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Malawi's Agrifood System

Structure and Drivers of Transformation

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Introduction

Malawi experienced modest growth from 2009 to 2019, with average annual GDP growth of 4.7 percent. The global COVID-19 pandemic caused a significant slowdown in 2020 and 2021, and the economy has not yet rebounded to pre-pandemic levels (World Bank 2023). At the time of writing, GDP is projected to grow at 2.4 percent in 2023, which in combination with population growth of 2.7 percent would result in a 0.3 percent contraction of GDP per capita (IMF 2023). At the core of the failure to resume pre-pandemic economic growth rates are a worsening debt crisis, a balance of payment crisis, an acute shortage of foreign exchange reserves, and several external shocks (World Bank 2022). The latter include the effects of the Russia-Ukraine conflict and the devastation caused by cyclone Freddy in 2023 (De Weerdt and Duchoslav 2022; Diao et al. 2022).

With the modest economic performance over the last decade, the share of the population that lives below the basic-needs poverty line has remained stagnant at just above 50 percent, while in absolute terms the number of poor people has increased by 2 million (Caruso and Cardona 2022). Poverty is concentrated in the rural areas (94 percent of all poor people reside there), where smallholder agriculture dominates employment. The rural population is growing at an annual rate of 2.9 percent (National Statistical Office 2019), pushing small farmers to expand cultivated land and putting increased pressure on land resources. Average landholdings have decreased from 0.8 ha per farming household in 2010/11 to 0.7 ha in 2019/20 (Benson and De Weerdt 2023). This implies that, even if farm productivity levels are raised, many smallholder farmers will not be able to exit poverty by relying on income from farming alone.

Four out of every 10 Malawians are younger than 14 years old, and 400,000 youth enter the work force every year (World Bank 2021). One of the most important challenges the country faces is developing policies that can shape economic development to provide productive jobs to this growing pool of young adults. With farming currently at the center of economic life for the majority of rural Malawians, further deepening of the agrifood sector could be important for raising incomes through higher agricultural productivity and diversification to high-value agricultural production, while at the same time ensuring

that a larger share of value added flows to the off-farm segments of the value chain, creating new income earning opportunities there (De Weerdt et al. 2023). In this brief, we unpack the historical and projected economic growth trajectory further to better understand the role of agriculture as well as the broader agrifood system (AFS) in the performance and transformation of the economy of Malawi.

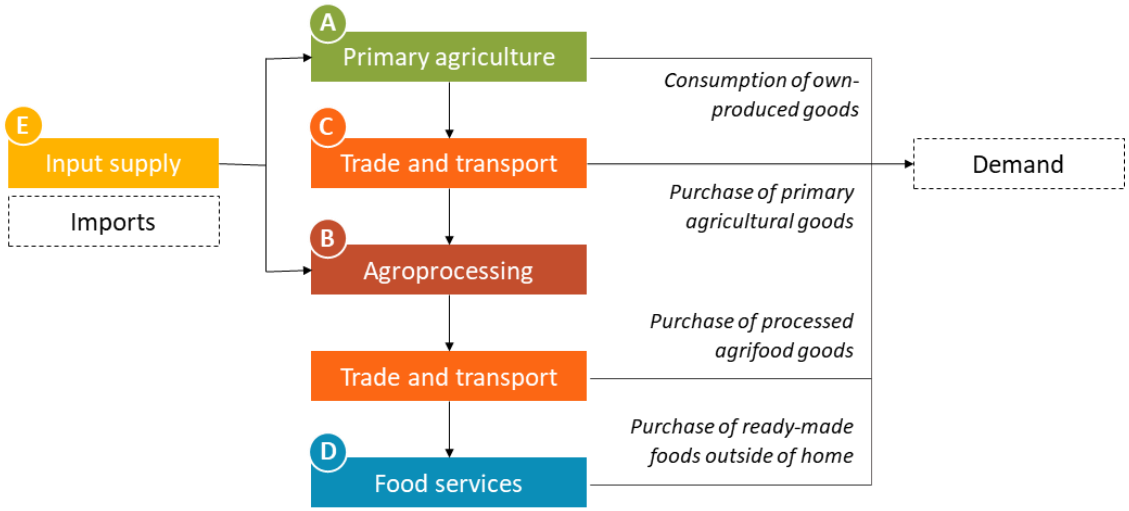
The AFS is a complex network of actors who are connected by their roles in supplying, consuming, and governing agrifood products and jobs. Just as an economy undergoes transformations as a country develops, agrifood systems also are expected to evolve (Diao, Hazell, and Thurlow 2010; Timmer 1988). Subsistence farming typically dominates agriculture during the earliest stages of development; as agricultural productivity rises, however, farmers start to supply surplus production to markets, thus creating job opportunities for workers in the nonfarm economy both within and outside the agrifood sectors (Haggblade, Hazell, and Dorosh 2007). Rising rural incomes generate demand for more diverse products; this leads to more nonfarm activities such as processing, packaging, transporting, and trading. In the early stages of transformation, the agriculture sector serves as an engine of rural—and even national—economic growth. Eventually, urbanization, the nonfarm economy, and nonagricultural incomes play more dominant roles in propelling agrifood system development, with urban and rural nonfarm consumers creating most of the demand for agricultural outputs via value chains that connect rural areas to towns and cities (Dorosh and Thurlow 2013). The exact nature of this transformation process varies across countries because of the diverse structure of their economies and the unique growth trajectories of their various agrifood and nonfood subsectors.

This brief describes the current and changing structure of Malawi's AFS and evaluates the potential contribution of different value chains to the acceleration of agricultural transformation and inclusiveness. We start by offering a simple conceptual framework of the AFS and then compare Malawi's AFS with that of other countries at different stages of development. We go on to disaggregate Malawi's AFS across agricultural value chains, taking into consideration their different market structures and historical contribution to economic growth and transformation. Finally, we use a forward-looking economywide model to assess the diverse contributions that specific value chains can make to each of a set of broad development outcomes. We conclude by summarizing our main findings.

