Chapter 4 POVERTY, FOOD PRICES, AND DIETARY CHOICES IN MALAWI

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ABSTRACT: THIS CHAPTER REPORTS ON THE LINKS BETWEEN HOUSEHOLD FOOD consumption choices, food prices, and household income, using data from Malawi's Second (2004–2005) and Third (2010–2011) Integrated Household Surveys. Results indicate that while income poverty appears to have decreased on average, substantial disparities remain and are indeed increasing, with the richest quintile becoming disproportionately better off, and the poorest of the poor becoming even worse off, a trend that may well shape nutritional outcomes in the future. Further, all but the richest households appear to be spending more money on food than in the past, although much of this trend is likely explained by a relative decline in the cost of nonfood goods. Trends in food consumption appear mixed. They include some predictable responses. For example, with respect to maize nationwide, prices decreased and consumption increased, while for leafy greens, prices increased and consumption decreased nationwide. More unpredictable responses were also observed. These include an increase in consumption of red meat, fruit, rice, and fish nationwide, despite rising prices for all four commodities. Based on these results, indicators for household-level access to micronutrients were constructed to estimate household access to vitamin A and iron, as well as total calories. Results indicate substantial shortfalls across income quintiles for iron in rural areas, and vitamin A shortfalls nationwide. And while access to calories improved overall, significant differences exist in the levels and rate of decline in rural and urban areas, with the improvement in urban households being far greater.

The links between household income growth, household food security, and individual dietary outcomes are complex. While we expect higher incomes to lead to an increase in the quantity and quality of foods accessed by the household—particularly in a resource-constrained context like Malawi's—other considerations, such as the allocation of household budgets for the purchase of nonfood items and the relative prices of nutrient-dense food items, also influence what people eat.

In this chapter, we analyze Malawi's recent food consumption trends, including per capita calorie and micronutrient consumption estimates, and reflect on how these pertain to (1) changes in poverty and household income, and (2) relative changes in food prices. In so doing, we extract from a detailed analysis of household food consumption (Verduzco-Gallo, Ecker, and Pauw 2014) and from an assessment of recent poverty trends (Pauw, Beck, and Mussa 2016). Both of these studies draw on the second and third rounds of Malawi's nationally representative Integrated Household Surveys (IHS2 and IHS3) collected in 2004–2005 and 2010–2011, respectively (NSO 2005, 2012a).

Although in economics, the term "consumption" usually refers to the monetary value of expenditure on goods or services or both, the food consumption modules of the IHS questionnaire specifically ask respondents to report quantities and values of food actually consumed by household members

during a seven-day recall period. The interpretation of consumption in this study is therefore closer to the way nutritionists understand consumption—what people ingest. However, as the data are drawn from household surveys, we cannot comment on the allocation of food among household members or make statements about the bioavailability of the food consumed.

Our results indicate that while income poverty appears to have decreased between 2004–2005 and 2010–2011 on average, substantial disparities in welfare remain and are indeed increasing, with the richest quintile of the population of Malawi becoming disproportionately better off, and the poorest of the poor becoming even worse off. In addition, results show that households are generally allocating a larger share of their budgets to food than they did in the past, despite rising incomes. And while the country is consuming more of some nutrient-rich foods, such as white meat, vegetable consumption has decreased, which is likely to exacerbate micronutrient malnutrition.

REASSESSING MALAWI'S POVERTY ESTIMATES

Malawi ranked as the third poorest country in the world in 2010. Gross domestic product (GDP) per capita was US$780, compared with figures of between US$1,105 and US$3,925 in neighboring Mozambique, Tanzania, Kenya, and Zambia (World Bank 2015). However, Malawi also witnessed record levels of economic growth between 2005 and 2011. During this period, national GDP growth averaged 7.1 percent annually (NSO 2012b). This translates to increases in per capita GDP of around 3.1 percent. While expectations were high that growth would be accompanied by rapid poverty reduction, the official narrative is that this was not the case. Malawi's National Statistics Office (NSO) reports that the national headcount poverty rate—defined as the share of the population with consumption below a poverty line that reflects the cost of a basket of food that yields sufficient calories, plus essential nonfood items—declined only marginally, from 52.4 percent to 50.7 percent, over the period. Moreover, rural poverty reportedly rose, albeit by a statistically insignificant 0.7 percentage points (NSO 2005, 2012a).

However, recent findings from Pauw, Beck, and Mussa (2016), using the same datasets, provide a somewhat different story about the evolution of poverty in Malawi. In contrast to the NSO approach, Pauw, Beck, and Mussa (2016) utilize consumption baskets that are flexible rather than static over time, thus accounting for significant shifts in consumption choices observed for poor households over time, not only in terms of their food versus nonfood budget allocations, but also in terms of the relative amounts of different foods consumed. They also adopt regional poverty lines adjusted by region-specific inflation rates rather than a single national poverty line, given observed differences not only in food and nonfood inflation, but also in overall inflation rates across regions. This approach, they argue, produces poverty results that are more consistent with the economic growth trajectory as well as evidence of significant improvements in nonmonetary dimensions of welfare.[9]

Overall, compared with official NSO numbers, Pauw, Beck, and Mussa (2016) estimate a much larger decline in national poverty than the NSO found, from 47.0 percent to 38.6 percent (that is, –8.4 percentage points). As seen in Table 2, this includes a large decline in urban poverty consistent with the NSO estimates, but also a substantial 7.5 percentage point reduction in rural poverty, which stands in sharp contrast to the 0.7 percentage point increase estimated by the NSO. Figure 6 maps the district-level poverty rates for Malawi in 2004–2005 and 2010–2011, based on estimates by Pauw, Beck, and Mussa (2016). It is apparent that the incidence of poverty is highest in the Northern and Southern Regions, particularly in the more remote districts or those along the lakeshore, but these regions also witnessed the greatest declines in poverty over the period.

