Chapter 6

How do Urbanization and Income Levels affect Food Consumption? Insights from Budget-Consumption Studies

In order to understand better the impacts of urbanization and income growth on the evolution of the demand for food in the subregion, AGWA commissioned analysis by ReSAKSS/West Africa of budget-consumption surveys in eight countries: Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali, Niger, Senegal, and Togo (Table 6.1). These countries reflect a range of experiences with respect to their degree of urbanization, as well as their per capita income levels and growth rates over the past 20 years. Data were sufficient to carry out detailed analyses for all of the countries except Benin. In five of the countries (Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Senegal), two budget-consumption studies were available – one during the late 1980s or during the early1990s, and the other from 2005 or later – thus allowing examination of how food expenditure patterns have changed over time (Taondyandé and Yade, 2012b).[48] The chapter complements this analysis with data from two budget-consumption surveys from Nigeria carried out in 2003/04 and 2009/10 (NBS, 2007; NBS, 2012a).

This chapter analyses the shares of the food budget that consumers in each of these countries devoted to the main food groups and to individual commodities. For the countries included in the ReSAKSS study, it also examines these expenditure patterns by income quintiles, urban and rural residence, and between the two survey periods in order to see how food expenditure patterns vary across the population. It then quantifies how income growth affects consumption patterns by estimating income elasticities of demand and marginal food budget shares for these commodities, by country, and discusses the implications of these findings for potential domestic market growth as incomes increase.

Table 6.1
Budget consumption surveys analysed by ReSAKSS

Country	During 1990s	During 2000s
Benin		2007
Burkina Faso	1994	2009
Côte d'Ivoire	1993	2008
Ghana	1992	2006
Mali	1989	2006
Niger		2005
Senegal	1994	2002
Togo		2006

47 The study was based on field work carried out with national teams in each country in collaboration with ReSAKSS and Michigan State University. See Taondyandé and Yade, 2012b, for details.

6.1 Methodological issues

Despite the usefulness of budget-consumption surveys in better understanding the impact of key drivers, such as income and urbanization, on food demand, some caveats apply in the interpretation of their results. First, most budget-consumption surveys only measure household food expenditures but not actual food consumption. Even though the latter could be estimated by dividing expenditures for individual food items by their prices at the time of data collection, the accuracy remains questionable in view of the quality of available price data. Second, data are only collected in a single year, which might not be typical in terms of prices and thus distort the relative expenditure shares of different food items. Third, the surveys discussed here were conducted in different years in the different countries, which needs to be taken into account when comparing differences between countries and trends over time. Hence, the results of budget-consumption surveys should be interpreted with caution and checked against other data sources such as food balance sheets.

6.2 The importance of food expenditures in households' budgets

Food expenditures account for a high percentage of total household expenditures in the ReSAKSS survey countries, ranging from 39% in Côte d'Ivoire to 62% in Benin (Table 6.2). The 2009/10 Nigeria National Budget Survey put the figure for Nigeria at 65% for the population as a whole, ranging from 55% in urban areas to 72% in rural areas (NBS, 2012a). These figures showed very little change since the 2003/04 survey, which found 64% of total expenditures nation-wide going to food; the figure for urban areas was 58% while that in rural areas was 67% (NBS, 2007).

In all seven countries for which data are available on expenditures by income group, the percentage of household expenditures going to food increased steadily as per capita household incomes fell, absorbing from between 55% and 70% of total expenditures of the poorest fifth of the population, against 30% to 55% in the top income quintile, depending on the country. Table 6.2 also shows that the decline of food in overall household expenditures is very modest over the first four income quintiles, remaining above 50% for all countries except Côte d'Ivoire, and only declines significantly in the highest income quintiles. This pattern emerges in part because the differences between median incomes are much more marked between the fourth and fifth quintiles compared to differences that exist between the other quintiles.

These figures highlight two main policy issues: (1) the food price dilemma facing policy makers, and (2) the disproportionate share of upper income segments in total food expenditures. With consumers spending such a high percentage of their total budgets on food, there is very little room for consumers, especially poor consumers, to absorb increases in food prices without cutting consumption. Therefore, the scope for encouraging domestic food production through higher prices (e.g. by increasing import tariffs) may be very limited from a political standpoint. On the other hand, the large shares of the middle- and upper-income segments in total domestic food-market expenditures point to the importance of better understanding these groups' demands and their implications for domestic food market development.

6.2.1 Evolution of urban food expenditures

Table 6.3 shows the proportion of total food expenditures that takes place in urban areas and how that share has changed over time in the six countries for which two surveys were available. It shows the increasing importance of urban food markets across commodity groups and countries. Urban food expenditures accounted for 30% of total food expenditures in Burkina Faso (2009), 38% in Nigeria (2009/10), 40% in Mali (2006), and between 50% and 60% in Côte d'Ivoire, Ghana and Senegal at the time of the last surveys. The overall figure for Nigeria appears low, given the degree of urbanization in the country, but urban shares are higher

Table 6.2 *Percentage of total household expenditures going to food, by income quintile*[a]

		Income Quintiles (low to high)					
Country	Year	Q1	Q2	Q3	Q4	Q5	National
Benin	2007						61.7
Burkina Faso	2003	69.6	68.3	65.4	60.4	41.7	53.6
Côte d'Ivoire	2008	51.3	49.8	46.8	43.1	29.9	38.6
Ghana	2006	60.6	59.0	57.1	53.6	45.0	51.0
Mali	2006	58.3	59.2	57.5	51.6	31.4	43.4
Niger	2005	60.5	62.9	64.7	63.6	55.5	60.1
Senegal	2002	54.8	53.0	53.1	52.8	47.1	45.3
Togo	2006	65.7	63.9	61.2	55.2	43.5	51.6

Source: Taondyandé and Yade, 2012b
[a]Q1= lowest income quintile, Q5=highest

(and increasing over time) for high-value products such as animal products, fruits and vegetables, and beverages. However, despite the growth of urban food consumption in absolute and relative terms, rural food markets remain important, especially in the less urbanised countries.

In terms of how urban food expenditures are distributed across different food groups (Table 6.4), Côte d'Ivoire experienced a noticeable shift between the two surveys from cereals and "other food products" towards animal products and fish, fruits and vegetables, and roots and tubers. Ghana and Senegal underwent similar changes, though less pronounced. While in Ghana, the share of meat expenditures remained at a high level of 27%, in Senegal it increased from 29% to 33%. In Mali, cereals and meat and fish increased their budget shares at the expense of vegetable oils and other food products.

Nigeria, in contrast, recorded an increase in the share of urban food expenditures going to starchy staples in 2009/10 compared to 2003/04, a sharp drop in the budget share going to animal products, and an increase in the share going to fruits and vegetables. These changes may reflect consumers' adaptation to the high food prices prevailing in 2009/10, as they sought to protect their basic calorie consumption by cutting back on more expensive animal products. The largest increase in urban budget share for Nigeria in

Table 6.3 *Share of urban in total food expenditures for major food groups (%)*

	Burkina Faso		Côte d'Ivoire		Ghana		Mali		Nigeria		Senegal	
Food Group	1994	2009	1993	2008	1992	2006	1989	2006	2003/04	2009/10	1994	2002
Cereals	21.9	28.4	42.7	52.1	48.2	54.2	27.7	37.6	25.9	27.8	40.4	49.9
Roots & tubers[a]	41.9	40.4	18.5	38.8	55	55.4	47.5	68.2	18.9	38.5	67.6	69
Pulses	15.5	27.8					23	38	b	34.8	21.1	37
Oils and oilseeds	29.7	34.9	41	51.6	44.4	48.8	29.8	39	24.4	36.6	44.8	49.3
Fruits and vegetables	40.2	39.8	44.5	57	47.9	52.6	35.3	53.6	22.2	43.8	52.7	64.8
Animal products and fish	31	37.5	65.7	61	42.7	50.6	45.1	53.4	26.4	42.8	58.2	74.6
Beverages	27.5	25.5	34.6	49.4	41.7	58.4	29.7	41.1	b	53.2		
Other food products	34.8	27.1	84.1	63.1	52.8	56.9	39.2	44.2	31.4	35.4	42.3	48.5
Total food expenditures	**26**	**30**	**46**	**53.7**	**52.8**	**56.9**	**34.2**	**44**	**25.3**	**37.5**	**47.2**	**58.3**

Source: Calculated from data in Taondyandé and Yade 2012; National Bureau of Statistics 2007; National Bureau of Statistics 2012.
[a]Includes plantains for Nigeria
[b]Not reported separately; likely included in "Other food products".

Table 6.4 *Evolution of food budget shares in urban areas (%)*

	Burkina Faso		Côte d'Ivoire		Ghana		Mali		Nigeria		Senegal	
Food Group	1994	2009	1993	2008	1992	2006	1989	2006	2003/04	2009/10	1994	2002
Cereals	36.9	52.2	32.9	24.8	20.5	23.1	29.6	36.4	25.7	22.2	32.1	26.9
Roots & tubers[a]	1.9	0.9	8.8	12.1	21.0	15.6	1.6	2.8	10.8	23.2	2.4	2.9
Pulses	2.3	3.3					0.7	1.3	b	9.0	0.3	0.4
Oils and oilseeds	8.1	5.7	5.2	6.6	5.6	4.7	7.8	5.6	7.1	3.7	13.5	11.3
Fruits and vegetables	9.0	8.1	9.5	16.9	10.1	13.8	12.2	11.6	11.4	20.2	13.2	14.0
Animal products and fish	13.6	12.5	17.7	25.6	27.1	27.7	23.3	25.8	24.2	10.2	29.4	33.1
Beverages	13.8	6.9	3.2	2.2	6.8	7.2	5.2	6.2	b	6.4	n.a.	n.a.
Other food products	14.2	10.4	22.6	11.7	8.9	7.9	19.6	10.4	20.8	5.1		11.4

Source: Calculated from data in Taondyandé and Yade 2012; National Bureau of Statistics 2007; National Bureau of Statistics 2012.
[a]Includes plantains for Nigeria
[b]Not reported separately; likely included in "Other food products".