A Simple Conceptual Framework of the Agrifood System

A country's AFS is a complex network of actors who are connected by their differing roles in supplying, using, and governing agrifood products (see Fanzo et al. 2020 for a detailed conceptual description of the AFS). In this brief, rather than examining all components of Malawi's AFS, we employ a narrower focus. We first measure its size, structure, and historical contribution to economic growth and transformation through a data-driven exercise; second, we use the International Food Policy Research Institute (IFPRI) Rural Investment and Policy Analysis (RIAPA) model (IFPRI 2023a) to assess the effectiveness of AFS growth (led by productivity gains in different agricultural value chains) in promoting multiple development outcomes in Malawi. Our measurement of the AFS is done from a supply-side perspective; that is, we use national accounts and employment statistics to either track or simulate growth and employment changes over time. By disaggregating the AFS into several value chain groups, this analysis offers a unique and useful perspective on the drivers of AFS growth and transformation.

Figure 1. A simple conceptual framework of the agrifood system



Source: Thurlow et al. (2023).

Figure 1 provides a simple conceptual framework of the AFS made up of five components, A to E (see Thurlow et al. 2023). *Primary agriculture* (A) comprises the supply and demand of all agricultural products including crops, livestock, fisheries, and forestry products. *Agroprocessing* (B) is part of the manufacturing sector and includes those subsectors that process agriculture-related food or nonfood products. *Trade and transport services* (C) includes those services associated with the transporting, wholesaling, and retailing of agrifood products between farms, firms, and final points of sale. *Food services* (D) includes services such as meals prepared at restaurants, food stalls, or hotels. Finally, *input supply* (E) is the portion of domestically produced intermediate inputs that is used directly in agricultural and agroprocessing production, such as fertilizers and financial services.

Using this conceptual framework, it is possible to measure the size and structure of Malawi's AFS from a supply-side perspective. Following the definitions of Thurlow et al. (2023), AFS GDP (or AgGDP+) is the sum of the GDP contributions of the five components (A to E), while AFS employment (or AgEMP+) is the total number of jobs across those components. As the economy grows and transforms over time, there will be changes in the relative contributions of the various on-farm and off-farm components of the AFS to total AgGDP+ or AgEMP+. A transforming economy, for example, will typically be characterized by more rapid growth in the off-farm components of the AFS; there will thus be an increased contribution by off-farm components to AgGDP+ and AgEMP+ and a relative decline in the contribution of primary agriculture. By disaggregating AgGDP+ and AgEMP+ by specific agricultural value chains, we can further assess the contribution of each of those value chains to AFS growth and transformation.

Current Structure of Malawi's Agrifood System

Table 1 presents the structure of Malawi's AFS in 2019 based on official national accounts data and sectoral employment statistics (NSO 2020; ILO 2020), as compiled in a 2019 Social Accounting Matrix (SAM) for Malawi (IFPRI 2023b). National estimates are broken down into estimates for the AFS (that is, AgGDP+ and AgEMP+) and the rest of the economy. The AFS is further broken down into its on-farm (primary agriculture) and off-farm components. The estimates for manufacturing and services (including the trade and transport services subsector) at the bottom of the table include activities in both

the AFS and non-AFS sectors; they thus provide a perspective on the relative size of the off-farm AFS components within the overall manufacturing and services sectors.

Table 1. Current structure of Malawi's agrifood system and economy (2019)

	GDP		Employment	
	Value (US$ billion)	Share (%)	Workers (million)	Share (%)
Total economy	**10.4**	**100.0**	**7.6**	**100.0**
Agrifood system	**4.6**	**44.1**	**5.9**	**77.0**
Primary agriculture (A)	**2.5**	**24.4**	**4.8**	**63.5**
Off-farm AFS	**2.0**	**19.6**	**1.0**	**13.5**
Processing (B)	0.8	8.2	0.2	3.1
Trade and transport (C)	0.8	7.7	0.6	8.2
Food services (D)	0.1	0.8	0.1	1.7
Input supply (E)	0.3	3.0	0.0	0.6
Rest of economy	**5.8**	**55.9**	**1.8**	**23.0**
Total manufacturing	1.3	12.3	0.3	4.1
Total services	5.8	55.8	2.2	29.2
Total trade and transport	2.1	19.9	1.5	19.2

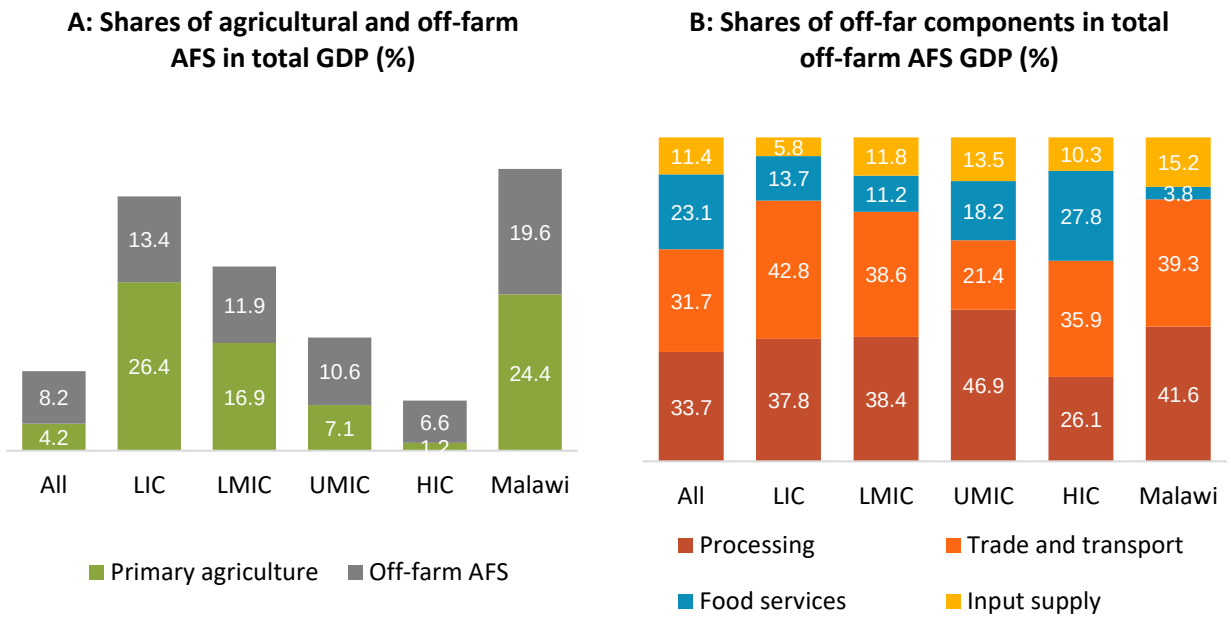
Source: Authors' calculation based on the 2019 Social Accounting Matrix for Malawi (IFPRI 2023b).
Note: A to E correspond to the five agrifood system (AFS) components from Figure 1.

