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Competition issues and regional integration in soybean and animal feed to poultry markets, within and across Kenya, Malawi and Zambia

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Abstract

Africa as a whole has run a food trade deficit averaging around \$30bn a year over the last decade, with various countries in the east and southern African (ESA) region being net food importers despite good soils, land availability and favourable growing conditions. Poultry exemplifies these patterns. The ESA region continues to be a net importer of poultry products despite increased soybean production in Malawi and Zambia as inputs into poultry feed, together with investments in breeding operations in Zambia for the supply of day-old chicks. This paper provides a comparative analysis of poultry markets in Kenya, Malawi and Zambia to assess competition and competitiveness in the regional animal feed to poultry value chain. We find that while there is potential for substantial expansions in soybean and maize production to ensure competitively priced animal feed and poultry production across the region, it is being stymied by markets which are not working well. Prices for maize, and in some instances soybeans, have been substantially lower than international prices, yet prices to poultry producers of feed, as well as day-old chicks, have been very high and the poultry industry within and across countries is not competitive or inclusive. We propose the need to reshape the poultry value chain, and agricultural markets more widely; including through appropriate policies to support resilient and inclusive regional value chains, monitoring markets in real time as climate change implies more frequent and deeper shocks to agricultural production, and ramping up regional competition enforcement to make regional markets work more effectively.

Keywords: Market structure, poultry, animal feed, competitiveness, regional value chains

JEL codes: D4, F1, L10, O13, O18, Q18, Q54

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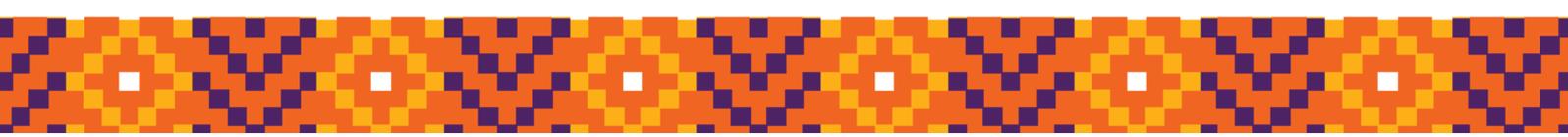
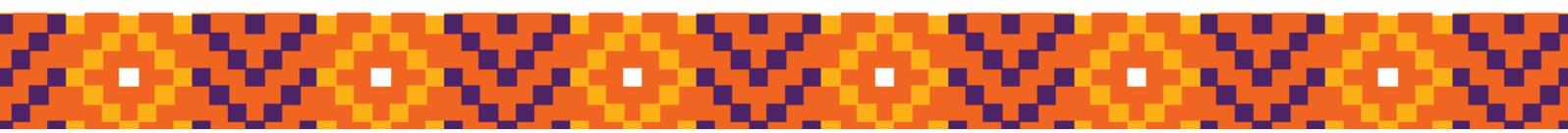


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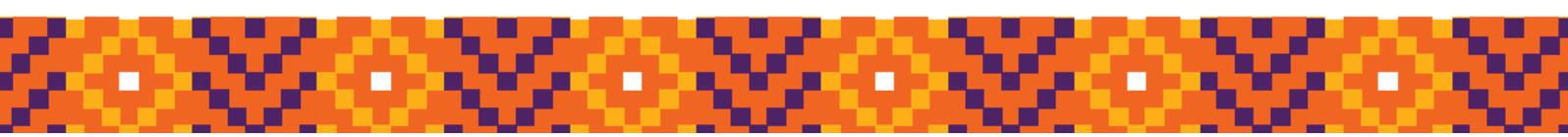


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1. Introduction

The agricultural sector is key to fostering economic growth, reducing poverty and improving food security in Eastern and Southern Africa (ESA). It is necessary to sustainably increase food production to meet the demand from rapidly expanding urban populations. However, Africa as a whole has run a food trade deficit averaging around \$30bn a year over the last decade (Nsomba et al., 2022). Many countries in the ESA region are net food importers despite good soils, land availability and favourable growing conditions in much of the region (Annan et al., 2015; Kaziboni and Roberts, 2022).

Poultry exemplifies these patterns. Urbanization and rising incomes mean an increased demand for chicken meat as the main source of animal protein. Commercial poultry production relies on the competitive supply of maize and soybean for animal feed, however, the region is a net importer of poultry products and soybeans. Higher levels of production in soybeans in Malawi and Zambia since 2015, along with increased levels of investment in breeding operations in Zambia, provide a good base for competitive poultry production. This base includes through regional linkages to countries such as Kenya, especially important in the context of drought in East Africa in 2021 and 2022.¹

In this working paper we assess competition and competitiveness in the regional animal feed to poultry value chain across Kenya, Malawi and Zambia. This includes assessing market outcomes and market structure in each of the countries. A comparative analysis between the countries highlights why markets need to function better for smaller participants including farmers and poultry producers, and the role that regional integration and competition enforcement can play for fairer and more competitive poultry markets.