2009/10 compared to the earlier period was for roots and tubers, suggesting that consumers may have switched to these locally produced goods as prices for internationally traded cereals spiked. Gari, in particular, may have been a convenient "fast food" substitute for rice during this period of high rice prices. Data for Burkina Faso from 2009, also show a strong expansion of cereals at the expense of all other food groups compared to the earlier (1994) survey, likely for similar reasons, as consumers tried to defend basic calorie consumption at the expense of dietary diversity.

6.3 Structure of food expenditures by major food group

Table 6.5 presents the latest data on the share of the food budget going to major food groups in each of the eight countries included in the ReSAKSS study along with comparable information for Nigeria. In seven of the nine countries, cereals have the highest share in total food expenditures. These include four Sahelian countries (Burkina Faso, Mali, Niger and Senegal) and three coastal countries (Nigeria, Côte d'Ivoire and Togo). In the case of Côte d'Ivoire, the high share of cereals is mainly due to the importance of rice. In Nigeria, roots, tubers, and plantains account for the second largest share of the food budget, closely following cereals. In contrast, in Benin and Ghana livestock products and fish accounted for the largest share of food expenditure, followed by roots and tubers (Benin) and cereals (Ghana). In the other countries, animal products come in second place, accounting for 10% of total food expenditures in Burkina Faso in 2009 and 25% in Senegal in 2002. Nigeria has the lowest budget share of any of the countries devoted to animal products, but this is at least partially offset by the high budget share (9%) devoted to pulses, a high-quality protein source. Overall, food expenditures are more concentrated on a single food category in the inland Sahelian countries compared to the coastal countries: the main food group–cereals–accounts for between 44.5% (Mali) and 60.9% (Niger) of total food expenditures.

6.3.1 Starchy staples: large expenditures and changing composition

The budget-consumption studies show the central role that starchy staples play in the food budgets of West Africans and how those expenditures are changing over time as the population becomes more urbanised and as incomes grow.

Budget shares. Starchy staples (cereals and roots and tubers combined) account for between 30 and 50% of total food expenditures in coastal countries. In inland Sahelian countries their share is even higher. Due to the importance of starchy staples in total food expenditures, increases in starchy staple prices hit consumers particularly hard. Previous studies have found that in response to higher staple food prices, West African consumers often

Table 6.5 *Structure of food expenditures by major food group (%)*

Food Group	Benin 2007	Burkina 2009	Côte d'Ivoire 2008	Ghana 2006	Mali 2006	Niger 2005	Senegal 2002	Togo 2006	Nigeria 2009/10
Cereals	22.5	55.1	25.7	22.8	44.5	60.9	31.4	20.8	27.8
Roots and tubers	10.2	0.6	16.8	15	1.9	0.8	2.4	8	22.6[a]
Pulses	3.7	3.6			1.6	1.8	0.6	2.7	9.7
Oils and oilseeds	8.6	4.9	6.9	5.1	6.5	3.3	13.4	6.4	3.7
Fruits and vegetables	11.6	6.1	15.7	13.9	9.9	4.8	12.6	14.9	17.3
Livestock products and fish	30.1	10.0	22.6	29.2	22.2	12.1	25.8	17.8	8.9
Beverages	6.7	8.1	2.4	6.6	6.9	4.2		6.2	4.5
Other products	6.7	11.5	10.0	7.4	6.4	12.0	13.7	23.2	5.4

Source: Taondyandé and Yade, 2012b; NBS, 2012a.
[a]Also includes plantains for Nigeria

cut back on diet quality (reducing consumption of fruits, vegetables, and animal protein) to "defend" their consumption of starchy staples; they sometimes also cut back on health and educational expenditures in order to try to reduce the impact of the higher prices on caloric intake (Camara, 2004; Diagana *et al.*, 1999). Data from the budget-consumption studies suggest that the same phenomenon occurred in Burkina Faso in 2009 and Nigeria in 2009/10 in response to the surge in food prices (see Table 6.4).

Starchy staple expenditures take a particularly large share of the food budget of the poor. In six of the seven countries for which detailed information is available in the decade 2000-09, the percentage of the food budget amongst urban consumers going to starchy staples declined as incomes rose (Appendix Table A6.1, p. 165). For example, in Niger the lowest-income quintile spent 61% of its food budget on starchy staples, compared to 44% for the highest-income quintile. The one exception to this pattern was Burkina Faso, where urban consumers spent between 48 and 55% of their food budget on these staples in all five income quintiles. In rural areas, budget shares going to starchy staples were at the same level or higher than those in urban areas for five of the six countries surveyed, being lower only in Togo (Appendix Table A6.2). The rural budget shares, however, varied much less across income groups; as incomes grew in rural areas, the tendency was to expand consumption of starchy staples proportionately to the increase in income. This probably reflects in part the lower average incomes in rural areas; as incomes rise in the rural areas, the first priority appears to be to increase total caloric consumption.

Changing composition of starchy staple expenditures with income growth and urbanization

Urban food expenditures. While budget shares remain high for starchy staples across income groups, the composition of starchy staple expenditures varies by income and across countries. The surveys conducted during the last decade show the predominant share of rice in total food expenditures of urban populations in most countries. In five out of eight countries, urban consumers spent between 15% and 25% of their total food expenditures on rice. Only in Ghana, Nigeria and Togo were the shares lower (between 11% and 14% in Ghana, 9% on average for Nigeria and between 6% and 7.5% in Togo). With the exception of Niger, urban rice expenditures in the Sahelian countries were higher than those for millet and sorghum combined, despite the higher per capita consumption of the latter as shown in the food balance sheets. In the humid coastal countries with the exception of Nigeria, urban rice expenditures were close to (in Togo and Ghana) or exceeded (in Côte d'Ivoire) total expenditures for roots and tubers. These data show the importance of rice as a convenience food despite its higher cost per calorie compared with traditional cereals and starchy roots. It appears that in urban Nigeria, however, gari may be playing more of a role as a convenient fast food, in part perhaps because of trade restrictions on polished rice (see Chapter 12).

Strikingly, the poorest income quintiles spent similar or larger shares of their food budgets on rice than did those with higher incomes in most countries. With the exception of Burkina Faso, the share of rice in total urban food expenditures decreased with rising incomes. This was most pronounced in Côte d'Ivoire, where the share of rice in total food expenditures amounted to 25% in the lowest income quintile but only 13.5% in the highest quintile. A similar trend can be seen in Ghana and Togo, even though the differences between income quintiles are much less. In Mali and Niger, it is the second-lowest income quintile that spent the highest share of its total food budget on rice (25% and 21%, respectively).

In Senegal, the country with the highest per capita income of the four Sahelian countries and the country with the longest tradition of heavy rice consumption, urban budget shares devoted to rice fell sharply as incomes rose, as higher-income consumers diversified their diets away from starchy staples. Likewise, in both urban Ghana and urban Côte d'Ivoire, the share of the budget going to rice declined as incomes rose (as did the budget share going to all starchy staples), as consumers in these countries diversified their expenditures towards fruits, vegetables, and animal products. In absolute terms, however, per

capita expenditures on rice continued to increase as incomes rose. In contrast, in the lower-income countries of Mali and Niger, the share of the urban food budget going to rice was high (between 19 and 25%) and varied little among 80% of the income distribution, dropping only amongst the highest income groups.

Burkina Faso is an exceptional case where the share of urban food expenditures for rice increased consistently from lower to higher income quintiles (from 16% to 25%). Likewise, the share going to wheat increased from 2% to 5%, while the share going to millet and sorghum plummeted from over 14% to 3%. Thus, as their incomes rose, urban Burkinabé shifted increasingly to imported staples. In less dramatic fashion, the budget shares devoted to millet and sorghum fell amongst urban consumers as incomes rose in the other Sahelian countries analysed as well (Mali, Niger, and Senegal), and budget shares for both wheat and roots and tubers increased.

In line with the per capita consumption levels reported in the food balance sheets, the share of wheat in total urban food expenditures is still low in the survey countries, except in Senegal. In the poorest countries (Burkina Faso, Niger and Togo), the share of urban expenditures for wheat increased with rising incomes. In countries with higher wheat consumption, there was little variation across income groups (Ghana), or urban expenditure shares first increased and then decreased as incomes went up (Senegal). This suggests that urban wheat consumption is likely to expand with growing incomes, even though from a much lower basis compared to rice.

Also consistent with food balance sheet data, per capita maize expenditures were highest in Burkina Faso, followed by Niger and Togo. In the first two countries, urban expenditure shares are stable across income quintiles, around 16% and 11%, respectively. In the other countries, maize's shares in total expenditures decreased with growing incomes. This applied even more to sorghum and millet, especially in the Sahelian countries where they still account for a significant share of total urban food expenditures, especially among the poor. The urban expenditure share of roots and tubers was stable across income quintiles in countries where these form an important part of the traditional diet (Ghana, Togo) or declined only slightly with higher incomes (Côte d'Ivoire). This suggests that in these countries households tend to diversify their diets by reducing the share of their incomes spent on maize and rice, rather than on starchy roots and tubers. It may also reflect the suitability of processed forms of cassava, such as gari and attiéké, as urban fast foods that can substitute for rice.