As shown in Table 1, in 2019 the AFS accounted for 44.1 percent of Malawi's national GDP and 77.0 percent of employment. Primary agriculture alone contributed one-quarter of GDP and two-thirds of employment, while the four off-farm components of the AFS contributed 19.6 percent to GDP and 13.5 percent to employment. Off-farm components of the AFS therefore accounted for roughly 43 percent of AgGDP+ and 18 percent of AgEMP+. The comparison of on- and off-farm GDP and employment shares shows that labor productivity in off-farm components of the AFS is significantly higher than on-farm productivity. The movement of farm workers into these off-farm components—a natural process of agricultural transformation—may thus be beneficial to household incomes.

Comparing Malawi's Agrifood System to Other Countries

The structure and economic contribution of a country's AFS varies at different stages of its development. Evidence of this is provided in Figure 2, which compares the 2019 AFS structures of low-income (LIC), lower-middle-income (LMIC), upper-middle-income (UMIC), and high-income countries (HIC). As an LIC, the on-farm component of Malawi's AFS and its contribution to national GDP are comparable to that of its peer countries, while its off-farm component is higher (Panel A). Within the four off-farm components of the AFS, however, Malawi's agroprocessing is relatively larger than that of other LICs, while the agrifood trade and transport component is relatively smaller (Panel B).

Figure 2. Comparing Malawi's agrifood system to other countries (2019)

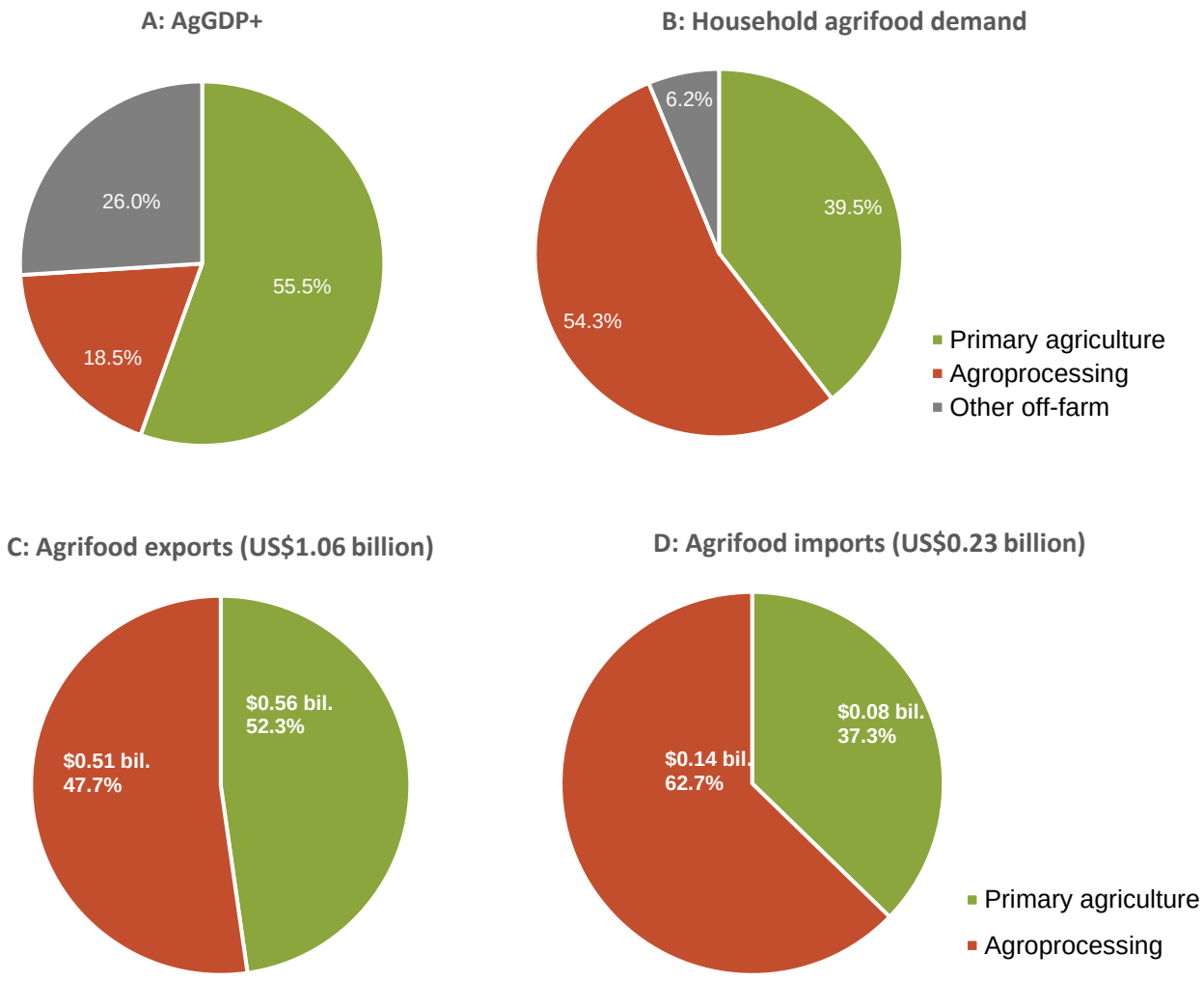


Source: IFPRI's Agrifood System Database (Thurlow et al. 2023) and the 2019 Social Accounting Matrix for Malawi (IFPRI 2023b).
Note: LIC = low-income country; LMIC = lower-middle-income country; UMIC = upper-middle-income country; and HIC = high-income country.