With respect to extreme poverty—that is, the share of the population with consumption below the food-only component of the poverty line, the figures of Pauw, Beck, and Mussa (2016) are consistent with those of

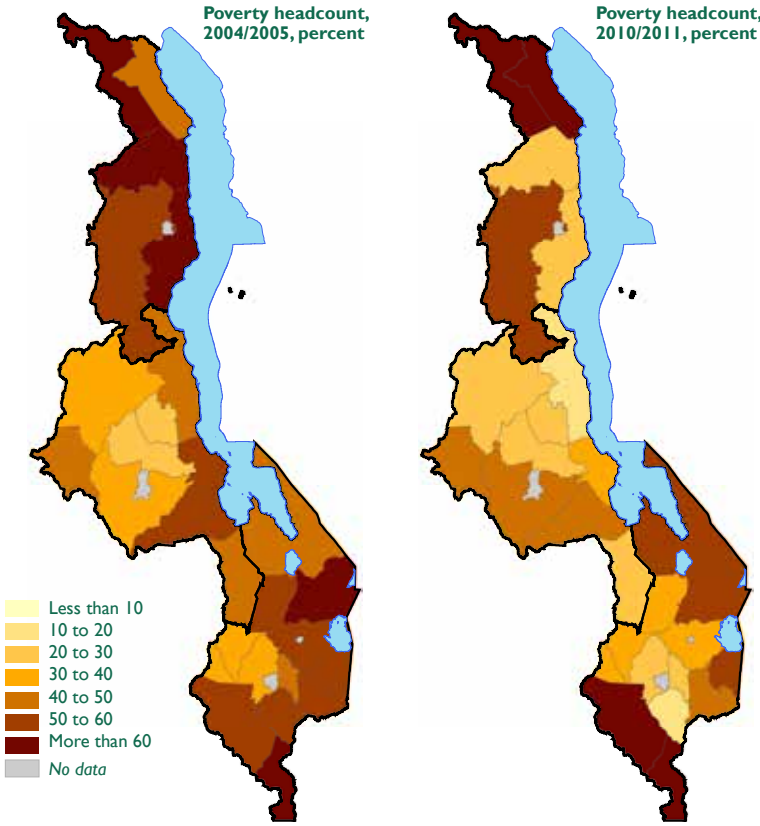
TABLE 2 ALTERNATIVE POVERTY ESTIMATES FOR MALAWI, 2004–2005 TO 2010–2011

	Poverty headcount rate (%)				Percentage point change & 95% confidence intervals	
	2004–2005 (IHS2)		2010–2011 (IHS3)			
	Pauw et al.	NSO	Pauw et al.	NSO	Pauw et al.	NSO
Normal (food plus nonfood) poverty line						
National	47.0	52.4	38.6	50.7	−8.4 ± 2.8	−1.7 ± 2.4
Urban	37.6	25.4	27.3	17.3	−10.3 ± 9.4	−8.1 ± 6.8
Rural	48.2	55.9	40.6	56.6	−7.5 ± 2.9	0.7 ± 1.4
Extreme (food only) poverty line						
National	17.1	22.3	17.9	24.5	0.8 ± 2.0	2.1 ± 2.2
Urban	9.0	7.5	4.7	4.3	−4.2 ± 3.6	−3.2 ± 3.4
Rural	18.1	24.2	20.2	28.1	2.1 ± 2.2	3.9 ± 2.4

Source: Pauw, Beck, and Mussa (2016) and NSO (2005, 2012a).

Note: IHS = Integrated Household Survey; NSO = National Statistical Office.

FIGURE 6 ALTERNATIVE POVERTY HEAD COUNT ESTIMATES FOR MALAWI, BY DISTRICT, 2004–2005 AND 2010–2011



Source: Maps by M. Kedir Jemal, IFPRI, of results of alternative poverty analysis of IHS2 and IHS3 data (Pauw, Beck, and Mussa 2016).

the NSO in terms of the direction of change, in that both estimates indicate an increase. Although the magnitude of change is smaller in Pauw, Beck, and Mussa's findings, the fact that both analyses document a rise supports the claim that the most vulnerable Malawians were excluded from the benefits of economic growth between 2005 and 2011. For example, Malawi's Farm Input Subsidy Program (FISP) has been documented as being less effective in targeting the poorest of the poor (Chibwana et al. 2014); the consumption level of most recipients of the subsidy is more likely closer to the poverty line than to the extreme poverty line. Figure 7 shows district-level extreme poverty rates, also based on Pauw, Beck, and Mussa (2016).

This rise in extreme rural poverty is a contributing factor to rising inequality in Malawi. Not only are the richest becoming disproportionately better off, but the poorest of the poor are becoming even worse off, a trend that may well shape nutritional outcomes in the future.