Rural food expenditures. In rural areas (Appendix Table A6.2, p. 165), the patterns differed from those in urban areas, reflecting in part lower cash incomes and lower opportunity cost of time. In the rural areas of all four Sahelian countries, budget shares for millet and sorghum were the highest of all the staples and varied little across the first four income groups. Rural households spent a lower share of their incomes on rice, although this share was growing or stable in most countries. Rural inhabitants in Senegal, Côte d'Ivoire and Mali spent the largest shares of their incomes on rice amongst the survey countries, ranging from 15% to 25%. Rural households spent a lower share of their incomes on maize compared to rice, except for Togo. Moreover, in all countries except for Burkina Faso and Niger, maize's share in overall food expenditures declined with rising incomes. Wheat consumption remained under 2% of rural food expenditures except in Senegal, where it varied between 5% for the lowest-income quintile and 8% for the highest-income group; the highest-income quintile in rural Senegal devoted more of its budget to wheat products than to millet and sorghum. In all countries, higher income quintiles spent more on wheat than did their poorer peers. This is consistent with the trends in urban areas and suggests strong increases in wheat demand with growing incomes, albeit from a much lower base than rice. Expenditure shares for roots and tubers in total in rural Ghana were lower than in urban areas, but increased in proportion with incomes. In Côte d'Ivoire, rural households spent double the share of their incomes on roots and tubers compared with their urban peers, especially in the three middle income segments.

Changing composition of starchy staple expenditures over time. The ReSAKSS study also examined changing expenditure patterns for food over time for five countries for which budget-consumption studies were available in the late 1980s/early 1990s and from 2005 onward (Burkina Faso, Côte d'Ivoire, Ghana, Mali, and Senegal). These comparisons show some strong shifts among starchy staple expenditures over time (Appendix Tables A6.3 and A6.4, p.167). The share of cereals increased in Burkina Faso, Mali and Ghana while declining in Côte d'Ivoire and Senegal in both urban and rural areas.[48] This increase was mainly driven by the strong growth of rice consumption, whose share in overall food expenditures increased in all the countries, except for Senegal. However, real expenditures for rice in absolute terms also increased in Senegal. [49]A second consistent trend across the five countries is the decline of millet and sorghum in total food expenditures (except for rural Burkina Faso). For the other two cereals, the picture was more diverse: maize's share of the food budget only increased in Burkina Faso, Mali and urban Senegal, while decreasing in the other countries. Wheat's share of the food budget increased in countries with low initial consumption levels (Burkina, Ghana and Mali), but fell in Côte d'Ivoire and urban Senegal, where expenditure shares were already high in the early 1990s. According to ReSAKSS, the strong decline in wheat consumption in Côte d'Ivoire could be attributable to the devaluation of the CFA franc.

Roots' and tubers' budget shares evolved differently in the two main consuming countries covered by repeat surveys: in Côte d'Ivoire the share increased in urban areas (from 8.8% in 1993 to 12.1% in 2008), but fell markedly in rural areas (from 31.7% to 22.2%). For Ghana, the surveys revealed a decline in urban areas from 21.0% to 15.6% between 1992 and 2006 but little change in rural areas. Thus, while absolute levels of expenditure increased for roots and tubers in Ghana (due to strong income growth over the period), the budget-consumption studies suggest less dramatic growth of root and tuber consumption in Ghana than do the FBS data.

48 According to ReSAKSS, the strong increase of cereal consumption in Burkina Faso needs to be interpreted with some caution, given that the survey instrument used in 1994 was not very detailed and some cereal expenditures in that year might be recorded under "other food products."

49 Calculated by dividing total per capita expenditures by deflated food prices in 1994 and 2002.

Growing demand for processed staples. As West African consumers become more urbanised and the opportunity cost of their time increases with income growth and a more hectic urban lifestyle, they increasingly seek staples in more convenient, processed forms. This is clearly seen in Table 6.6, which shows the percentage of consumer expenditures for basic staples in raw and processed forms across rural and urban areas in six countries. The proportion of staples purchased in processed form is higher in urban areas than in rural areas of all six countries.[50] The proportion of staples purchased in processed form also jumps sharply as one moves from a low-income country like Niger, where virtually all staples were purchased in unprocessed form, to an emerging economy like Ghana, where 70% of maize and 60% of cassava expenditures went for processed products in urban areas. A key variable driving this shift is the opportunity cost of time, particularly of women, who do most of the food preparation in the region. In countries where many people, especially poorly educated young women, have few opportunities for remunerative employment, the demand for processed products remains limited, as home processing is a cheaper alternative. In contrast, in countries such as Ghana, where incomes are rising rapidly and urban women have more employment opportunities outside the home, the growth in demand for processing services expands rapidly. This shift suggests that if West Africa succeeds in sustaining strong, broad-based income growth, there will likely be an explosive growth in the demand for processed staple food products, particularly in urban areas.

Summary: starchy staples. The picture that emerges of starchy staples consumption from the budget-consumption studies is one in which: (1) despite a slight decline in budget shares over time, these products, especially rice, continue to account for a high percentage of the total food budget, especially for low- and middle-income consumers, making their prices very politically sensitive; (2) there is a strong shift as incomes increase in the Sahelian countries away from millet and sorghum towards

50 Although detailed data are not available for Nigeria, the 2009/10 budget-consumption survey provides some evidence of similar patterns. For example, over 60% of total national expenditures on "bread and similar foods" occurred in urban areas, compared to only 30% of national expenditures on all cereal products.

rice, maize (in Mali and Burkina Faso) and, to a lesser extent, wheat; (3) the budget shares of rice and wheat are increasing in Ghana, where incomes have grown strongly, relative to roots and tubers, although absolute expenditures on roots and tubers continue to increase over time. The more recent surveys show that the expenditure shares of roots and tubers are fairly stable across income quintiles in other countries where these form an important part of the traditional diet, such as Togo and Côte d'Ivoire; (4) while these trends are more strongly seen in urban settings, they are also occurring in rural areas, as what was primarily an urban transformation of the diet a generation ago has become a national phenomenon.

The studies also demonstrate that consumption of rice, and to a lesser extent, wheat products, is not just driven by the rich, particularly in urban areas. While the budget shares and absolute levels of consumption of these predominantly imported staples is highest among the high-income groups (except in Senegal, where the budget shares fall for the highest income groups), these staples, particularly rice, claim from between one-fourth to over half of total expenditures on staples by the lowest-income quintile in seven countries surveyed.[51] Finally, the studies suggest that as per capita incomes increase

51 Compared to rice, which is consumed largely as imported, wheat is mainly consumed as bread, pasta and biscuits, and the imported raw material may only account for parts of the costs of these finals products. Therefore, increases of wheat prices have a lower impact on consumers than in case of rice.

Table 6.6 *Shares of total expenditures on unprocessed and processed starchy staples, various countries*

	Burkina Faso, 2009			Mali, 2006			Niger, 2005		
Staple	Urban	Rural	National	Urban	Rural	National	Urban	Rural	National
Millet									
Millet Grain	80.9	96.0	94.5	98.5	99.9	99.5	99.8	100.0	100.0
Processed/prepared forms	19.1	4.0	5.5	1.5	0.1	0.5	0.2	0.0	0.0
Sorghum									
Sorghum grain (white & red)	93.1	99.2	98.8	100.0	100.0	100.0	100	100	100
Sorghum flour	6.9	0.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Maize									
Maize grain (white & yellow)	78.0	93.2	86.9	81.9	92.9	89.8	92.5	98.3	96.1
Processed/prepared forms	21.9	6.8	13.1	18.1	7.1	10.2	7.5	1.7	3.9

	Senegal, 2002			Côte d'Ivoire, 2008			Ghana, 2006		
Staple	Urban	Rural	National	Urban	Rural	National	Urban	Rural	National
Maize									
Maize grain (white & yellow)	85.7	89.4	89.0	15.6	23.2	20.7	31.2	48.3	40.2
Processed/prepared forms	14.3	10.6	11.0	84.4	76.8	79.3	69.8	51.7	59.8
Millet[a]									
Millet Grain	46.1	92.7	80.5	25.1	30.4	27.1	–	–	–
Processed/prepared forms	53.9	7.3	19.5	74.9	69.6	72.9	–	–	–
Sorghum[a]									
Sorghum grain (white & red)	a	a	a	26.4	30.6	29.5	–	–	–
Sorghum flour	a	a	a	73.6	69.4	50.5	–	–	–
Cassava									
Fresh cassava	–	–	–	26.1	52.7	40.8	39.7	48.3	44.0
Processed/prepared forms	–	–	–	73.9	47.3	59.2	60.3	51.7	56.0

Source: Calculated from data in Taondyandé and Yade, 2012b
[a] Figures for Senegal are for millet and sorghum combined

and populations become more urbanised, there will be a strong growth in the demand for processing services for such staples.