Unpacking the Demand Side of Malawi's Agrifood System

In Figure 3, the structure of Malawi's AFS from the supply side, as measured by AgGDP+ (Panel A), is compared to the structure of the AFS from the demand side, as measured by household consumption of agrifood products (Panel B). While 55.5 percent of AgGDP+ is from primary agriculture, primary agricultural commodities account for only 39.5 percent of household agrifood demand. In contrast, household demand for processed agrifood products accounts for 54.3 percent of total agrifood demand, even though the associated sector accounts for only 18.5 percent of AgGDP+. The bias toward processed agrifood products is mirrored in the high share of agrifood imports accounted for by processed products, that is, 52.3 percent of agrifood commodity exports are primary agricultural commodities (Panel C), but 62.7 percent of imports are processed goods (Panel D). Malawi nevertheless maintains a surplus on its total agrifood commodity trade balance, given a substantial surplus on primary agricultural trade—the value of Malawi's primary agricultural exports is seven times the value of its primary agricultural imports.

Figure 3. Composition of agrifood system GDP, household demand, and trade (2019)



Source: Authors' calculation based on the 2019 Social Accounting Matrix for Malawi (IFPRI 2023b).

Disaggregating the Agrifood System across Value Chains

For a more detailed assessment of structural and historical growth patterns within the AFS, we group Malawi's agrifood system into 12 value chain groups (see Table A1 in the Appendix for details on how individual value chains or subsectors are mapped to value chain groups). The 12 value chain groups are further categorized into three subgroups based on their trade orientation. Exportable and importable value chains are defined, respectively, as those value chains with export–output and import–consumption ratios above the national average, respectively. Trade in both primary and processed agrifood products is considered in the calculation of these trade ratios. The remaining value chains are classified as less-traded value chains.

Table 2 shows the 12 value chain groups, categorized into exportable, importable, and less-traded value chains. The table also reports the contribution of each value chain group to AgGDP+, primary agricultural GDP, and GDP in the off-farm components of the AFS. Consistent with Figure 3, Table 2 shows that Malawi has a comparative advantage in exports, with an export–output ratio of 13.1 percent, which is much higher than the import–consumption ratio of 3.2 percent. Four of the 12 value chains are

classified as exportable value chains because their export–output ratios exceed the national average for AFS value chains. Some exportable agrifood products require additional processing and trade and transport services; these sectors thus have a relatively large off-farm AFS GDP share of 38.4 percent, which exceeds their primary agricultural GDP share of 28.2 percent. Interestingly, some exportable value chains also have import–consumption ratios higher than the national average for AFS value chains. This may reflect urbanization and growing nonfarm income-generating opportunities in rural areas leading to an increase in demand for processed agrifood products, many of which are imported. In those value chains that have both high export–output and import–consumption ratios, it is often the case that exports from the value chain are predominantly in the form of primary agricultural products (for example, oilseeds), while imports into that value chain are in the form of processed products (like cooking oil).

Table 2. Malawi's agrifood system composition by trade orientation of value chains (2019)

	Share of GDP (%)			Exports / output (%)	Imports / demand (%)
	AFS (AgGDP+)	Primary agriculture	Off-farm AFS		
Total	**100.0**	**100.0**	**100.0**	13.1	3.2
Exportable	**32.7**	**28.2**	**38.3**	**40.9**	**6.0**
Pulses	5.8	9.1	1.6	32.2	0.2
Oilseeds	9.7	7.4	12.7	20.9	7.7
Tobacco	10.3	7.0	14.4	71.9	14.9
Other crops	6.9	4.7	9.6	25.6	2.3
Importable	**7.1**	**4.4**	**10.5**	**0.7**	**12.0**
Other cereals	6.1	3.8	8.9	0.8	10.3
Forestry	1.0	0.6	1.6	0.1	21.8
Less traded	**58.8**	**67.4**	**48.2**	**1.3**	**1.1**
Maize	22.6	23.9	20.9	1.4	0.4
Roots	6.1	8.9	2.5	0.5	0.6
Horticulture	13.1	21.2	3.0	4.7	1.5
Cattle and dairy	7.0	1.1	14.5	0.1	1.8
Other livestock	4.1	6.5	1.1	0.1	0.3
Fish	6.0	5.8	6.3	0.2	3.4

Source: Authors' calculation based on the 2019 Social Accounting Matrix for Malawi (IFPRI 2023b).

Despite the relative openness of Malawi's economy, 6 of the 15 value chains fall in the less-traded group of value chains, together accounting for 58.8 percent of AgGDP+. Many of these less-traded value chains have relatively small off-farm components, and thus contribute a relatively smaller share to off-farm AFS GDP (48.2 percent) compared to their primary agricultural GDP contribution (67.4 percent). The cattle and dairy value chain is a clear exception in that it is associated with significant value addition off-farm (such as meat processing and dairy products); expansion of this sector together with

some tradable value chains could thus effectively drive agricultural transformation by boosting value addition and off-farm employment in the value chain.

