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Agricultural growth, poverty, and nutrition linkages in Malawi

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While economic growth is generally acknowledged as a necessary precondition for reducing poverty, relatively little is known about how growth and nutrition are related. Therefore, questions persist regarding how to leverage economic policies so that they have a larger impact on nutrition. In recent years the Malawian government allocated a large share of its resources to the Farm Input Subsidy Program (FISP). Subsidized fertilizer and seed mainly for maize production led to rapid GDP growth during 2005–2010. It is obvious that an abundant supply of the calorie-laden staple maize is good for reducing calorie deficiency; however, it is less clear how FISP has affected micronutrient deficiencies, which are high in Malawi. This brief explores diverse poverty and nutritional outcomes of recent maize-led growth in Malawi and considers outcomes under two plausible future growth scenarios.

Ecker, Breisinger, and Pauw (2011) explore the relationship between growth and nutrition. Their study entails two components: first, a cross-country analysis and second, a modeling analysis of case studies on Yemen and Malawi. This brief summarizes some key findings, particularly those relevant to Malawi.

What does cross-country evidence reveal about the relationship between growth and nutrition?

Ecker et al.'s cross-country analysis reveals that while some countries have been successful in leveraging growth for improved nutrition outcomes, others have seen nutrition deteriorate despite growth. In general, economic growth positively influences nutrition, but it is often not sufficient. During the early stages of development growth helps reduce calorie deficiency rates in particular, and, in most countries, agricultural growth plays a key role.

Calorie deficiency rates become less responsive to growth as its prevalence declines, and at this stage in the development process economic diversification into manufacturing and services is often necessary to leverage further economic growth, especially as rural-to-urban migration intensifies. Growth is generally insufficient to address all aspects of malnutrition, including child undernutrition and micronutrient deficiencies. Strategic investments and special programs are needed in sectors such as health and education.

Malawi's heavy dependence on agriculture and the Farm Input Subsidy Program

So what about Malawi, a low-income country with high levels of malnutrition? The country's economy is agriculture-based and features limited economic diversity. Maize and tobacco are dominant subsectors, jointly contributing almost 15 percent to national GDP, and hence the performance of the agricultural sector and the economy as a whole is highly dependent on these sectors. Growth in the predominantly rainfed agricultural sector is volatile due to frequent droughts and floods. During 1990–2005 Malawi suffered at least three severe droughts and four major floods, with the agriculture sector contracting during 4 of these 15 years. The country has experienced at least two major food deficits since the turn of the millennium, leading to famine in 2002 and a serious food emergency in 2005. Frequent poor harvests combined with poor management of grain stocks contribute to food insecurity in Malawi.

During the 2005-06 growing season, and in response to particularly severe food supply problems experienced in 2005, the government of Malawi initiated the Farm Input Subsidy Program (FISP), a large scale subsidy scheme that significantly reduces fertilizer and hybrid maize seed costs faced by resource-poor smallholders. The program has been lauded for its success in raising maize yields and contributing to overall economic growth, despite legitimate concerns about its fiscal sustainability (program costs have ranged from 5–16 percent of GDP

since inception). Rapid maize output growth improved food security and raised caloric availability. However, it is less clear how FISP may have impacted on micronutrient deficiencies in iron, zinc, vitamin A, and folate, which historically have been high.

The Malawi case study in Ecker et al. assesses the ways and extent to which FISP-led growth has contributed to nutrition outcomes in the country, and also considers nutritional outcomes under future growth scenarios. In this analysis, they use an economywide ("macro") model which is linked to household and child nutrition simulation ("micro") models. The combined analytical framework thus permits analyses of the effects of policy shocks on sector-level economic growth and household incomes, and how this in turn affects nutritional status.

Modeled scenarios and results

Three scenarios are explored. In the first, the period of rapid maize-led agricultural growth experienced under FISP during 2005–2010 is replicated. Under this scenario national GDP growth averages 7.2 percent, with growth in cereals driving overall economic growth (Table 1). These estimates are largely consistent with preliminary GDP growth estimates from Malawi national accounts.