6.3.2 Fruits and vegetables

Appendix Table A6.1 (p.165) shows that across all seven countries surveyed in the 2000s, the share of the food budget allocated to fruits and vegetables was nearly constant across all income classes in urban areas. This finding implies that per capita fruit and vegetable expenditures in urban areas increase roughly proportionally with income growth. In rural areas, the pattern is less uniform, with the budget share allocated to fruits and vegetables decreasing as rural incomes rise in Burkina Faso, Ghana, and Mali; increasing in Côte d'Ivoire, Niger and Togo; and holding steady across the different income quintiles in Senegal (Appendix Table A6.2, p.165). Except for Burkina Faso, however, the changes in the fruit and vegetable budget shares were very modest across income groups in rural areas.

Even though the short-run relationship between income levels and fruit and vegetable expenditures is uneven across countries, as revealed in the cross-sectional surveys of the 2000s discussed above, the longer-term relationship, as revealed by comparing surveys over time, appears to be strongly positive. The comparison of the budget-consumption studies from the late 1980s and early 1990s with those in the 2000s reveal that for urban areas, budget shares allocated to fruits and vegetables increased over time in Côte d'Ivoire, Ghana and Senegal and declined slightly in Mali. The only substantial reduction in urban budget share going to fruits and vegetables was in Burkina Faso, where it fell from 9.0% in 1994 to 8.1% in 2009. The latter year was one of high staple food prices; as mentioned earlier, it appears that Burkinabé consumers tried to deal with the higher staple food prices by cutting back expenditures on other products. In rural areas, the budget shares going to fruit and vegetable expenditures increased in four of the six countries, held steady in Senegal, and declined only in Mali. The crop year 2005/06 in Mali was marked by high prices due to drought and locust attacks, which may have caused Malian consumers to devote a higher proportion of their budget to basic staples. Overall, then, the budget-consumption study results appear consistent with the FBS analysis presented in Chapter 5 that showed fairly broad-based increases in apparent per capita fruit and vegetable consumption across the region over the past 30 years.

6.3.3 Animal products, including fish

The most dramatic findings that emerge from Appendix Tables A6.1 and A6.2 concern the strong increase in expenditure shares for meat, fish, and dairy products as incomes increase. In both urban and rural settings, the budget shares allocated to animal products rise with growing incomes. In urban Burkina Faso, Mali, Niger, and Senegal, budget shares allocated to animal products more than double between the poorest 20% of the population and the richest 20%. In rural areas, the increases are slightly lower yet still substantial. Only in urban Ghana (where per capita incomes were highest among the seven countries) and rural Niger (which has a large pastoral population) do budget shares for animal products remain fairly stable across income groups (implying, nonetheless, increases in absolute consumption as incomes rise). Overall, the figures reflect a strong desire by consumers to upgrade the quality of their diet by increasing consumption of animal protein as their incomes increase.

In four of the six countries for which data are available, Table 6.4 shows that urban consumers increased the proportion of their food budget going to animal products over time. The two exceptions were Burkina Faso and Nigeria, where higher starchy staple prices in 2009/10 may have forced consumers to reallocate their food budgets to those staples to defend their basic calorie consumption. In rural areas, the food budget shares allocated to animal products increased over time only in Côte d'Ivoire and Mali (Appendix Table A6.4, p.167). Because incomes were growing over time, however, absolute per capita expenditures on animal products increased in all urban and rural areas of the countries covered by the ReSAKSS study except rural Senegal, where they remained unchanged (Taondyandé and Yade, 2012b). In relative terms,

the most consistent increase in budget share across countries was for dairy products (driven largely by increased expenditures for imported milk powder). Both budget shares and absolute expenditures for dairy products increased across all rural and urban areas of the five countries surveyed except for rural Burkina Faso and rural Senegal, where they declined.

Across the five countries analysed by the ReSAKSS study, the absolute expenditures per capita for meat and poultry increased over time in all urban and rural areas except rural Senegal, where they declined slightly. In relative terms, meat and poultry accounted for the largest share of expenditures on animal protein in urban Burkina Faso, Côte d'Ivoire, and Mali in the late 1980s/early 1990s, while fish absorbed the highest proportion of the animal protein budget in Ghana and Senegal. By 2008, the data indicate a massive shift in relative budget shares towards fish in both urban and rural Côte d'Ivoire (which ReSAKSS attributes to increased consumption of inexpensive frozen fish – as suggested by a strong growth of fish imports during this period from 9.4 kg to 17.9 kg per capita) and a decline in the budget share going to red meat and poultry (Appendix Tables A.6.3 and A6.4). This substitution may have been due in part to the disruption of the livestock trade from Burkina Faso and Mali to Côte d'Ivoire as a result of the Ivorian conflict. In urban Senegal, there was a modest increase in the total food budget share going to meat and poultry between 1994 and 2002, but the budget shares of all other animal protein products also increased over that period, so the share of meat and poultry expenditures as a percentage of total animal protein expenditures remained stable. In contrast, in rural Senegal, the total budget share (as well as absolute expenditures) going to animal protein fell sharply between 1994 and 2002. This was largely driven by a decline in meat consumption, as both the budget share and the absolute expenditures on fish and seafood increased.

Ghana experienced an increase in the overall share of the food budget going to animal products between 1992 and 2006. In urban Ghana, relative shares of the total expenditures on animal products were remarkably stable over time. In rural Ghana, there were modest increases in the shares going to meat and dairy products and a small decline in the relative share of fish expenditures between 1992 and 2006. Nonetheless, in 2006, fish still accounted for 73% of animal protein expenditures in rural Ghana and 55% in urban Ghana.

Unfortunately, the ReSAKSS analysis did not disaggregate meat expenditures between red meat and poultry, so it is not possible to use these data to examine the degree to which imported frozen poultry has substituted for either red meat or fish, as suggested in Chapter 5. We will examine that question in more detail in Chapter 7 based on interviews with consumer focus groups in Accra and Lagos.

6.4 Quantifying the relationship between income growth and demand

In order to quantify how demands for different types of food groups are likely to change as per capita incomes increase in the region, ReSAKSS used the budget-consumption data to estimate income elasticities of demand and marginal budget shares (MBS) for the various urban and rural income groups. Income elasticities of demand and MBS both express the relationship between per capita income growth and growth in demand for different products, but they express the relationship in different ways. Income-elasticities of demand show the percentage growth in the expenditures for a product or food group given a one percent change in income. In contrast, marginal food-budget shares show the share of any additional spending on food that will go to a given product or food group (see Box 6.1).

6.4.1 Income elasticities of demand

ReSAKSS reports that the estimated income elasticity of demand of food as a whole is approximately 1.0 for the set of countries analysed, ranging from 0.7 for Senegal to 1.1 in Togo. In contrast, estimates of the income elasticity of demand for all food, beverages and tobacco in high-income countries range from about 0.35 to 0.50 (ERS, 2012). The

Box 6.1 Income elasticity of demand and marginal budget shares

The income elasticity of demand is the ratio of the percentage change in the expenditures for a given product or food group to the percentage change in per capita income.[1] The elasticity thus expresses how quickly, in percentage terms, demand for the product changes as the rate of income growth changes. The basic relationships are shown in the table below. In high-income countries, income elasticities of demand for staple foods are typically very low (under 0.2) and often negative (ERS, 2012). The higher the elasticity, the faster will be the growth of demand as per capita incomes increase.

In a few cases, demand for a product may actually fall as incomes increase, as consumers shift to more preferred substitutes. Economists refer to such products as "inferior goods."[2]

Meaning of different values of the income elasticity of demand

Income elasticity of demand value (η)	Meaning
$0<\eta<1$	Demand grows as per capita income increases, but at a slower rate than income growth
$\eta>1$	Demand grows at a faster rate than per capita income growth
$\eta<0$	Demand falls as per capita incomes increase ("inferior good")

An example illustrates the use of these elasticities in quantifying future growth in demand for various products. The ReSAKSS study estimated the income elasticity of demand for meat products in urban Burkina Faso at 1.4 (Table 6.7). If per capita incomes in Burkina Faso increase at 2.4% per year (the rate projected by the UN Population Division for the period 2010-30) and the urban population grows at 5.4% per year (also a UN projection), then total demand for meat products in urban Burkina Faso will increase at 5.4% + 2.4% x 1.4 = 8.76% per year – a rate that would result in the doubling of demand every eight years.

The marginal budget share (MBS) for a food group expresses the percentage of a given increase in total expenditures (either for all consumption or for all food items) that will be spent on a particular food group. For example, if total per capita consumption expenditures in Ghana increased by 100 cedis and consumers spent 5 of those cedis on additional purchases of rice, the MBS for rice would be 5. Alternatively, the MBS can be defined with respect to changes in total food expenditures rather than all consumption expenditures. In that case, it is referred to in this report as the marginal food-budget share (MFBS). The MFBS represents the percentage of any additional spending on food that will go to a particular food item. For example, if out of an increased total food expenditure of 100 cedis per capita, our Ghanaian consumer spent 10 cedis on rice, the MFBS for rice would be 10.

1 In the budget-consumption studies analysed in this study, total per capita expenditures on all goods and services are taken as a proxy for per capita income.
2 The term "inferior good" is not meant to convey any connotation about the nutritional quality of the product in question. Indeed, in early stages of economic growth, consumers often shift their purchases from whole-grain products to products based on more highly refined flours. Although in economic terms the whole-grain products are "inferior goods", from a nutritional standpoint they are often superior to the highly refined products.

high income elasticity of demand for food in aggregate in West Africa implies that per capita demand for food will increase at roughly the same rate as growth in per capita incomes. This is consistent with the description given earlier in this study of a mass market in which many consumers are still trying to expand their basic intake of food as their incomes rise.