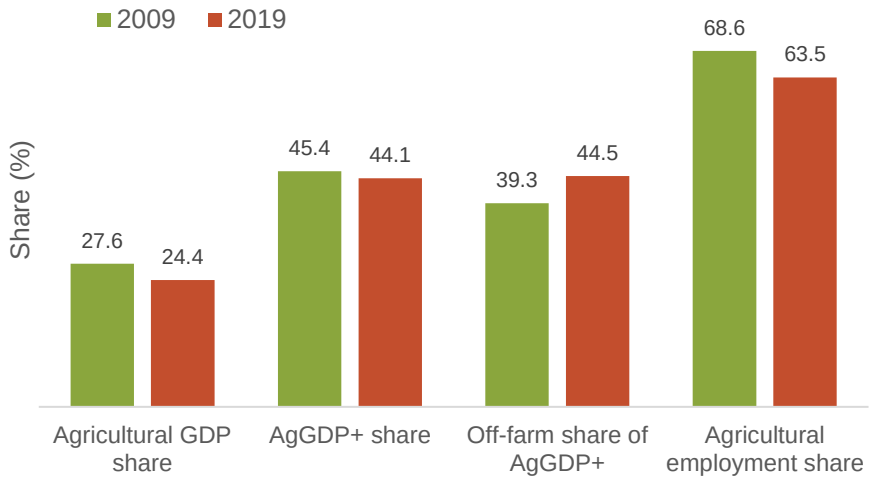
Structural Change and Drivers of Agrifood System GDP Growth

The previous sections have provided a snapshot of the current structure of Malawi's AFS, the disaggregation of the AFS across the 12 value chain groups, and the trade orientation of those value chains. We have demonstrated that Malawi has a comparative advantage in agrifood exports, while less-traded value chains are dominant in terms of their contribution to AgGDP+ and primary agriculture. Except for the cattle and dairy value chain, however, these value chains also are generally less oriented toward value addition in the off-farm components of the AFS (that is, their contribution to off-farm AFS components is small relative to their contribution to primary agriculture, especially when compared to tradable value chains). Prioritizing growth in some tradable value chains and the cattle and dairy value chain could therefore be an effective strategy for expanding off-farm value addition and jobs, which would contribute positively to AFS transformation.

In this section, we assess the performance and structural transformation of Malawi's AFS in recent years. Labor productivity is typically lowest in primary agriculture, and higher in off-farm activities, such as in agrifood processing, food services, or in sectors outside of the AFS. Economic growth and urbanization are associated with relatively faster growth in these nonagricultural sectors, which can help create higher-paying jobs for both rural and urban households. As such, even smallholder farm households with family members who obtain off-farm employment may benefit from structural transformation.

Figure 4 compares the shares of agricultural GDP and AgGDP+ in Malawi's national GDP along with agricultural employment as a share of total employment between 2009 and 2019. The figure also includes an estimate of the share of the off-farm components in AgGDP+. Agricultural GDP and AgGDP+ shares as well as the agricultural employment share fell modestly over this period, while the off-farm component of AgGDP+ increased more significantly. This indicates that Malawi's AFS has been gradually transforming, which is consistent with the findings of Benson and De Weerdt (2023) that off-farm activities have become increasingly important to rural households' livelihood in Malawi.

Figure 4. Agricultural GDP, agrifood system GDP, and employment shares (2009–2019)



Source: Authors' estimates using the 2009 and 2019 Social Accounting Matrixes for Malawi (IFPRI 2023b).

Table 3 evaluates the growth performance across AFS value chains over the 2009 to 2019 period. As before, value chains are grouped according to their trade status, that is, exportable, importable, and less traded. Overall, Malawi's AFS grew modestly, with an average annual AgGDP+ growth rate of 4.1 percent. The off-farm component of the AFS grew much faster (5.4 percent) than primary agriculture (3.2 percent), with agrifood processing, a subcomponent of the off-farm component of the AFS, growing particularly fast at 6.3 percent per year.

Table 3. Agrifood system GDP growth rates by value chain (2009–2019)

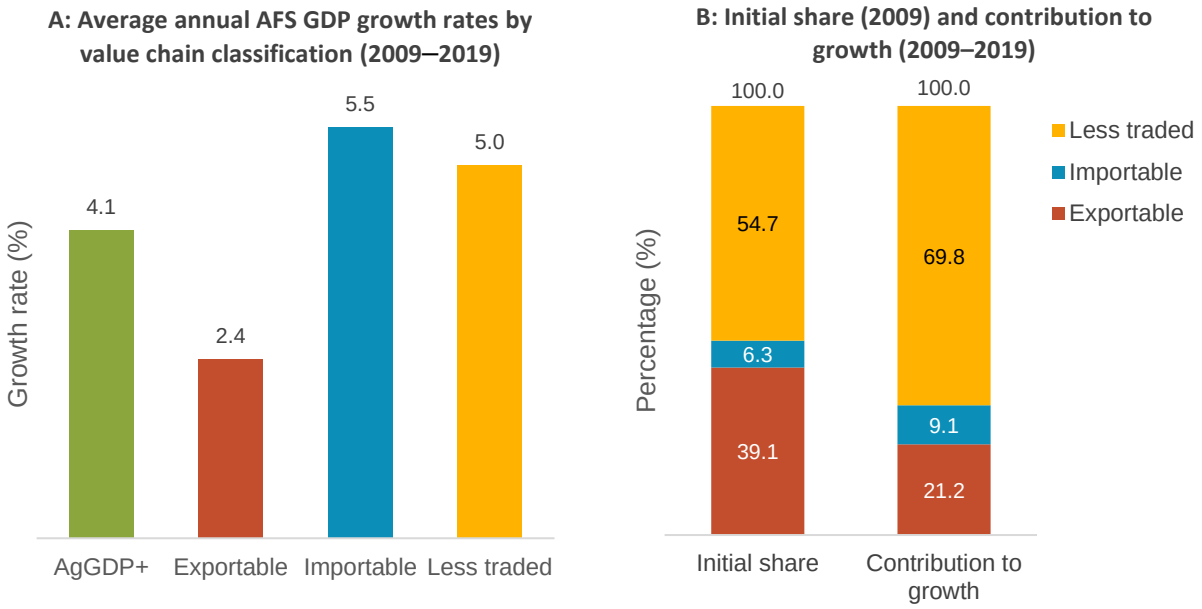
	Average annual GDP growth rate (%)			
	Total AFS	Primary agriculture	Off-farm AFS	Agro-processing
Total AFS	4.1	3.2	5.4	6.3
Exportable	2.4	1.3	3.5	5.0
Pulses	−2.3	−2.5	−0.5	6.7
Oilseeds*	7.8	8.3	7.5	8.3
Tobacco	0.0	0.6	−0.3	0.5
Other crops*	6.5	4.2	8.3	7.2
Importable	5.5	7.7	4.5	6.3
Other cereals*	7.1	8.0	6.6	6.2
Forestry	−0.6	5.9	−2.4	8.3
Less traded	5.0	3.8	7.4	7.2
Maize*	6.1	5.1	7.7	8.1
Roots*	6.1	5.7	8.5	10.0
Horticulture*	4.3	4.3	4.8	−1.3
Cattle and dairy*	6.6	1.8	7.2	6.4
Other livestock	2.7	2.6	3.5	9.4
Fish	2.0	−1.4	8.8	8.2