Table 1. Simulated GDP growth paths for selected sector (2005-2010 and 2010-2020)

	Historical maize-led growth path	Future scenarios			
		Return to long-run growth path		Broad-based agricultural growth	
	2005-2010	*2010-2015*	*2015-2020*	*2010-2015*	*2015-2020*
National GDP	7.2	4.4	4.1	6.3	6.0
Agriculture	9.1	4.0	3.4	6.4	5.0
Cereals	16.5	4.1	3.0	8.8	4.4
Export crops	5.2	4.4	4.0	5.6	7.7
Industry	5.5	4.5	4.6	6.2	6.8
Services	5.9	4.7	4.6	6.2	6.7

Source: Ecker et al. (2011)

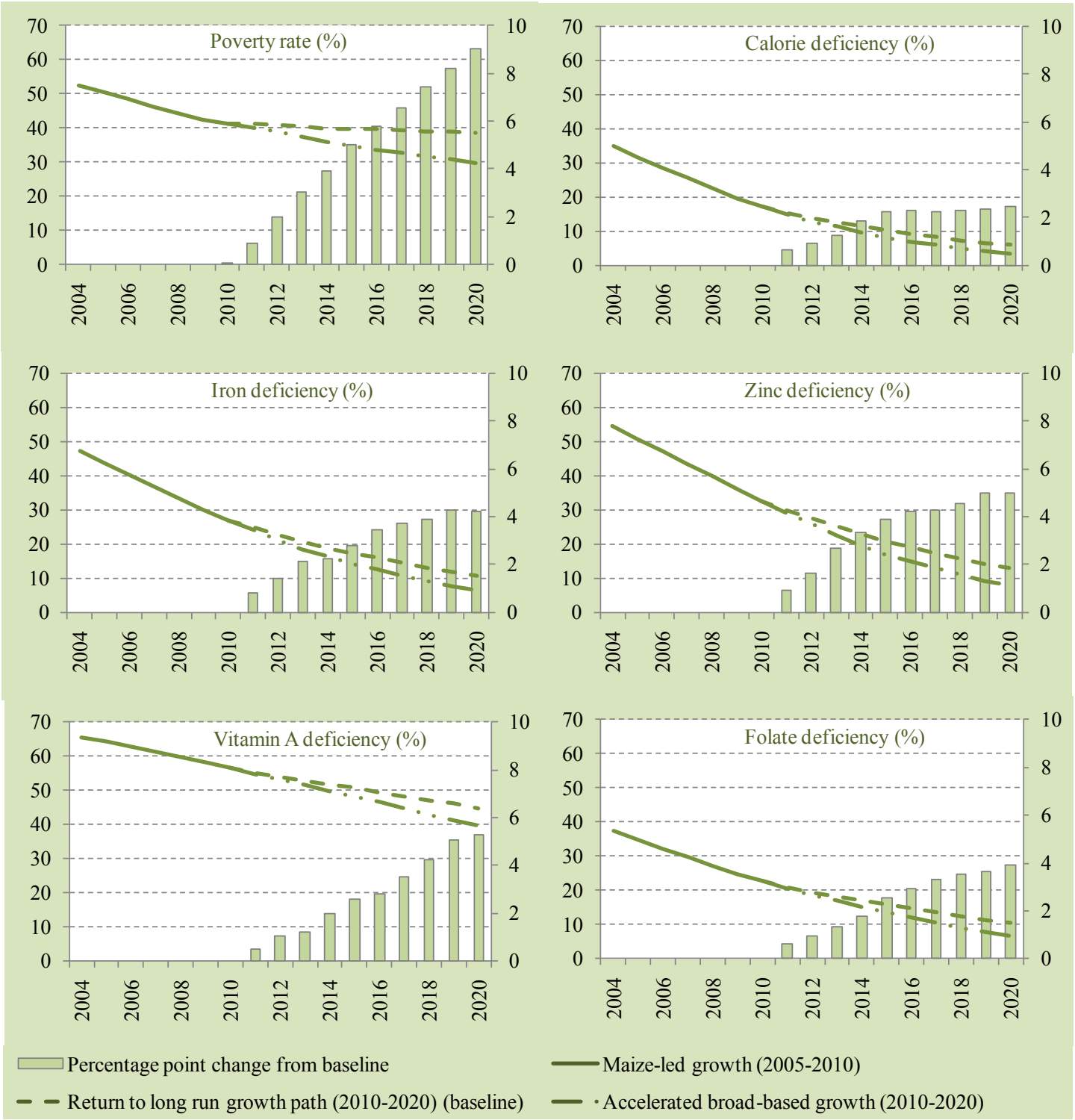
Two future scenarios (2010–2020) are also modeled. The first assumes a return to long-term growth of around four percent experienced in the decade prior to FISP. This scenario, which serves as the baseline scenario, assumes the country will be unable to maintain the maize-led growth momentum generated under FISP. A second more optimistic scenario assumes a broad-based agricultural growth path as provided for under Malawi's Agricultural Sector-Wide Approach (ASWAp). This policy document outlines Malawi's vision of transforming the agricultural sector from its current overreliance on maize and tobacco to a more diversified one where a broader range of food and export crops are prioritized, and where rapid growth in downstream industrial and service sectors is encouraged through productivity-enhancing investments.