Table 6.7 presents the estimates of income elasticities of demand for the different foods in rural and urban areas of each country. Several salient features emerge from this table:

- Elasticities are high for almost all food products, sometimes exceeding 1.0. This implies that per capita expenditures on these items will grow at a faster rate than per capita income growth. This applies particularly to wheat products, meat, dairy products, beverages and stimulants, and fruits and vegetables, as well as for outside dining.

- The main exception is millet and sorghum (taken together), which, excluding Niger, has a low to moderate income elasticity of demand in most countries. The data indicate that in urban Burkina Faso millet and sorghum is an inferior good, with consumers decreasing their consumption of it as incomes increase. Only in Niger, where millet and sorghum remains the main staple and a significant part of the rural population remains undernourished, does the elasticity of demand exceed 0.5. The elasticity estimates indicate that even for Niger, however, demand for all other staples will grow at a faster rate as incomes increase than will the demand for millet and sorghum. Other commodities with income elasticities below 1.0 in most or all countries include maize and sugar.

- Elasticities for almost all food groups are higher in rural areas than in urban areas. In part, this likely reflects lower per capita incomes in the rural areas, as poorer people tend to increase their food consumption more than the rich as incomes increase. But it also indicates that the structural transformation of West African diets described earlier (more consumption of wheat and rice, increased fruit, vegetable, meat, dairy products, oils, and sweeteners) is not just an urban phenomenon. Rural residents are also changing their diets as their incomes increase, often at a faster rate than their urban counterparts. One implication of this finding is that even though West Africa is becoming increasingly urbanised, improvements in food marketing and processing systems need to occur in rural as well as urban settings, as rural residents are also demanding an increasingly diversified diet.

- Looking at individual staples, elasticities are high across all countries for wheat products and for rice in most countries (especially in rural areas). The elasticities for rice and wheat products exceed 1 in both rural and urban areas of Ghana, suggesting further rapid growth in demand for those products if Ghana continues its solid economic growth. The income elasticities of demand for yams and cassava are also very high for Ghana, exceeding those for wheat and rice in the rural areas and being amongst the highest for any of the staples in the seven countries studied.

- Elasticities for cassava and yams were estimated for only three countries. The elasticities are lowest in Côte d'Ivoire (0.5 to 0.7), are greater in Togo (0.7 to 1.4), and, as mentioned earlier, are very high in Ghana (1.0 to 2.2). In all countries, the elasticities are higher for yam than for cassava, indicating that even though cassava is the focus of several production initiatives, future income growth may also put upward pressure on the price of yams.

- The high elasticities for fruits and vegetables (close to or above 1.0 for most countries), oils and oilseeds, sugar and beverages are all broadly consistent with the picture of growing demand for these products that emerged from the food balance sheet analysis presented in Chapter 5.

- Elasticities are very high for animal products, particularly for meats (red meat plus poultry) and dairy products. The higher elasticities for

these meats and dairy products relative to fish is consistent with the story that emerged from the FBS analysis of increased consumption of these products relative to fish in several of the countries analysed.

- Expenditures on outside dining were analysed only the surveys for Côte d'Ivoire and Togo, but the elasticities that emerged were the highest of any food category – nearly 4.0 in Côte d'Ivoire. These figures presage a potentially explosive growth in the demand for restaurant and street-food dining as incomes increase.

- Although the analysis carried out on the budget-consumption data focuses on commodity groups rather than processed products, some insight into the potential demand for processed products can be gained by looking at the elasticities for wheat products, dairy products, and outside dining. Practically no wheat is consumed in the region as grain; most is consumed as bread, noodles, or pasta. Similarly, most dairy products consumed in the region are in processed form, primarily milk powder. Hence, the demands for wheat and dairy products are largely demand for processed products. Similarly, outside dining involves consumption of processed products (along with the associated services of being served and entertained by the experience). It is telling that the elasticities for this combination of goods are the highest of any food groups in the diet, suggesting that as incomes grow, the demands for processed foods are likely to grow extremely rapidly.

6.4.2 Marginal food-budget shares

The MFBS more accurately reflect absolute increases in expenditure on a given food group as incomes increase, as a lower percentage increase in a large-expenditure item (such as rice) often absorbs more of any increment in food spending than does a large percentage increase in a low-expenditure item (such as wheat).

Table 6.7 *Income elasticities of demand for food products, by country and place of residence*

	Burkina Faso		Côte d'Ivoire		Ghana		Mali		Niger		Senegal		Togo	
Product	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Rice	0.9	1.4	0.4	0.7	1.25	1.17	0.5	1.2	0.8	1.4	0.6	0.9	0.8	1.2
Wheat products	1.5	1.7	1.0	1.2	1.11	1.24	1.3	0.8	1.7	1.5	0.7	1.1	1.2	2.0
Maize	0.4	0.7	0.0	0.5	0.74	0.81	0.4	0.5	0.8	1.3			0.2	0.7
Millet and sorghum	-0.2	0.6				0.19	0.2	0.5	0.5	0.9	0.5	0.9	0.5	0.6
Cassava			0.5	0.7	0.98	1.65							0.7	1.1
Yam			0.6	0.5	1.27	2.19							1.0	1.4
Banana-plantains			0.6	0.7	0.37	1.31								
Beans/cowpeas									0.6	1.1			0.5	1.0
Pulses							0.7	1.1						
Fruits and vegetables	0.9	1.0	0.8	0.9	0.94	1.31	0.7	0.7	1.0	1.3	1.0	1.4	1.0	1.1
Oils and oilseeds	0.9	1.1	0.6	0.7	0.51	0.88	0.7	0.9	1.1	1.2	0.6	1.0	0.8	1.0
Meat	1.4	1.5	1.0	1.2	1.16	1.46	1.0	1.3	1.3	1.3	1.3	2.4	1.3	1.6
Fish and seafood	0.9	1.2	0.7	0.8	0.99	0.89	0.6	0.9	0.9	1.0	1.0	0.9	1.0	1.2
Dairy products	1.5	1.3	1.3	1.4	1.34	0.51	1.1	1.3	1.2	0.9	1.1	2.1	1.7	2.1
Sugar							0.6	0.8			0.6	1.0		
Beverages and stimulants	1.0	1.1	1.3	1.3	1.81	1.61			1.1	1.4			1.3	1.1
Outside dining			3.2	4.3									1.6	1.3
Other food products	0.7	1.0	1.2	1.5	1.67	1.37	0.8	0.9	1.0	1.1	1.0	0.9	0.9	0.9

Source: Taondyandé and Yade, 2012b

Figures 6.1 through 6.4 display the calculated MFBS for the survey countries, both in rural and urban areas. The stories that emerge from these figures are similar to those from the elasticity analysis, but give a better picture of the magnitude of the absolute changes in demand for the different food groups as total spending on food increases.

Starchy staples

The MFBS for starchy staples (Figures 6.1 and 6.2) are striking in several respects.

- The strong potential future demand for rice is evident, both in rural and urban areas. In Mali, for example, urban consumers would spend 14% of any increase in per capita food expenditures on rice; in rural Mali, the figure is 25%. In four of the seven countries, the MFBS for rice are higher in rural areas than in urban areas, indicating that rural consumers in these countries are more eager, given an increase in income, to raise their per capita rice consumption than are their urban counterparts.[52] Thus, the increase in rice consumption around the region is a rural-driven as well as an urban-driven phenomenon.

- The strong desire by rural residents of Burkina Faso and Niger for additional calories is evident in the very high MFBS for all starchy staples, especially millet and sorghum. Over 40% of any additional food expenditures in rural Burkina would go to staples (24% to millet and sorghum); in rural Niger, the corresponding figures are 59% for all starchy staples and 42% for millet and sorghum. Thus, while the long-term demand perspective for these cereals is not vibrant for urban areas (for example, the MFBS for millet and sorghum in urban Burkina is negative – indicating that per capita consumption falls as the food budget expands), they remain important and potentially growing sources of calories for poor rural populations in these inland Sahelian countries.

- The MFBS for wheat is larger in urban areas than in rural areas of all the countries analysed except Ghana, reflecting the current low levels of wheat consumption in the rural areas. In the urban areas, the MFBS for wheat varies between 3.5 and 7.1% except for Mali, where it is under 1%. But in Niger and Mali, the MFBS for maize in urban areas exceeds that of wheat, indicating that as urban Malians and Burkinabé spend more money for food, they will increase expenditures for maize more they will for wheat products. In rural areas, the maize MFBS exceeds that of wheat for all countries for which data are available except for Ghana, where the MFBSs are roughly comparable. Taken together, these findings imply that as total expenditures on food increase, spending for maize, in absolute terms, will grow more than that for wheat products in almost all the countries analysed here.

- In the three countries for which data are available on roots and tubers (Côte d'Ivoire, Ghana and Togo), the MFBS for yams and cassava exceed those of wheat in rural areas, and, for Ghana, in urban areas as well. In rural Ghana, MFBS for cassava is close to that for rice. In urban Togo, the MFBS for yams exceeds that for wheat, while in urban Côte d'Ivoire, the MFBS for cassava is only slightly lower than that for wheat. These figures indicate that as total food expenditures grow, expenditures for cassava and yams will grow, in absolute terms, at a pace at least comparable to that of wheat (but less than that for rice) in these coastal countries.