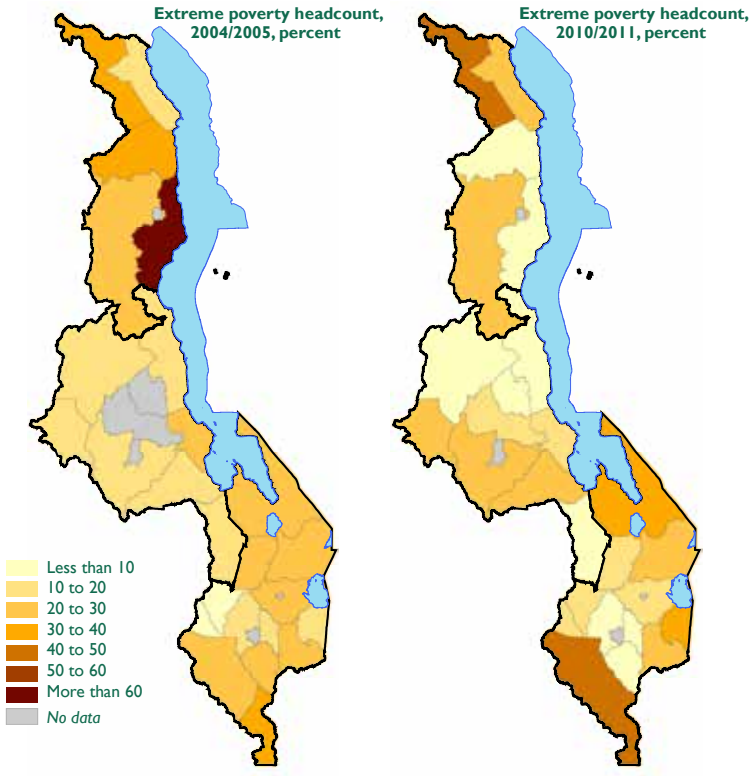
DOES INCREASED INCOME TRANSLATE TO IMPROVED FOOD SECURITY?

SHIFTS IN FOOD AND NONFOOD SPENDING

Given that the national accounts data of the NSO suggest that GDP per capita in Malawi rose by 3.5 percent annually from 2005 to 2011, the expectation is that household expenditures would also rise. Analysis of the IHS data from the same period confirms these expectations, showing average expenditure growth to have been around 2.2 percent per capita annually after adjusting for inflation (Pauw, Beck, and Mussa 2016).

We would expect a rise in income to result in households spending a smaller share of their budget on food. However, Pauw, Beck, and Mussa (2016) find that most households actually spent a greater share of their incomes on food in 2011 than in 2004. On average, household food expenditures increased

FIGURE 7 ALTERNATIVE EXTREME POVERTY HEADCOUNT ESTIMATES FOR MALAWI, BY DISTRICT, 2004–2005 AND 2010–2011



Source: Maps by M. Kedir Jemal, IFPRI, of results of alternative poverty analysis of IHS2 and IHS3 data (Pauw, Beck, and Mussa 2016).

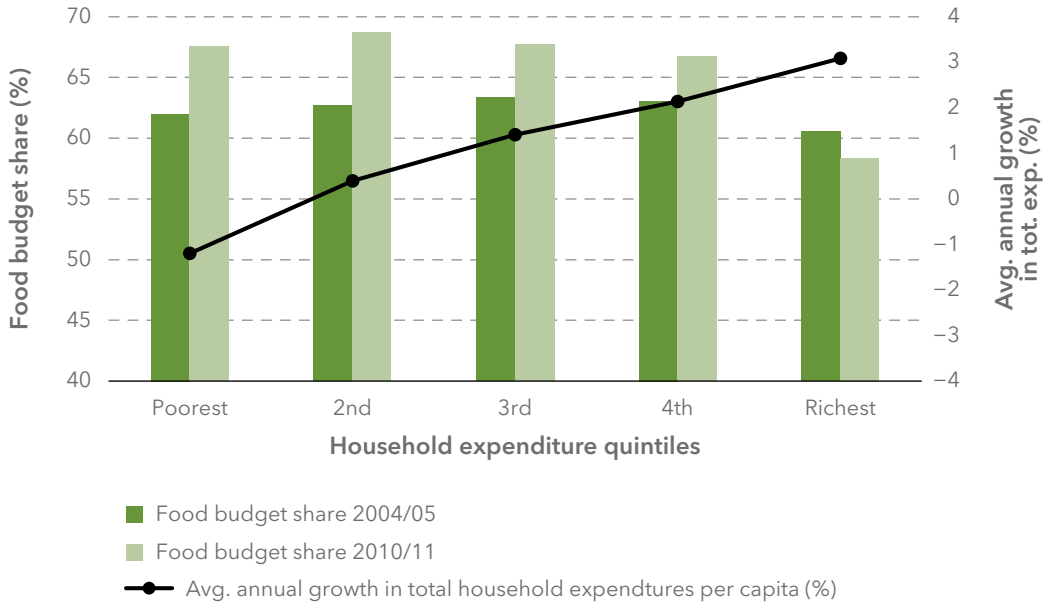
slightly from 61.7 percent to 62.6 percent between 2004 and 2011. While we might expect this scenario for the poorest quintile, who likely were not able to afford to meet their basic food needs despite substantial growth, we see in Figure 8 that the second, third, and fourth quintiles also increased their food budget expenditures. Only the richest income quintile spent a smaller share of income on food in 2010–2011 relative to 2004–2005.

A closer look at relative food and nonfood inflation rates may help explain this outcome. Using prices underlying their estimated poverty lines, Pauw, Beck, and Mussa (2016) estimate a food inflation rate of 129.0 percent, a significantly lower nonfood inflation rate of 93.1 percent, and a national average inflation rate of 114.7 percent. The NSO's own estimates also reveal higher food inflation in the period between the two IHS rounds, while the overall inflation rate for this period is also slightly higher, at 128.9 percent.