The paper draws on information from the African Market Observatory (AMO), an initiative on the workings of selected food markets in ESA housed at the University of Johannesburg and in partnership with competition authorities across the region.² The AMO has revealed that regional markets are not working well. This includes for smaller farmers who are receiving poor prices for their produce, while at the same time food prices in African cities are generally higher than in developing countries in other regions of the world (Nakamura et al. 2016; Nsomba et al. 2022). It is thus extremely important to analyse how key food markets are working and why. The AMO data enable this analysis and provide a basis to consider the systemic economic changes required to ensure more resilient value chains (Nsomba, Roberts and Tshabalala, 2021; Nsomba et al., 2022).

The paper is structured as follows. Section 2 provides an overview of the animal feed to poultry value chain, and of the production, trade and pricing of the main feed inputs across the focus countries in a regional context. Section 3 analyses market structure and market outcomes by country. Section 4 makes a comparative assessment to assess the regional value chain across Kenya, Malawi and Zambia. Section 5 concludes and draws recommendations.

¹ See African Market Observatory price tracker, July 2022. Available at: https://static1.squarespace.com/static/52246331e4b0a46e5f1b8ce5/t/62f66665a839f5731409c379/1660315237940/AMO_Price+tracker+15_12082022.pdf

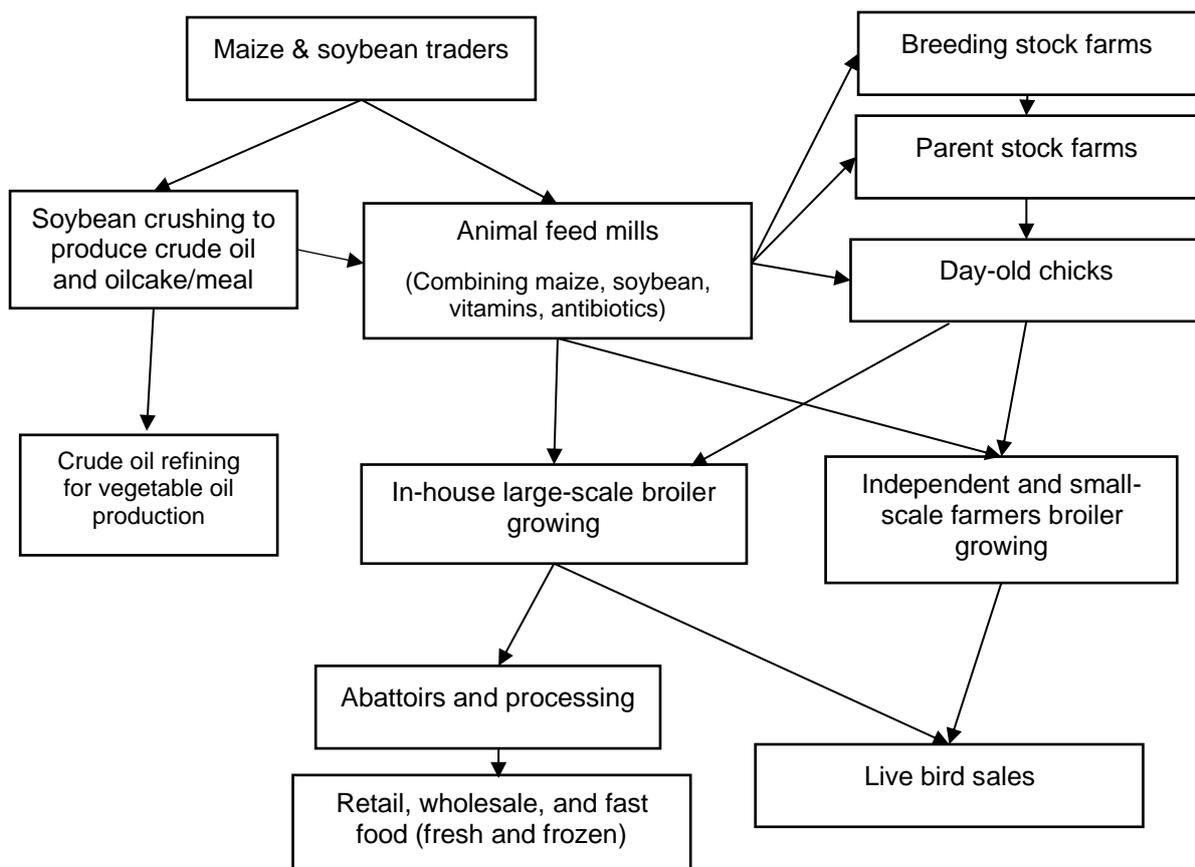
² Funding for the pilot phase from the COMESA Competition Commission is gratefully acknowledged.