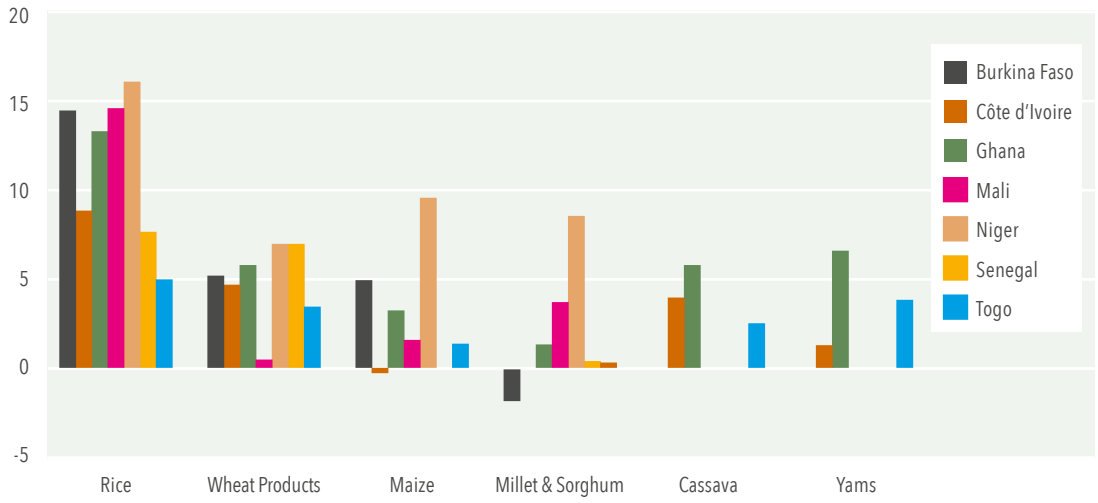
Animal products

Figures 6.3 and 6.4 present the MFBS for animal products, which indicate the proportion of any increase in food expenditures that would go to animal products. The elasticity estimates showed that these were among the products whose demand, in percentage terms, would grow the fastest as per capita incomes increased. The following observations stand out from these MFBS:

- The MFBS for animal products in total are high, especially in urban areas, ranging from 20% in Togo and Niger to 44% in Senegal,

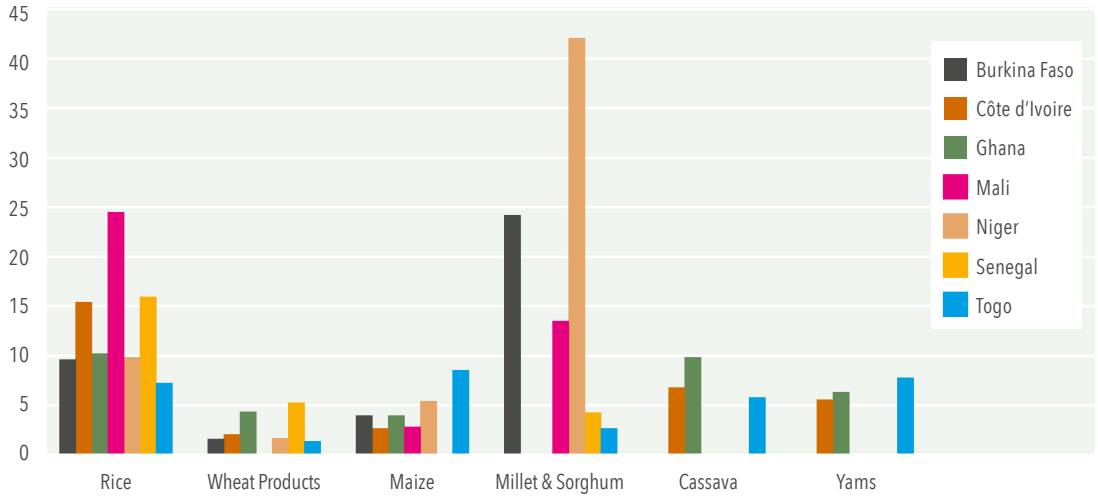
52 The rural consumers are starting from a much lower initial level of per capita rice consumption; their higher MFBS indicate that they are trying to "catch up" with the urban pattern of consumption.

Figure 6.1 *Marginal food-budget shares for basic staples in urban areas*



Source:Taondyandé and Yade, 2012b.
Data from the following years:
Burkina Faso (2002), Côte d'Ivoire (2008), Ghana (2006), Mali (2006), Niger (2005), Senegal (2002), and Togo (2006).

Figure 6.2 *Marginal food-budget shares for basic staples in rural areas*

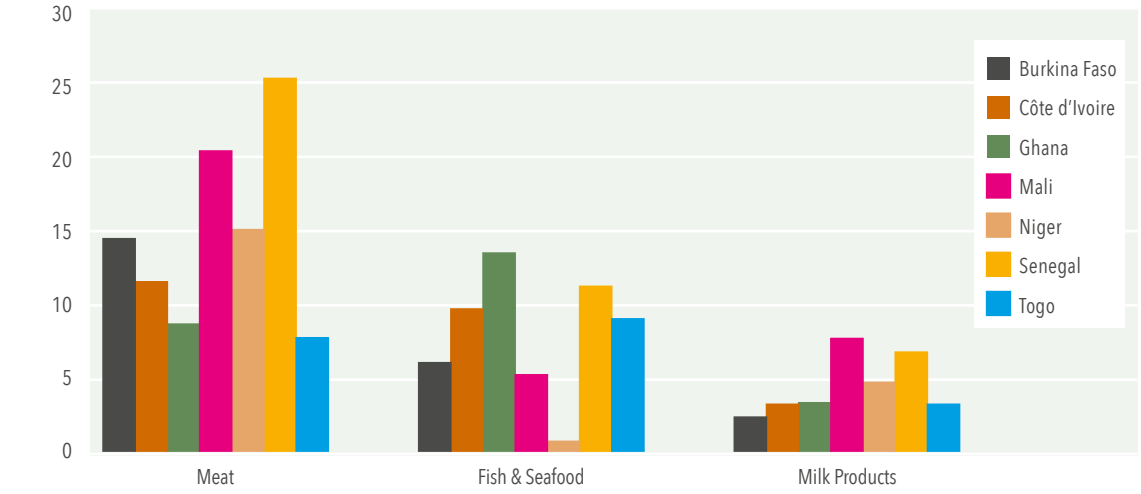


Source:Taondyandé and Yade, 2012b.
Data from the following years:
Burkina Faso (2002), Côte d'Ivoire (2008), Ghana (2006), Mali (2006), Niger (2005), Senegal (2002), and Togo (2006).

indicating that a substantial share of additional spending on food would go to these products.

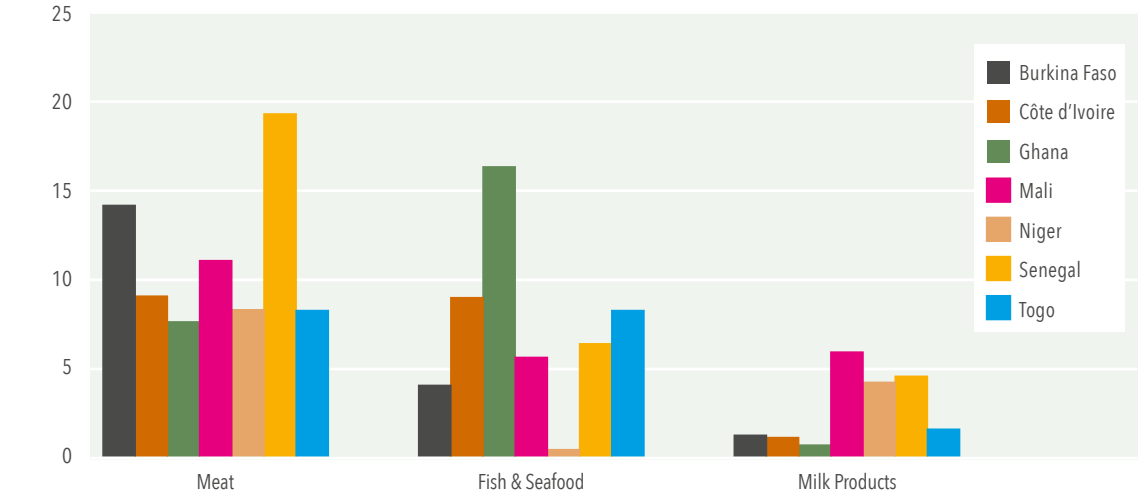
» In both urban and rural areas, the MFBS are highest for meats (red meat and poultry meat combined), followed by fish and then dairy products. Even though the income elasticities of demand for dairy products generally exceeded those of meat (indicating that expenditures on dairy products would increase at a faster percentage rate than would expenditures on meat as incomes increased), the MFBS indicate that the absolute volume of expenditures on meat products would increase at more than double the pace of spending on dairy products. This suggests that the infrastructure to handle meat marketing will have to expand more, in absolute terms, than will that for dairy products.

Figure 6.3 *Marginal food-budget shares for basic animal products in urban areas*



Source:Taondyandé and Yade, 2012b.
Data from the following years:
Burkina Faso (2002), Côte d'Ivoire (2008), Ghana (2006), Mali (2006), Niger (2005), Senegal (2002), and Togo (2006).

Figure 6.4 *Marginal food-budget shares for basic animal products in rural areas*



Source:Taondyandé and Yade, 2012b.
Data from the following years:
Burkina Faso (2002), Côte d'Ivoire (2008), Ghana (2006), Mali (2006), Niger (2005), Senegal (2002), and Togo (2006).

- The absolute volume of expenditures on meat in response to an increase in incomes would also be greater than that on fish for every country except Ghana and Togo.