Household survey data reveal significant declines in the share of households reporting inadequate access to housing (–12.5 percent), healthcare (–27.5 percent), and clothing (–15.5 percent) between 2004 and 2011, suggesting that these nonfood expenditure items were important cost-saving components for households during this period. The subsidy value of the FISP fertilizer package (approximately US$80), available to half of smallholders or two-fifths of all Malawian households from 2006 onward, equates to around 6.8 percent of the poverty line, translating into another significant saving on nonfood items over the period. The FISP also transferred significant benefits to beneficiary households—and disproportionately to those in the lower- to middle-income brackets close to the poverty line as opposed to the extreme poor—in the form of increased value of output. By official accounts, maize yields doubled from 2005 to 2011, with the FISP officially credited as a major contributor to productivity growth (Government of Malawi 2012).

The direct benefits of the FISP combined with the significant decline in prices of some important nonfood items to a large extent explain Malawi's poverty trajectory as measured at the "normal" poverty line (in addition to justifying the adoption of flexible

FIGURE 8 HOUSEHOLD FOOD BUDGET SHARES, BY QUINTILE, 2004–2005 AND 2010–2011



Source: Authors' estimates based on IHS2 and IHS3 (NSO 2005, 2012a).

consumption baskets in estimating poverty changes). Simulations by Arndt, Pauw, and Thurlow (2016) suggest that the FISP alone accounted for a 1.7–2.8 percentage point reduction in poverty under different assumptions (that is, approximately one-quarter of the observed decline), although this is likely an underestimate given an unavoidable assumption that FISP beneficiaries were randomly selected from the subset of maize growers, when in reality the extremely poor and wealthy were more likely to be excluded.

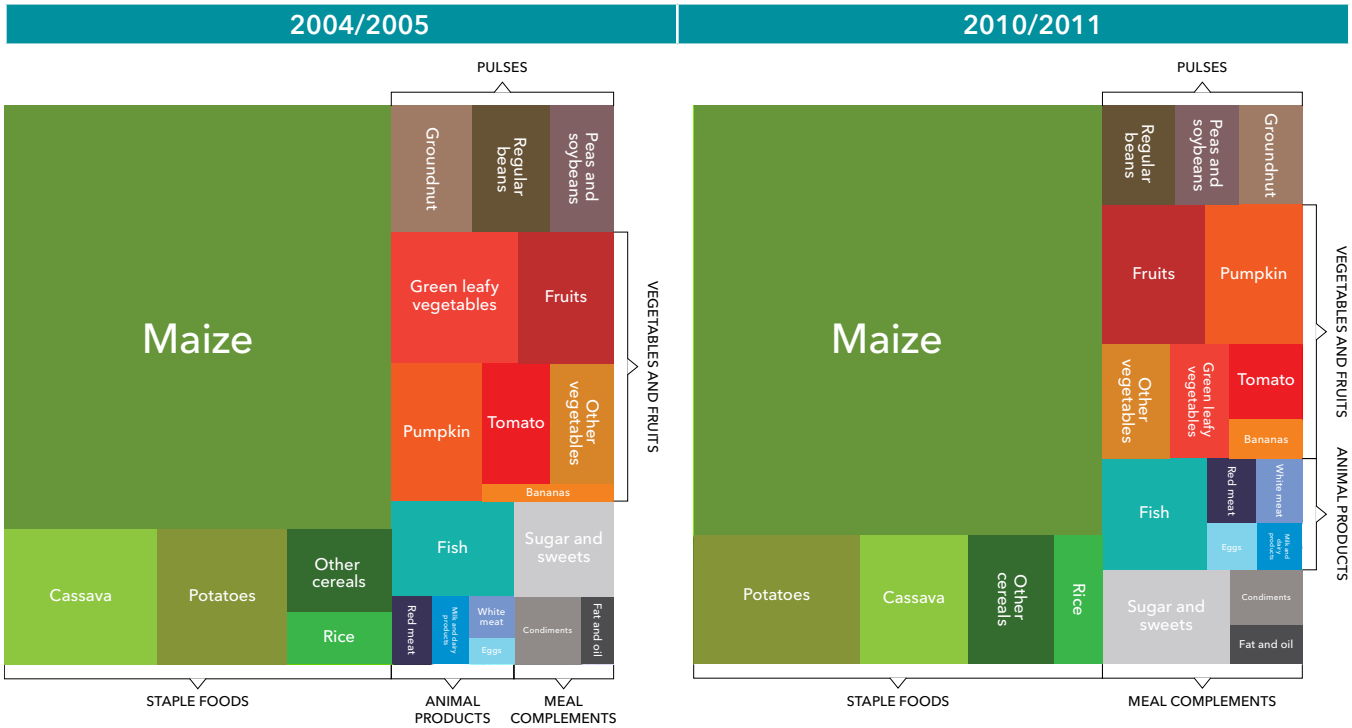
In summary, a consequence of recent income growth and spending trends was that households were able to allocate more money to food, in relative and absolute terms, without sacrificing nonfood consumption. Therefore, the question of interest, discussed in the remaining sections of this chapter, is whether this shift in household budget allocation to food translated into changes in the types of foods that were purchased, and if so, what the nutritional implications of such changes may have been.

SHIFTS IN HOUSEHOLD FOOD CONSUMPTION PATTERNS

Before considering detailed household food consumption patterns, we first look at household dietary diversity, using IHS data to construct Household Dietary Diversity Scores (HDDSs). As described in Chapter 2, the HDDS is based on a simple counted score of 12 food groups constructed from recall data on household food consumption.