2. Animal feed to poultry value chain

2.1. Value chain overview

The poultry value chain has multiple levels – from the production and processing of commodities, mainly maize and soybean, for animal feed through to quasi-industrial processes of production in the rearing, processing and distribution of poultry in live, fresh and frozen form (Bosiu and Goga, 2019). Large-scale commercial producers are generally vertically integrated into key inputs such as animal feed and breeding stock, all the way to slaughtering operations. There are therefore a range of activities and processes required to produce poultry commercially (Figure 1).

Figure 1: The poultry value chain



Source: Gondwe, Nsomba and Roberts (2022)

The main input cost to the production of poultry is feed, estimated to account for around 60-70% of total input costs (Bosiu and Goga, 2019). The second most important cost in broiler production is day-old chicks (DoC), which also require feed for their production by breeding operations. Along the value chain there are independent producers of feed competing alongside vertically integrated firms.

Poultry breeding stock for the DoCs that are reared as broilers are, for the great majority of East and Southern African production, breeds of two multinational corporations, Aviagen (EW Group) and Cobb-Vantress (Tyson Foods) (see Goga and Roberts, 2023). The main breeds are Aviagen's Ross 308 and the Cobb 500 bird of Cobb-Vantress (Goga and Roberts, 2023) which account for more than 90% of all commercial broiler production globally. There are also the Indian River, Sasso and Kuroiler breeds used in Malawi and Zambia. Indian River

is a breed owned by Aviagen and Sasso is a breed developed by Hendrix Genetics, which from 2007 has been in a joint venture with Cobb-Vantress.³ For poultry producers in the region, day-old chick costs account for about 20% of costs. Day-old chick prices in the studied countries have increased substantially over 2021 and 2022, with increased feed prices being cited as one factor.

Despite various broiler breeds being available, they all originate from the two multinational companies. Concentration in breeding rights at the global level has raised important questions about barriers to entry in breeding and in participation further down the value chain as holders of rights can control supply (Goga and Roberts, 2023). In Kenya we note that the local Kienyeji breed is also used quite widely by small-scale free range producers of chickens for meat as well as egg layers.

In the ESA region broiler breeding and distribution rights are licenced to a few breeding companies, with South Africa and Zambia being key locations for license holders. Poultry producers need to purchase breeding stock from these license holders. Becoming a license holder is costly, as setting up breeder farms requires significant research and investment, as well as special phytosanitary care (Goga and Roberts, 2023). It also takes time to produce commercial DoCs, estimated at a year from delivery of grandparent day-old chicks to the first commercial level broiler DoCs.

The large investment requirements for licensing and breeding have meant that a specific breed typically only has one license holder in a given country or geographic area at the grandparent level. There may be several companies producing DoCs from parents, as this does not require any licensing. Breeding companies therefore have the ability to monitor and control breeding stock levels within a given region, with effects on competition, especially given the high levels of concentration globally.

The ability to collude through exerting control at breeding stock level together with information exchange through third parties is evident in the cartel cases levelled against poultry producers in the United States in 2020 and 2021. The publicly available papers for these cases set out how producers allegedly conspired and combined to fix, raise, maintain and stabilize the price of broiler chickens including through manipulating a key price index and through sharing information over a period from 2008 to 2019. Settlements of these cases were reached by the main producers.⁴ The alleged collusion in the USA worked through the vertical linkages from breeding into broiler production meaning that production could be controlled, such as in 2008 and 2009 in the USA, by reducing breeder flocks, and constrained thereafter to support higher prices than would otherwise have been the case.⁵ At the time there were three providers of breeds (Tyson/Cobb-Vantress, Aviagen and Hubbard, with the latter two merging in 2018). Concentration and vertical integration through to processing also meant that supply could be collectively controlled and price increases sustained. In addition, information was shared through Agri Stats, even while

³ https://www.cobb-vantress.com/en_US/who-we-are/our-history/

⁴ These included a Tyson settlement of \$221.5mn (Tyson Annual Report 2021 on Form 10-K SEC filing, pages 78-80; <https://www.wsj.com/articles/tyson-foods-to-settle-price-fixing-claims-11611167192>) with further provisions being made, and JBS company Pilgrim's Pride admitting conduct and paying a fine of \$110mn (<https://news.bloomberglaw.com/antitrust/pilgrims-to-pay-110-5-million-fine-over-chicken-price-fixing>). Note that the criminal cases brought against individual managers, which are subject to a standard of beyond reasonable doubt, were not proven in court.