Source: Authors' analysis using the 2009 and 2019 Social Accounting Matrixes for Malawi (IFPRI 2023b).
Note: Value chains that experienced above-average AgGDP+ growth over the period 2009–2019 (that is, higher than 4.1 percent) are marked with an asterisk (*).

Among the 12 value chains, 7 achieved above-average growth during the 2009 to 2019 period, that is, more than 4.1 percent per year (these are marked with an asterisk in Table 3). Among these value chains with above-average growth, six—oilseeds and other crops in exportable value chain group; maize, root crops, and cattle and dairy in the less-traded value group; and other cereals in the importable group—achieved growth rates above 6 percent per year, indicating that these value chains have played an important role in overall AFS growth. In several of these rapidly growing value chains, growth in the off-farm components of the AFS was higher than growth in the primary agricultural component. In most of these value chains that achieved fast growth—and in many of the slower-growing value chains, too—the processing components of value chains grew rapidly. This is consistent with the broader patterns of growth and structural change in Malawi's AFS, which show that growth in the off-farm component of the AFS was greater than growth on-farm, and processing agricultural GDP grew even more rapidly.

Figure 5 summarizes the key growth trends from Table 3. On average, less-traded (5.0 percent) and importable (5.5 percent) value chains grew faster than the national AgGDP+ (4.1 percent) (Panel A). Since importable value chains only make up a small share of the AFS (6.3 percent), however, the larger less-traded group of value chains contributed the most to growth, at 69.8 percent (Panel B).

Figure 5. Drivers of Malawi's AFS GDP growth (2009–2019)



Source: Authors' analysis using the 2009 and 2019 Social Accounting Matrixes for Malawi (IFPRI 2023b).

Assessing Growth Outcomes Using IFPRI's RIAPA Model

IFPRI's Rural Investment and Policy Analysis (RIAPA) model is a tool for conducting forward-looking, economywide country-level analysis (IFPRI 2023a). RIAPA has been used in a wide variety of contexts to simulate the impacts of policies, investments, and economic shocks. Here we employ RIAPA to assess the effectiveness of productivity-led growth in Malawi's agricultural value chain groups for promoting multiple development outcomes. The analysis was carried out for 10 value chain groups, which were selected from the original list of 12; other cereals and forestry were excluded. We considered five development outcomes:

- A poverty–growth elasticity that measures the percentage point change in the poverty headcount rate per unit of agricultural GDP growth generated within the targeted value chain;
- A growth multiplier that measures the change in GDP per unit of increase in agricultural GDP in the targeted value chain;
- An employment multiplier that measures the change in the number of jobs created per unit of increase in agricultural GDP in the targeted value chain;
- A diet-quality indicator that measures the percentage change in a diet quality index per unit of agricultural GDP growth generated within the targeted value chain; and
- A hunger–growth elasticity that measures the percentage point change in the rate of undernourishment per unit of agricultural GDP growth generated within the targeted value chain.