As expected, results indicate that HDDSs in Malawi tend to increase as incomes increase. Nationally, alongside the increase in average incomes, the average HDDS increased from 7.9 to 8.2 between 2004–2005 and 2010–2011. However, this national average masks substantial variation across income quintiles. In line with findings on extreme poverty, the poorest Malawians did not increase their HDDSs at all, but saw a very marginal decline from 6.4 to 6.3. HDDSs increased across all other quintiles, but most markedly in the fourth (8.7 to 9.4). This is not surpris-

FIGURE 9 GRAPHICAL REPRESENTATION OF CHANGES BETWEEN 2004–2005 AND 2010–2011 IN THE SHARE OF QUANTITY OF FOOD CONSUMED IN THE AVERAGE MALAWIAN DIET, BY FOOD SOURCE



Source: Authors' estimates based on data from the Second and Third Integrated Household Surveys (NSO 2005, 2012a).

ing, as HDDSs for the wealthiest households will tend to increase at a slower rate than those of relatively poorer household groups for a given rate of income growth, as the wealthiest are already closer to their optimum HDDS (Swindale and Bilinsky 2006).

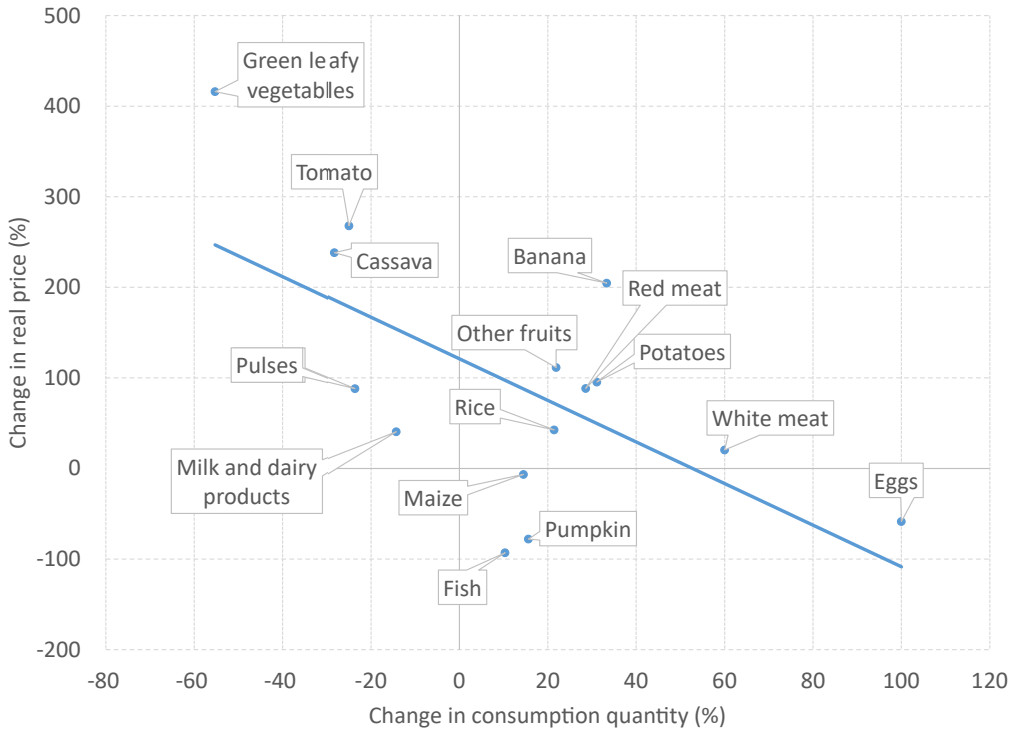
Regarding estimated consumption of specific food items, several important household food-consumption shifts appear to have occurred between 2004–2005 and 2010–2011. These shifts are shown graphically in Figure 9 for the country as a whole. In both rural and urban areas, there was a substantial increase in consumption shares of staple foods, such as rice and maize, the latter already being the most widely consumed food crop. Consumption shares of fruit and animal products also increased in both rural and urban areas, while consumption shares of vegetables and cassava declined. The consumption share of pulses, in turn, declined sharply in rural areas, but increased in urban areas, with the net effect being a decline nationally. The potato consumption share also increased in urban areas.

RELATING FOOD CONSUMPTION SHIFTS TO CHANGING FOOD PRICES

To better understand the shifts in household food consumption, we also estimate the daily per capita consumption of various foods and the change in consumption per day between 2004–2005 and 2010–2011. These estimates of average per capita availability of specific foods and food groups are based on household consumption data, not individual dietary data.

Figure 10 plots changes in the consumption levels of these foods (horizontal axis) against changes in their national median prices. While the figure disregards potentially significant regional price variations, it nevertheless conveys a powerful message of how, on average, price increases may explain decreases in consumption, as evidenced by the downward-sloping fitted trend line: the higher the price increase of a particular food group or item, the larger the expected decline in consumption, and vice versa. However, for a significant number of food items we see increases in consumption

FIGURE 10 FOOD CONSUMPTION CHANGES AND RELATIVE PRICE SHIFTS, 2004–2005 TO 2010–2011



Source: Authors' estimates based on IHS2 and IHS3 (NSO 2005, 2012a)..

despite rising prices, including luxury items such as rice and meat. These results may reflect shifting consumption choices associated with the rising income levels we have seen among wealthier households.

Staple foods. As incomes increase, households often substitute away from coarse grains (maize or sorghum) and starchy staples (potatoes or cassava) toward finer grains such as rice or wheat (Fuglie 2004). However, in Malawi, our analysis indicates that maize consumption increased by 14 percent. This increase is significant in absolute terms given that maize already accounts for around two-thirds of all calories consumed in Malawi. The most likely explanation for this is the increase in maize supply under the FISP, which coincided with a real decline in maize prices (Arndt, Pauw, and Thurlow 2016; Ricker-Gilbert et al. 2013). A relatively sharp rise also occurred in potato consumption. More detailed analysis reveals that this increase was driven mostly by rising potato consumption in urban areas.