Figure 1 shows changes in poverty and nutrition levels for the historical and future scenarios. Maize is grown extensively by poorer smallholder farmers; hence maize-led growth under FISP contributes to the rapid decline in poverty during 2005–2010. The poverty estimate for 2010 is close to the current official poverty rate of 39 percent. Under the slower growth scenario no further significant reductions in poverty emerge; in contrast, the broad-based growth scenario is associated with significant further reductions in the poverty rate, which drops below 30 percent by 2020.

The remaining panels in Figure 1 show changes in calorie and various micronutrient deficiency rates. Historical maize-led growth reduces calorie deficiency from 34.8 to 17.1 percent. The proportions of people affected by iron, zinc, or folate deficiencies also decline in both absolute and relative terms (i.e., by more than one-third). Vitamin A deficiency, on the other hand, does not decline as rapidly, which reflects limited quantities of meat, fish, vegetable, and fruit in the average diet. In fact, the absolute number of vitamin A deficient people increases by 400,000 over the period. Thus, FISP, coupled with favorable weather conditions, was successful in reducing calorie and micronutrient deficiencies in relative and absolute terms, with the exception of vitamin A.

The scenarios for 2010–2020 show continued declines in malnutrition rates, albeit generally at a slower pace compared to the historical period. In the baseline scenario the proportion of calorie deficient people drops to under 10 percent after 2015, while iron, zinc, and folate deficiencies are all estimated to affect less than 15 percent of the population by 2020. The absolute number of people deficient in calories and most micronutrients also continues to decrease. Vitamin A deficiency, however, remains a concern, with the absolute number of vitamin A deficient people continuing to rise even though their proportion in the total population drops to well below 50 percent by 2020.

Figure 1. Poverty and nutritional changes (2005-2020)



Notes: Deficiency rates are shown on the left axes; percentage point difference between slow-growth and accelerated growth paths are shown on the right-hand axes.

Source: Based on results in Ecker et al. (2011)

Under the broad-based growth scenario for 2010–2020 nutritional deficiency rates decline considerably faster than in the baseline. Micronutrient deficiencies tend to decline more rapidly than calorie deficiency, at least in percentage point terms. This relates to the high initial incidence of micronutrient deficiencies. From 2015 onwards the rate of decline in calorie deficiency remains stable at around 2 percentage points below the baseline (see bar chart). In contrast, iron, zinc, and vitamin A deficiencies continue to decline at an increasing rate relative to the baseline, such that by 2020 micronutrient deficiency rates will be about 4–5 percentage points below the rates in the baseline. By 2020 the number of people deficient in calories, iron, zinc, and folate is more than one-third lower than in the baseline.

Concluding remarks and policy recommendations

Ecker et al.'s analysis shows that economic structure and the characteristics of poor or malnourished people determine whether agricultural or nonagricultural growth is more effective at reducing poverty and malnutrition. In countries such as Malawi where agriculture contributes significantly to national income and where the majority of poor people earn a living from farming, agriculture has an important role to play. Nutrition improves not only for those rural households linked to agriculture; urban households also benefit from agricultural productivity growth and the associated reduction in food prices.

However, cross-country evidence shows how the role of growth shifts during the development process. The comparison between the broad-based growth and baseline scenarios for Malawi confirms this and shows how calorie and micronutrient deficiencies become less responsive to growth as prevalence rates decline, at which time economic diversification is needed to leverage further growth and reductions in malnutrition.

Ultimately, however, neither agricultural nor nonagricultural growth is *sufficient* to eliminate poverty, hunger, or micronutrient malnutrition. For example, in the modeled scenario for Malawi, even after a 15-year period of sustained and rapid agriculture-led economic growth, poverty remains close to 30 percent.

This in part reflects the failure of economic growth to trickle down to all the poor and malnourished households; many individuals simply lack access to jobs or markets and hence fail to benefit from growth. As far as nutrition is concerned, the result also reflects lack of access to information and knowledge about proper nutrition, which diminishes the effect of growth-induced changes in household incomes on nutrition.

Individual health status and access to healthcare are equally important for nutrition; if growth is not associated with improvements in health service delivery the nutritional effects of growth will be limited, even if higher incomes mean people can better afford health services. This highlights the need for strategic investments and targeted programs that are complementary to growth policies but explicitly aim to improve health and nutrition outcomes and thus strengthen the growth-nutrition linkages.

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The Malawi Strategy Support Program of the International Food Policy Research Institute (IFPRI) works closely with the government of Malawi and other development partners to provide information relevant for the design and implementation of Malawi's agricultural and rural development strategies.

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