- For almost every product in every country, the MFBS for animal products in urban areas are higher than those in rural areas, reflecting the higher initial levels of consumption of animal products in urban areas and the priority given by consumers in some countries, such as Burkina Faso and Niger, to spend a large part of any increments of their food budget on starchy staples. The higher MFBS in urban areas, combined with rapid urbanization in these countries, suggest that a large proportion of the future increases in expenditures on animal products will take place in urban areas.

Other products

MFBS for fruits and vegetables, on a national level, range from a little over 5% in Mali and Niger to nearly 14% in Togo, Ghana and Côte d'Ivoire, with the figures higher in urban areas than in rural areas for every country except Ghana. These figures point to a potentially robust increase in absolute expenditures for fruits and vegetables in urban areas in response to income increases, generally exceeding that for fish and dairy products. This strong growth suggests the potential for fruit and vegetable value chains to be important future sources of income and employment. MFBS for oils and oilseeds are generally lower, ranging at a national level from 4 to 7%. In the four coastal countries (Senegal, Ghana, Togo and Côte d'Ivoire) where palm oil and peanut oil are traditional parts of the diet, these MFBS are higher in rural areas than in urban areas, while the reverse is true in the three inland countries of Burkina, Mali, and Niger. The MFBS for meals taken outside the home are extremely high in Côte d'Ivoire and Togo, the only two countries where this item was covered in the surveys. In urban Togo, almost 30% of any increment in spending on food would go to such meals, while in urban Côte d'Ivoire, the figure was 17%. This finding, like the elasticity data, suggests that as incomes increase, there could be an explosive growth in the demand for prepared foods, particularly in the cities.

6.5 Synthesis: main findings and policy implications

The analysis of budget consumption surveys revealed that the overall share of food in total household expenditures remains high, ranging from 39% in Côte d'Ivoire to 65% in Nigeria during the last decade. While food expenditures shares decline as incomes grow, this decline is limited over the first four income quintiles, where it remains above 50% in all countries except Côte d'Ivoire. The decline is more noticeable between the fourth and the fifth income quintile given that the middle and upper income segments largely fall into the top income quintile. Two policy implications result: First, the high share of food in total household expenditures makes large population groups vulnerable to food price increases. Hence, the scope for encouraging domestic food production through higher prices (e.g. by increasing import tariffs) may be very limited from a political standpoint. Second, the high food expenditure shares even in the fifth quintile translate into a disproportionally high share of middle- and upper-income households in total food expenditures and growing domestic food markets. Understanding this demand in terms of quality, safety and presentation of food products is key from a domestic food policy perspective, aimed at successfully competing against imports.

Concerning food commodity groups, cereals accounted for the largest share of total food expenditures in seven out of nine countries covered by the surveys analysed in this chapter, followed by livestock and fish. Only in Ghana and Benin did livestock and fish constitute the largest expenditure category, followed by cereals (in Ghana) and roots and tubers (in Benin). In Nigeria, expenditures on roots and tubers were only slightly below those on cereals. Food expenditures were more diversified in the coastal states than in inland Sahelian countries. Within the cereals group, rice had the largest share in the urban food expenditures in five of the nine countries. Moreover, in most countries, the poorest income quintiles spent similar or larger shares of their food budgets on rice than did higher income quintiles. This shows the importance of rice as a convenience food even for the poor. In Senegal, the country with the highest per capita rice consumption among the survey countries, urban budget shares devoted to rice fell sharply as incomes rose. This suggests that urban Senegalese households gradually substitute higher value food such as livestock products for rice as their incomes increase. Similar trends with respect to budget shares were found for Ghana and Côte d'Ivoire for starchy staples as a group. However, even though budget shares for these staples fell as incomes rose, per capita expenditures still increased in absolute terms with rising incomes. This confirms that middle- and upper-income households remain very important sources of demand for starchy staples in these countries.

In rural areas, rice and wheat are less important than in urban areas. However, the comparison with earlier survey data shows their growing importance for all income segments. Millet and sorghum and, to a lesser degree, maize still account for important shares in rural food budgets in inland Sahelian countries. Wheat consumption remains under 2% of food expenditures except in Senegal. In all countries, higher income quintiles spent more on wheat then did their poorer peers, both in rural and urban areas. This suggests that one can expect strong increases in wheat demand with growing incomes, albeit from a much lower base than rice. Only in urban Senegal, with the highest wheat consumption level among surveyed countries, does the share of the food budget devoted to wheat products decline slightly with rising incomes. Food expenditure shares for fruits and vegetables increased over time in the six countries (including Nigeria) for which two surveys were available. No marked differences between income segments could be found. In turn, expenditure shares for meat, fish and dairy products increased strongly with rising incomes in both urban and rural areas. As shown by the food balance sheet analysis, the relative importance of fish and meat varies between countries. While in Senegal in Ghana, expenditure shares of meat increased at the expense of fish, the opposite trend could be observed in Côte d'Ivoire.

Income elasticities were high for most food commodities, including wheat products, meat, dairy, beverages, fruits and vegetables. Income elasticities were higher in rural than in urban areas. This suggests that rural income growth would induce a disproportionate increase in food demand accompanied by a rapid change in the composition of the food basket. The analysis of marginal food budget shares shows the strongest market growth potential for animal products, followed by rice, fish, and fruits and vegetables. Producing and marketing such products is labour-intensive and thus offer potential for substantial job creation if the demand can be met through local production rather than imports. Such products are also highly perishable and thus require tight coordination of their value chains if they are to deliver quality products and avoid food-safety problems.

While in percentage terms, wheat consumption is growing quickly as incomes increase, in some of the countries surveyed, maize, yam and cassava expenditures are projected to grow in absolute terms as much or more than expenditures on wheat. Finally, the studies point out that the demand for processed forms of staple foods and for food eaten away from home is strongly responsive to increases in income, pointing to potentially very rapid increases in the demand for processing and marketing services, particularly in urban areas, as per capita incomes grow. A key variable driving this shift is the opportunity cost of time, particularly of women, who do most of the food preparation in the subregion. In countries where many people, especially poorly educated young women, have few opportunities for remunerative employment, the demand for processed products remains limited, as home processing is a cheaper alternative. In contrast, in countries such as Ghana, where incomes are rising rapidly and urban women have more employment opportunities outside the home, the growth in demand for processing services expands rapidly. This shift suggests that if West Africa succeeds in sustaining strong, broad-based income growth, there will likely be an explosive growth in the demand for processed staple food products, particularly in urban areas.

In order to understand more about the nature of these demands for processed products and food eaten away from home, as well as shifting demands for different types of animal products in dynamic urban settings, Chapter 7 analyses information gleaned from discussions with consumers and retailers in urban Ghana and Nigeria.

Appendix to Chapter 6

Appendix Table A6.1 *Percentage of the food budget allocated to different foods, by income group, in urban areas (%)*

Country	Quintile (urban)	Rice	Maize	Millet/ sorghum	Wheat	Roots & tubers	Total starchy staples	Fruits & vegetables	Animal products
Burkina Faso (2009)	1	16.4	16.6	14.6	2.3	0.6	50.5	8.7	6.8
	2	18.9	18.1	14.8	2.4	0.4	54.6	7.6	7.5
	3	21.7	16.2	9.1	3.6	0.7	51.3	8.5	8.8
	4	21.8	15.4	5.9	4.4	0.8	48.3	8.9	11.8
	5	25.2	16.6	3.1	5.2	1.1	51.2	7.6	16.1
Côte d'Ivoire (2008)	1	24.9	5.6	0.4	2.3	12	45.2	16.2	18.4
	2	23.7	3.9	0.6	3.3	10.6	42.1	16.6	21.3
	3	20.8	2.3	0.4	3.8	10	37.3	16.8	24.1
	4	17.2	1.8	0.4	4.4	9.6	33.4	17.3	26.2
	5	13.5	1.0	0.4	4.7	8.0	27.6	17.0	29.5
Ghana (2006)	1	13.9	8.1	0.5	5.4	13.0	40.9	14.9	25.6
	2	12.5	6.8	0.2	5.7	14.4	39.6	14.1	26.7
	3	12.2	5.5	0.2	6.1	12.3	36.3	14.2	28.4
	4	11.6	4.8	0.3	5.7	12.6	35.0	13.8	29.1
	5	11.1	3.7	0.1	5.9	12.9	33.7	13.3	27.4
Mali (2006)	1	20.5	5.5	14.8	3.8	1	45.6	11.1	16.1
	2	24.8	2.5	13.5	4.5	1.4	46.7	10.8	17.5
	3	22.5	2.7	11.5	3.9	2.3	42.9	11.6	20.7
	4	21.9	2.1	8.2	5.0	3.2	40.4	12.3	22.2
	5	14.0	1.9	6.3	4.8	3.8	30.8	11.5	36.5
Niger (2005)	1	18.7	10.6	29.9	1	0.8	61.0	7.1	7.8
	2	21.2	11	22.2	1.8	0.5	56.7	6.9	10.4
	3	20.4	11.5	18.8	2.4	0.9	54.0	7.6	12.7
	4	18.7	11.2	14.9	4.2	1.3	50.3	8.4	14.3
	5	16.1	10.1	10.4	5.8	1.7	44.1	9.6	19
Senegal (2002)	1	18.9	0.1	3.1	11.3	2.3	35.7	12.4	9.3
	2	15.3	0.1	2.6	12.8	2.6	33.4	13.3	12.7
	3	13.5	0.2	2.4	13.1	2.7	31.9	13.3	16.2
	4	10.9	0.2	1.9	11.8	3	27.8	14.4	20.4
	5	12.7	0.2	1.3	9.1	3.1	26.4	14.6	27.5
Togo (2006)	1	7.5	11.1	1	1.4	8.9	29.9	16.4	13.2
	2	7.8	8.6	0.8	2.6	8.4	28.2	15.6	15.5
	3	7	7.4	0.5	3.4	8.6	26.9	15.7	17.7
	4	6.9	5.8	0.2	3.6	8.2	24.7	16.4	19.2
	5	5.6	4	0.2	4.1	8.1	22.0	16.1	22.1