Unlike maize and potatoes, the typical substitution response did not seem to hold for cassava, for which consumption declined substantially. Cassava is traditionally a food crop for which demand rises when maize supply is low, and so ample maize harvests and stores during the period in question are perhaps one reason for the decline in cassava consumption. However, cassava prices also more than tripled during this period, which suggests the decrease in consumption may be as much due to a price effect as an income effect. Much of the price increase was likely due to increased demand for cassava as a commercial input for manufactured food and nonfood products (Kambewa 2010).

Finally, despite an increase in the price of rice, consumption rose by an estimated 21 percent. This pattern may be due to strong consumer preference for rice evident all over Africa south of the Sahara, facilitated by increased purchasing power.

Pulses. The per capita decline in the consumption of pulses (24 percent) is also likely linked to increased prices (88 percent). However, it is important to note that this national decline in the consumption of pulses masks substantial differences in regional price changes—overall, the price of pulses in rural markets increased by 99 percent, while in urban areas the price only increased by 47 percent. Moreover, when the data were disaggregated by type of pulse, groundnut prices were found to have declined in urban areas, while pea and soybean prices increased by only around 10 percent, compared with sharp increases in the prices of these particular varieties in rural areas. These regional price trends to some extent explain regional consumption behavior—namely, that per capita consumption of pulses decreased substantially among rural households, but rose among urban households (see Verduzco-Gallo, Ecker, and Pauw [2014] for details).

Vegetables and fruits. Per capita consumption of fruit and pumpkin increased nationwide, while consumption of tomatoes and green leafy vegetables declined considerably. These consumption trends are similar across rural and urban areas, with relative price shifts again providing a likely explanation for the changes: pumpkin prices declined by 82 percent, while tomato and leafy green prices rose sharply, by 264 percent and 412 percent, respectively. The one exception within this group was bananas and other fruit. Despite two- to threefold increases in their price—admittedly from a relatively low level compared with, say, animal-source foods—consumption increased substantially. As with rice and meat products, this pattern may be due to strong consumer preferences for fruit, facilitated by increased purchasing power.

Animal-source foods. Per capita consumption of white meat (mostly chicken) increased substantially—by 60 percent—nationwide. Nationwide consumption of red meat also increased by 29 percent, albeit less drastically than for chicken. Importantly, prices for both of these animal-source foods also increased. White meat prices rose by 20 percent nationally, but declined in rural areas, possibly because of the availability of cheaper feed. In both rural and urban areas, red meat prices rose steeply, by 88 percent. As with rice and fruit, it is likely that household increases in income, combined with preferences for meat, outweighed national average price increases, with the net effect being increased per capita consumption.

In contrast, the 41 percent price increases for milk and dairy products may have led to a concomitant decline in consumption of 14 percent. Egg consumption doubled, likely due to a substantial price decrease of around 58 percent.

Fish is an important part of the traditional Malawian diet, especially for communities near the lakeshore. Per capita fish consumption increased by 10 percent alongside a sharp 93 percent decline in fish prices. This outcome is somewhat surprising in the context of dwindling fish stocks in Lake Malawi (FAO 2013), and indeed, the numbers change substantially when the data are separated into dried and fresh fish. Disaggregation reveals an almost threefold increase in the real price of fresh fish, and alongside that a decline in per capita fresh fish consumption. In contrast, per capita consumption of dried fish, some of which is imported from neighboring Tanzania and Mozambique, doubled alongside a significant decline in dried fish prices.

NUTRITIONAL IMPLICATIONS OF CHANGES IN PER CAPITA CONSUMPTION OF SPECIFIC FOODS

To better understand how shifts in household food consumption impact dietary quality, in the absence of individual dietary data we approximate daily per capita calorie and micronutrient intake given the foods and quantities accessed by the household. These per capita estimates are then compared with the daily recommended intake requirements for household members to yield Household Micronutrient Access indicator estimates. Estimates for average per capita consumption of calories, iron, and vitamin A via these food groups are based on food composition tables from Kenya and Senegal and are shown in Table 3. (More details on this estimation process can be found in Chapter 2.)

CALORIES

On average, Malawian households increased per capita consumption of calories by 4.6 percent between 2004–2005 and 2010–2011. Calorie consumption also increased across all income quintiles in both rural and urban areas. However, despite these increases, average estimated consumption among the poorest rural households remained below minimum calorie requirements.

In both rural and urban areas, the richest quintile recorded the largest increase in calories, despite already consuming calories well above required amounts. This

TABLE 3 CALORIE AND MICRONUTRIENT CONSUMPTION, BY RESIDENCE AND CONSUMPTION QUINTILE, 2004/2005 TO 2010/2011

	Calories (kcal/day)			Iron (mg/day)			Vitamin A (RE mcg/day)		
	2004–2005	2010–2011	Change (%)	2004–2005	2010–2011	Change (%)	2004–2005	2010–2011	Change (%)
Total	2,204	2,305	4.6	20.0	19.5	**–2.5**	417	373	**–10.6**
Rural	2,176	2,232	2.6	20.2	19.5	–3.5	420	375	–10.7
Poorest	1,387	1,441	3.9	13.5	13.8	1.8	304	219	–27.9
2nd	1,857	1,895	2.1	17.8	17.4	–2.0	379	303	–20.0
3rd	2,211	2,245	1.6	20.9	20.0	–4.1	427	392	–8.2
4th	2,632	2,642	0.4	24.3	22.6	–7.3	467	468	0.1
Richest	3,269	3,431	5.0	28.5	27.2	–4.6	592	586	–1.0
Urban	2,423	2,704	11.6	18.4	19.5	6.3	393	360	–8.5
Poorest	1,712	1,838	7.3	15.5	15.6	0.6	350	210	–40.1
2nd	2,104	2,387	13.4	17.6	18.7	5.8	365	311	–14.8
3rd	2,457	2,791	13.6	19.1	20.5	7.3	375	392	4.5
4th	2,752	3,157	14.7	19.7	21.4	8.3	446	463	3.8
Richest	3,385	3,867	14.2	21.0	23.6	12.2	451	503	11.7
Requirement	**1,701**	**1,728**	**1.6**	**17.2**	**17.5**	**1.7**	**375**	**380**	**1.3**

Source: Authors' estimates based on IHS2 and IHS3 (NSO 2005, 2012a).