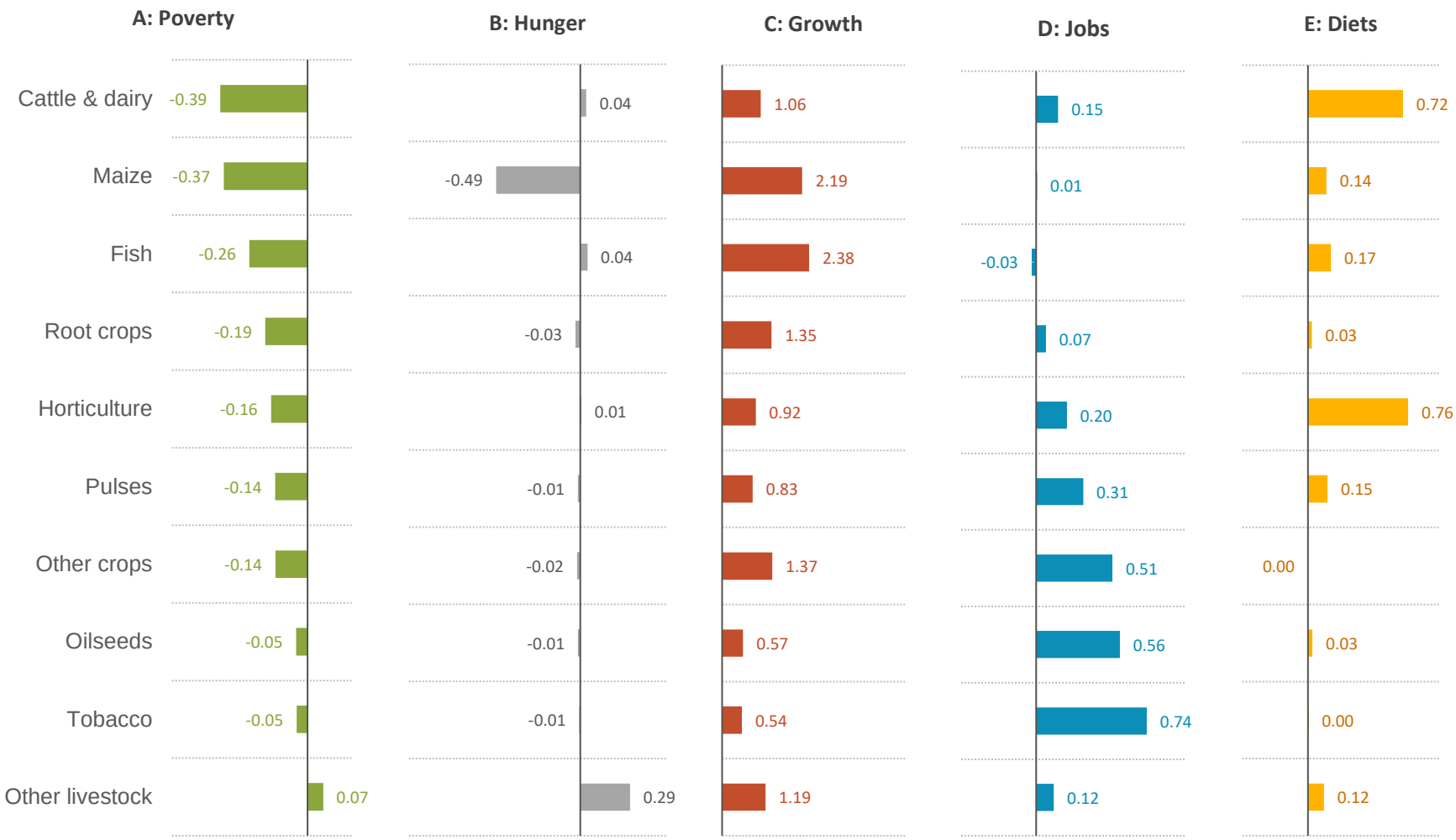
The simulations entail increasing on-farm productivity separately in each targeted value chain and comparing development outcomes across the value chains. While this exogenous productivity shock is imposed only in the primary agriculture component of each value chain, there are spillover effects into that value chain's off-farm components as well as into other agricultural value chains or sectors outside the AFS. These spillovers are captured by the economywide model and provide an indication of the transformation effect that agricultural productivity growth in the value chain has within the AFS and the broader economy. There are also structural differences across value chains; for example, value chains have unique links to other sectors as suppliers or users of intermediate inputs, or they have unique links to rural or urban households in different income groups because of the types of workers they employ or the consumption preferences of households for the agrifood products produced by those value chains.

As such, each value chain growth scenario is expected to have a unique impact on the development outcomes; moreover, not all value chains will be equally effective at improving outcomes. In some cases, there may even be trade-offs due to competition for resources across value chains. With the aid of the RIAPA model, these complex effects can be unpacked, thus providing information to governments or development partners that can be used to prioritize across different value chains; this is subject, of course, to the development outcomes they value most highly.

Figure 6 shows the scores each value chain achieves across the five development outcome indicators. We arbitrarily rank the value chains by their poverty score. Value chains clearly differ significantly in terms of their effectiveness in improving different development outcomes. The cattle and dairy value chain, for example, has strong poverty effects and is more effective at improving diet quality, but it is much less effective in reducing hunger or increasing jobs. Productivity growth in cattle and dairy would actually lead to a slight increase in the national hunger rate, though it has a positive impact in other outcomes. In contrast, the maize value chain has strong impacts on both poverty and hunger reduction but ranks much lower on the diet and job outcomes.

These results highlight the possible trade-offs that may emerge when prioritizing individual value chains, as there is no single value chain that is the most effective at achieving every development objective. Promoting a few value chains jointly will not only diversify agricultural growth but can also help to simultaneously achieve multiple development objectives.

Figure 6. Impact of value chain growth on development outcomes



Source: RIAPA model results.
Note: Panel A shows the percentage point changes in poverty rate that are associated with a 1 percent increase in agricultural GDP; Panel B shows the percentage point changes in hunger rate that are associated with a 1 percent increase in agricultural GDP; Panel C shows the changes in total GDP (in US$ millions) that are associated with a US$1.0 million increase in agricultural GDP from the targeted value chain; Panel D is the change in total economywide employment (in thousand persons) that is associated with a US$1.0 million increase in agricultural GDP from the targeted value chain; and Panel E is the percentage improvement in diet quality that is associated with a 1 percent increase in agricultural GDP. The figure is ordered by the poverty rate outcome.