Source: Adapted from Taondyandé and Yade, 2012b

Appendix Table A6.2 *Percentage of the food budget allocated to different foods, by income group, in rural areas*

Country	Quintile (rural)	Rice	Maize	Millet/ sorghum	Wheat	Roots & tubers	Total starchy staples	Fruits & vegetables	Animal products
Burkina Faso (2009)	1	5	7.3	35	1.2	0.4	48.9	7.1	7.3
	2	5.9	9.2	38.7	1.1	0.3	55.2	6.5	7
	3	7.4	10.5	36.4	1.3	0.6	56.2	5.7	7.2
	4	8.5	10.2	33.9	1.5	0.6	54.7	5.4	9.3
	5	10.2	10.2	35.8	1.5	0.6	58.3	4.4	10.2

Appendix Table A6.2 *Percentage of the food budget allocated to different foods, by income group, in rural areas (continued)*

Country	Quintile (rural)	Rice	Maize	Millet/ sorghum	Wheat	Roots & tubers	Total starchy staples	Fruits & vegetables	Animal products
Côte d'Ivoire (2008)	1	21.9	10.3	0.8	1.1	16.9	51.0	13.7	14.7
	2	21.2	7.4	0.8	0.9	21.6	51.9	13.2	16.4
	3	20.4	5.4	0.3	1.4	20.2	47.7	15	17.3
	4	19.9	4.7	0.3	1.7	20.8	47.4	14.6	18.8
	5	17	3.9	0.4	2.2	16.3	39.8	14.2	22
Ghana (2006)	1	8.6	9.3	6.3	2.8	5.1	32.1	15.7	24.6
	2	10.1	7.5	1.5	3.9	8.1	31.1	15.4	31.5
	3	11.6	6.9	0.8	4.1	9.9	33.3	14.3	32.7
	4	10.6	6	0.7	4.4	12.1	33.8	14.7	31.3
	5	10.5	5.3	0.5	4.6	13.3	34.2	13.3	30.7
Mali (2006)	1	10.6	6.1	29.1	1.6	1	48.4	9	13.1
	2	14.2	4.9	28.1	1.9	0.7	49.8	8	14.8
	3	17.6	5.4	24.6	2	1.1	50.7	8	14.8
	4	17.4	5.7	24.1	2.2	0.9	50.3	7.3	16.5
	5	19.5	3.7	17.4	3	1.3	44.9	7.9	22.6
Niger (2005)	1	4.2	4.2	58.1	0.4	0.6	67.5	2.5	10.1
	2	5	3.7	56.8	0.5	1	67.0	3.1	10.2
	3	6.4	4.4	54.4	0.8	0.6	66.6	3.1	11.2
	4	7.2	3.8	50.3	1.4	0.7	63.4	4	11.1
	5	8.9	5.5	44.1	1.6	0.8	60.9	4.7	12.2
Senegal (2002)	1	25.8	1.1	10	4.5	1.3	42.7	9.9	3.6
	2	21.5	1.2	8.5	6.8	1.8	39.8	10.8	4.6
	3	21.8	1.2	7.6	7.5	1.9	40.0	11	4.9
	4	20.7	0.9	7.6	7	1.9	38.1	11	6
	5	22.6	0.6	6.3	7.6	1.9	39.0	10.4	8.4
Togo (2006)	1	6.5	11	1.6	0.5	5.3	24.9	10.7	12.5
	2	7.4	8.3	1.2	0.8	6.7	24.4	12.4	12.8
	3	7.8	7.5	0.8	1	7.2	24.3	13.7	14.5
	4	8	8	0.8	1.6	7.5	25.9	13.2	14.7
	5	7.9	5.8	0.9	2.2	8.3	25.1	13.8	18.8

Source: Adapted from Taondyandé and Yade, 2012b

Appendix Table A6.3 *Evolution of the percentage of food expenditures on different food items in urban areas (%)*

	Burkina Faso		Côte d'Ivoire		Ghana		Mali		Senegal	
Product	1994	2009	1993	2008	1992	2006	1989	2006	1994	2002
Cereals	36.9	52.2	32.9	24.8	20.5	23.1	29.6	36.4	32.1	26.9
Rice	15.8	22.6	11.3	18.1	7.9	11.8	14.9	19.5	17.1	13.3
Maize	7.6	16.5	2.9	2.2	7.2	4.9	1.5	2.5	0.1	0.2
Millet and sorghum	9.9	6.7	0.2	0.4	0.2	0.2	11.0	9.4	2.1	1.9
Wheat products	2.9	4.3	18.5	4.1	4.7	5.8	2.0	4.5	12.1	10.9
Other cereal products	0.6	2.1			0.4	0.4	0.2	0.4	0.6	0.6
Roots, tubers, & plantains	1.9	0.9	8.8	12.1	21.0	15.6	1.6	2.8	2.4	2.9
Cassava & cassava products			3.0	5.5	8.3	6.7				
Yam & yam products			2.8	3.3	7.4	5.9				
Other roots & tubers			0.4	0.7	1.4	0.4				

Appendix Table A6.3 *Evolution of the percentage of food expenditures on different food items in urban areas (%) (continued)*

	Burkina Faso		Côte d'Ivoire		Ghana		Mali		Senegal	
Product	1994	2009	1993	2008	1992	2006	1989	2006	1994	2002
Plantains			2.5	2.6	3.9	2.7				
Pulses	2.3	3.3					0.7	1.3	0.3	0.4
Oils and oilseeds	8.1	5.7	5.2	6.6	5.6	4.7	7.8	5.6	13.5	11.3
Fruits and vegetables	9.0	8.1	9.5	16.9	10.1	13.8	12.2	11.6	13.2	14.0
Animal products and fish	13.6	12.5	17.7	25.6	27.1	27.7	23.3	25.8	29.4	33.1
Meat	7.5	5.9	11.7	9.0	8.2	8.4	14.8	16.4	11.3	12.8
Dairy products	1.5	2.5	1.9	2.0	2.8	2.9	2.9	4.3	5.8	7.5
Eggs & egg products			0.7	1.1	1.5	1.3			0.4	0.6
Fish & seafood	4.6	4.1	3.4	13.5	14.6	15.2	5.6	5.0	12.0	12.2
Beverages & stimulants	13.8	6.9	3.2	2.2	6.8	7.2	5.2	6.2		
Other food products	14.2	10.4	22.6	11.7	8.9	7.9	19.6	10.4	9.0	11.4

Source: Taondyandé and Yade, 2012b

Appendix Table A6.4 *Evolution of the percentage of food expenditures on different food items in rural areas*

	Burkina Faso		Côte d'Ivoire		Ghana		Mali		Senegal	
Product	1994	2009	1993	2008	1992	2006	1989	2006	1994	2002
Cereals	49.4	56.4	35.7	26.6	19.8	22.3	40.0	47.6	42.4	37.7
Rice	7.2	8.5	16.6	19.2	6.5	10.6	8.3	17.1	19.7	22.2
Maize	5.8	9.9	7.2	5.3	7.2	6.2	3.8	4.9	2.3	0.9
Millet and sorghum	34.9	35.8	0.7	0.4	1.6	1.0	26.4	22.9	16.2	7.4
Wheat products	1.4	1.4	11.3	1.7	4.0	4.3	0.8	2.4	4.1	7.1
Other cereal products	0.1	0.7			0.5	0.2	0.7	0.4	0.2	0.2
Roots, tubers, & plantains	0.9	0.6	31.7	22.2	15.5	14.3	0.9	1.0	1.0	1.8
Cassava & cassava products			10.6	7.9	8.8	7.5				
Yam & yam products			12.8	9.7	3.3	3.6				
Other roots & tubers			1.9	1.2	0.8	0.4				
Plantains			6.4	3.4	2.6	2.9				
Pulses	4.5	3.7					1.2	1.7	1.0	0.9
Oils and oilseeds	6.7	4.5	6.4	7.2	6.4	5.6	9.5	6.8	14.9	16.3
Fruits and vegetables	4.7	5.3	10.1	14.3	9.9	14.1	11.6	7.9	10.7	10.6
Animal products and fish	11.4	8.9	7.2	19.1	32.8	30.9	14.6	17.8	18.9	15.7
Meat	6.3	3.5	4.3	3.9	5.8	6.4	6.5	8.4	7.8	3.6
Dairy products	1.6	2.0	1.4	0.6	1.1	1.4	3.0	3.9	4.2	2.7
Eggs & egg products			0.3	0.3	1.3	0.8			0.8	0.1
Fish & seafood	3.5	3.5	1.2	14.3	24.6	22.4	5.1	5.4	6.2	9.4
Beverages & stimulants	12.8	8.7	5.2	2.6	8.6	5.9	6.4	6.9		
Other food products	9.4	12.0	3.7	8.0	7.2	6.8	15.7	10.3	10.9	16.9

Source: Taondyandé and Yade, 2012b