Note: RE = retinol equivalent

trend is common in many other developing countries and is often considered an early step in the nutrition transition. The nutrition transition is characterized by a shift away from relatively monotonous diets of varying nutritional quality toward an industrialized diet that is usually more varied and includes more processed food, more food of animal origin, more added sugar and fat, and often more alcohol. This transition is accompanied by a shift in the structure of occupations and leisure toward reduced physical activity and leads to a rapid increase in the prevalence of overweight and obese individuals, with implications for diet-related noncommunicable diseases and their associated healthcare costs (Popkin 1994).

IRON AND VITAMIN A

In urban areas, estimated changes in per capita access to iron appear to have been income-dependent and in line with estimated increases in nationwide red meat consumption. However, this does not hold true for rural areas where, counterintuitively, the highest declines were in wealthier households. Only the poorest rural quintile increased access to iron, based on our estimates. With respect to non-heme (that is, plant-based) iron, one partial explanation is the decreased consumption of pulses that occurred across income quintiles in rural areas due to rising rural prices of pulses. However, this does not explain the distribution across quintiles. One possibility is increased consumption of dried fish. When consumed whole, dried fish are an excellent source of iron. Further, it is possible that this food product, which may be considered an inferior good relative to increasingly expensive fresh fish, is consumed primarily by poorer households, with positive implications for iron intake.

Nationwide, estimated vitamin A consumption deteriorated sharply during the period 2004–2005 to 2010–2011, especially among poorer urban and rural households whose consumption patterns appear more price-sensitive to the significant price increases. This trend is not consistent with the nationwide increase in fruit and pumpkin consumption, both of which are sources of vitamin A, and is congruent with national decreases in dairy product and leafy green consumption, also sources of vitamin A. With respect to the latter, a line of inquiry that remains unexplored is whether high horticulture prices are creating incentives for farmers to sell more of their vegetables rather than retain them for their own consumption.

ESTIMATED CALORIE AND MICRONUTRIENT SHORTFALLS

Table 4 reports on Household Micronutrient Access indicators for calories,[10] iron, and vitamin A. Table 4 presents the share of households whose approximated calorie, vitamin A, and iron intakes are below the nutrient intake requirements of their members. The share of households whose consumption falls short of requirements is indicated for rural and urban areas and the country as a whole.

While access to calories improved from 2004–2005 to 2010–2011, significant differences exist in the levels and rate of decline in rural and urban areas. The number of rural Malawian households that failed to access sufficient calories changed from 40.5 percent to 36.7 percent. The improvement in urban households was far greater, changing from 30.9 percent to 20.6 percent. Figure 1, in Chapter 1, includes a district-level map of average estimated household calorie intake deficiencies.

TABLE 4 ESTIMATED SHORTFALLS IN CALORIE, IRON, AND VITAMIN A CONSUMPTION, BY RESIDENCE, 2004/2005 TO 2010/2011

	Calorie shortfall (%)			Iron shortfall (%)			Vitamin A shortfall (%)		
	2004–2005	2010–2011	%-point change	2004–2005	2010–2011	%-point change	2004–2005	2010–2011	%-point change
Total	**39.4**	**34.3**	**–5.1**	**44.1**	**48.6**	**4.5**	**62.0**	**69.9**	**7.9**
Rural	40.5	36.7	–3.8	42.6	47.7	5.1	61.8	69.8	8.0
Urban	30.9	20.6	–10.3	55.1	54.0	–1.1	63.1	70.8	7.7

Source: Authors' calculations with IHS2 and IHS3 data (NSO 2005, 2012a).

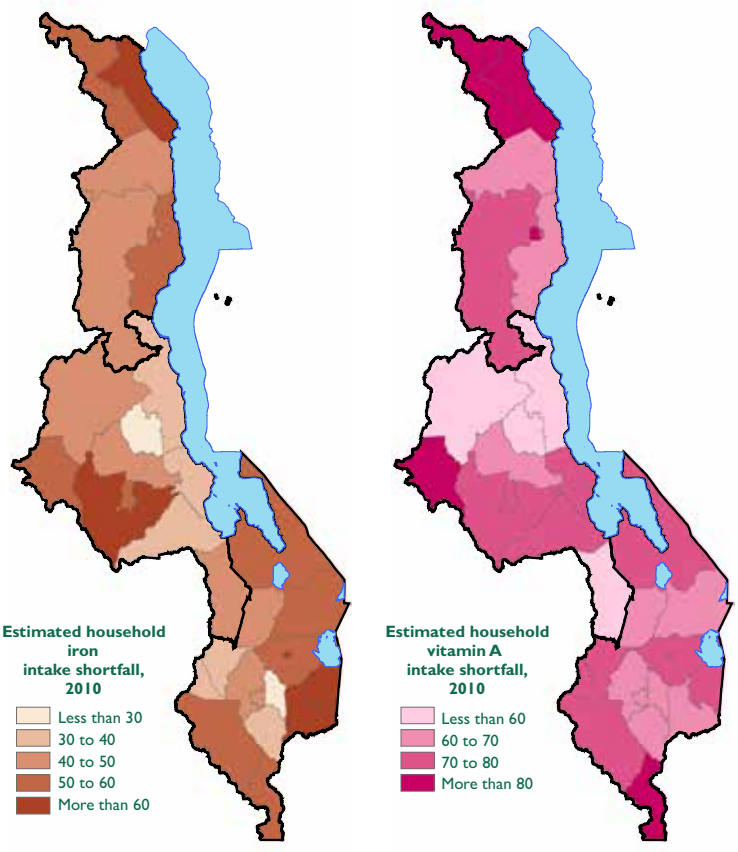
The picture looks different for micronutrients (Figure 11). A sharp increase in the rural iron shortfall rate (5.1 percentage points) caused the national shortfall to increase by 4.5 percentage points (offsetting a decrease of 1.1 percentage points among urbanites). Vitamin A shortfalls also increased sharply in both urban and rural areas, giving rise to a 7.9 percentage point increase in the share of households nationally with vitamin A intake below requirements. As above, while the reasons for this trend are difficult to tease out due to conflicting patterns of consumption between various vitamin A source foods, one partial explanation may be the steep price increase of green leafy vegetables and the concomitant sharp decline in their consumption.