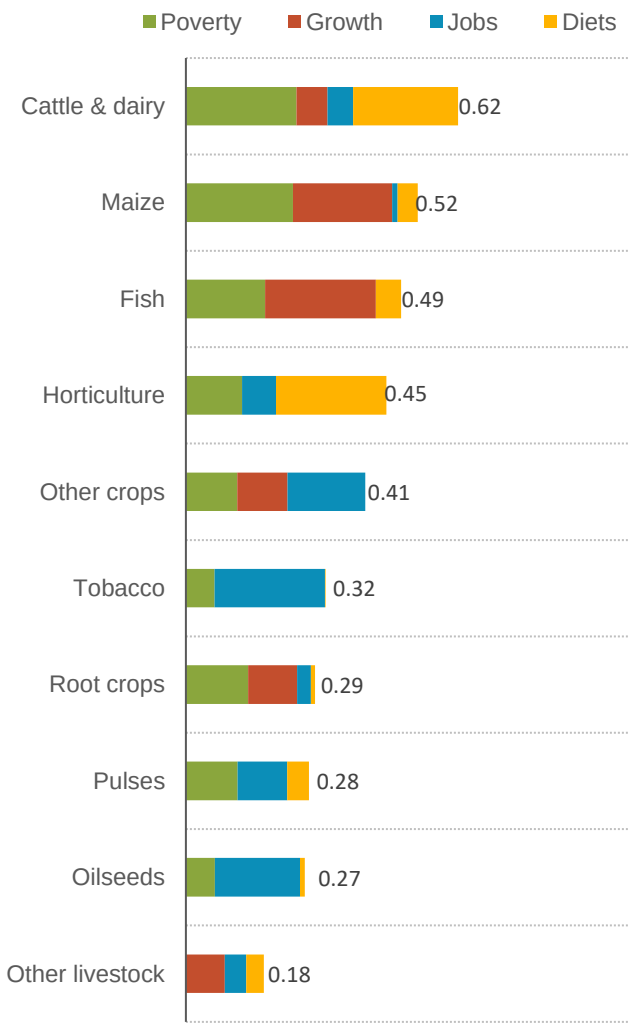
A composite score across different outcome indicators is created to narrow down the number of value chains that might be prioritized. Because of a high correlation between poverty and hunger impacts across value chains, the hunger score is omitted from the composite score. Also, since the different outcome indicators have different underlying units, the individual outcomes are normalized so that they are comparable while still retaining their ranking within the outcome category. Normalization entails assigning a score of 1 to the value chain that is most effective within an outcome category, and a score of 0 to the least effective value chain. All value chains with adverse effects on an outcome are also assigned a score of 0. This includes value chains with a growth multiplier of less than one (horticulture, pulses, oilseeds, and tobacco) or those with negative employment effects (fish). The remaining value chains receive a score between 1 and 0 that is proportionate to their original score relative to the highest-ranked value chain. The individual normalized scores for the outcomes are then combined into a composite score for each value chain.

The default approach assumes that each of the four outcome indicators is equally important, so an equal weight is assigned to each score. If policymakers consider a particular development outcome to be more or less important than the other outcomes, however, the weights assigned to each particular outcome score can be adjusted accordingly.

Figure 7 presents the composite scores using equal weights across the four development outcome indicators (that is, excluding hunger). Each component in the bars shows the relative contribution of a particular outcome indicator in the final score. The cattle and dairy, maize, fish, and horticulture value chains are ranked highest. For cattle and dairy (the highest-ranked value chain), each of the four outcome components makes important contributions to the composite score.

By contrast, in the second-ranked maize value chain, the contribution from the job component is minimal. Similarly, productivity growth in the fish value chain would make no contribution to job creation, and productivity growth in the horticulture value chain would make no contribution to the growth outcome, even though these two value chains could have important impacts on the other development outcome areas. While a ranking of their impacts on multiple development outcomes on the basis of composite scores allows us to identify and prioritize value chains, trade-offs clearly exist as to which outcomes are most significantly affected by productivity-led growth in each value chain.

Figure 7. Composite score of development outcomes: Equal weights



Source: RIAPA model results.
Notes: The composite score is a simple average (equally weighted) of the scores for each of the four outcome categories; the figure is ordered according to the highest composite score.

Summary

In the decade prior to the COVID-19 pandemic, Malawi experienced a modest annual economic growth rate of 4.7 percent. Although the agrifood system (AFS) did not grow as rapidly, it still achieved a respectable growth rate of 4.1 percent per year. This growth has been accompanied by a gradual structural change within Malawi's AFS. The growth rate for the off-farm components of the AFS was much higher than growth on-farm—5.4 and 3.2 percent, respectively— and the off-farm share of the AFS increased from 39.3 to 44.5 percent between 2009 and 2019. While both the agricultural GDP and agricultural employment shares declined over this period, agriculture remains a large sector in Malawi in terms of GDP and total employment.

Almost all the growth in Malawi's AFS between 2009 and 2019 was contributed by less-traded value chains (69.8 percent). The large contribution from the group of less-traded value chains is explained both by its large initial size and above-average growth rate.

The RIAPA model-based comparison of future sources of growth shows that there is no single value chain group that is the most effective in achieving all desired development outcomes, that is, declining poverty, declining hunger, economic growth, job growth, and improved diets. The cattle and dairy, maize, fish, and horticulture value chains rank highly in their composite outcome scores for poverty (and hunger), GDP, jobs, and diets. Many of these value chains already displayed above-average growth rates in the preceding decade. Promoting these value chains together offers an effective and broad-based way to achieve these development outcomes.

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Appendix

Table A1. Value chain groups and their corresponding agricultural subsectors

Value chain groups and their share of AgGDP+	Individual value chains (or agricultural subsectors) in the group and their share of the group's agricultural GDP
Maize (22.6%)	Maize 100%
Other cereals (6.1%)	Sorghum and millet 37% | Rice 63% | Wheat and barley 0% | Other cereals 0%
Oilseeds (9.7%)	Pulses 100%
Pulses (5.8%)	Groundnuts 74.9% | Other oilseeds 25.1%
Roots (6.1%)	Cassava 42.8% | Irish potatoes 21.0% | Sweet potatoes 36.2%
Horticulture (13.1%)	Leafy green vegetables 53.1% | Other vegetables 22.9% | Nuts 1.8% | Bananas 7.2% | Other fruits 12.6%
Tobacco (10.3%)	Tobacco 100%
Other crops (6.9%)	Sugarcane 48.7% | Cotton & fibers 4.9% | Tea 35.6% | Coffee 5.2% | Other crops 5.6%
Cattle and dairy (7.0%)	Cattle meat 33.9% | Raw milk 66.1%
Other livestock (4.1%)	Poultry meat 52% | Eggs 13.8% | Small ruminants 8.9% | Other livestock 25.3%
Fish (6.0%)	Aquaculture 4.7% | Capture fisheries 95.3%
Forestry (1.0%)	Forestry 100%

Source: Authors' calculation based on the 2019 Social Accounting Matrix for Malawi (IFPRI 2023b).

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