SYNOPSIS OF FINDINGS AND CONCLUDING REMARKS

In this chapter, we present per capita food consumption estimates and associated changes in calorie and micronutrient access for Malawi between 2004–2005 and 2010–2011. The focus of the analysis is on the household income–consumption relationship and the role of relative prices in shaping this relationship; we do not explicitly consider the source of foods consumed, which instead is addressed in the following chapter on the relationship between crop production and consumption patterns of farm households.

Consistent with growth in GDP per capita, poverty declined across urban and rural areas. Somewhat surprisingly, except for the richest households, income growth was accompanied by an increase in food

FIGURE 11 AVERAGE ESTIMATED HOUSEHOLD IRON AND VITAMIN A INTAKE SHORTFALLS, BY DISTRICT, MALAWI, 2010



Source: Maps by M. Kedir Jemal, IFPRI, of IHS3 calorie deficiency analysis results (Verduzco-Gallo, Ecker, and Pauw 2014).

expenditure shares across all household expenditure quintiles. However, in absolute terms, per capita food consumption, calorie access, and household dietary diversity in Malawi increased nationwide and in both rural and urban areas, despite evidence of rising food prices. This rise in food prices, we argue, reflects a shift in consumption toward more costly food items. The consumption shift was made possible by two factors. First, given the price and supply dynamics of consumer goods in Malawi, households were seemingly able to reduce their budget allocation to nonfood items without sacrificing the quantity or quality of nonfood items, giving rise to the paradoxical outcome of rising food budget shares. Second, the small decline in the price of the major staple, maize, brought about significant income and substitution effects in consumption, allowing households to allocate a greater share of their food budgets to higher-quality food items.

Evidence suggests that the FISP, through raising maize yields and production, was an important contributing factor to rising incomes, declining maize prices, and, given the dominance of maize in the food basket, poverty reduction (Arndt, Pauw, and Thurlow 2016). Additionally, as argued before, the relative decline in nonfood prices played an important role in raising overall household welfare levels. Generally, however, the resulting ability of households to increase their budget allocation to food items, in both absolute and relative terms, led to dietary changes that did not appear to translate into generalized improvements in micronutrient access. Estimated Household Micronutrient Access for vitamin A declined in rural and urban areas, particularly among poorer quintiles, while estimated Household Micronutrient Access for iron declined significantly among most income quintiles in rural areas.

Considering these food consumption shifts in more detail, apart from the increase in consumption of a select number of foods for which we observed price increases, most consumption choices can be construed as consistent with the direction of changes in relative prices of food items. Particularly, as noted, a sharp increase in the consumption of calorie-rich maize can be linked to a decline in real maize prices. We also note a reduction in consumption of iron-rich pulses, specifically in rural areas, together with sharp increases in prices of pulses. Finally, the decline in vitamin A may be partially associated with a sharp decline in the consumption of green leafy vegetables, which have also become significantly more expensive in real terms and relative to other food products.

These changes suggest that substitution effects in food consumption may indeed have contributed to reducing the vulnerability of Malawian households to severe food insecurity—that is, calorie insecurity—but also contributed to increasing the risk of micronutrient malnutrition and related health consequences. The changes are disconcerting, especially considering the potentially harmful long-term effects of shortfalls in vitamin A and iron. Moreover, as both the NSO (2005, 2012a) and Pauw, Beck, and Mussa (2016) poverty estimates indicate that the most vulnerable families have been bypassed by recent reductions in income poverty, this leaves the poorest households that much more vulnerable to rising food prices and inflation. Conversely, the pattern among the highest income quintile appears to be overconsumption of calories. In line with global trends, it is likely that this pattern has been accompanied by increased intake of processed foods, including those high in sugar, sodium, and fat, with negative implications for nutrition and health.

Beyond raising incomes and educating households about the importance of healthy, balanced diets, these results suggest a need for economic incentives that alter relative prices of different food items in a way that will stimulate demand for those nutrient-rich foods for which consumption levels are currently inadequate. The recent experience in Malawi is remarkably like that of India during the 1970s and 1980s, when real cereal prices declined rapidly but those of mineral-rich products such as fruits, vegetables, lentils, fish, and other meat products increased. When faced with such price scenarios, Bouis (2013) argues in the context of India, poor consumers have little option but to consume more staples and fewer mineral-rich foods; in short, "the poor get priced out of good nutrition, and the price they pay is too high."