⁵ See also End-User Consumer Plaintiff's Fifth Consolidated Amended Class Action Complaint [Redacted Version], filed, 7 August 2020, United States District Court, Northern District of Illinois Eastern Division.

anonymised, on breeding stock, hatcheries, feed, broiler flocks, slaughtering and processing, wages for plant workers, inventories, sales. Price expectations were also shared through public announcements, meetings with investors, industry gatherings and through commissioned market studies by industry bodies.

The competitiveness of the poultry value chain therefore depends on co-ordination of production and investment through the various levels, and the ability to acquire the key inputs at a reasonable price. There are important lead firms which can shape production activities along the value chain and influence the ability of smaller independent firms to compete.

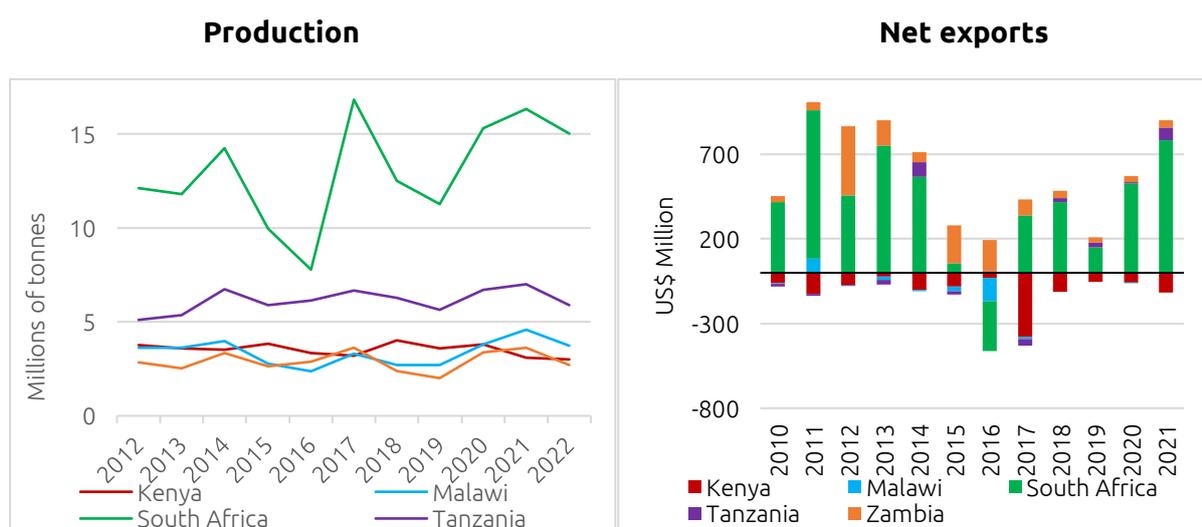
2.2. Production of poultry feed inputs

The region is well positioned in terms of production of the main inputs for feed as a competitive cost base into poultry production to meet growing regional demand and compete with imports. Zambia, in particular, has abundant agricultural land and water for expanding maize and soybean production.

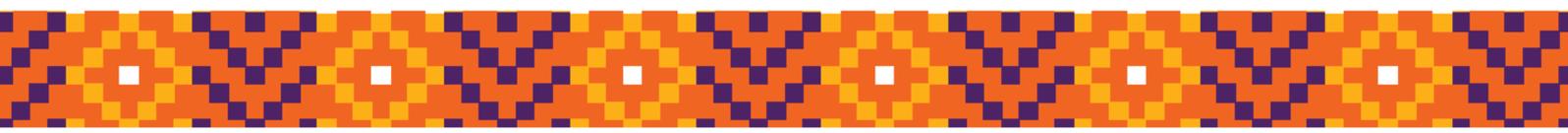
2.2.1. Maize

Maize is a major agricultural crop across ESA and is produced by smaller farmers in most of the countries, across large areas of land. Since 1970 maize production in the ESA region has almost quadrupled reaching over 48 million tons harvested in 2018 (Bell et al, 2020). In 2022, maize production was estimated at 34 million tons between Kenya, Malawi, South Africa, Tanzania and Zambia. South Africa is by far the largest producer and a substantial exporter, apart from in 2015/2016 with a major drought. Kenya is a net importer due to the size of its demand (Figure 2). After relatively poor rains in 2019, Malawi and Zambia have seen an increase in production in 2020 and 2021, falling back again somewhat in 2022. From 2018 Malawi has recorded balanced trade, while Zambia has had net exports.

Figure 2: Maize production and net exports, for selected countries



Source: FAOSTAT2017 - 2020 Malawi data is from the Ministry of Trade in Malawi

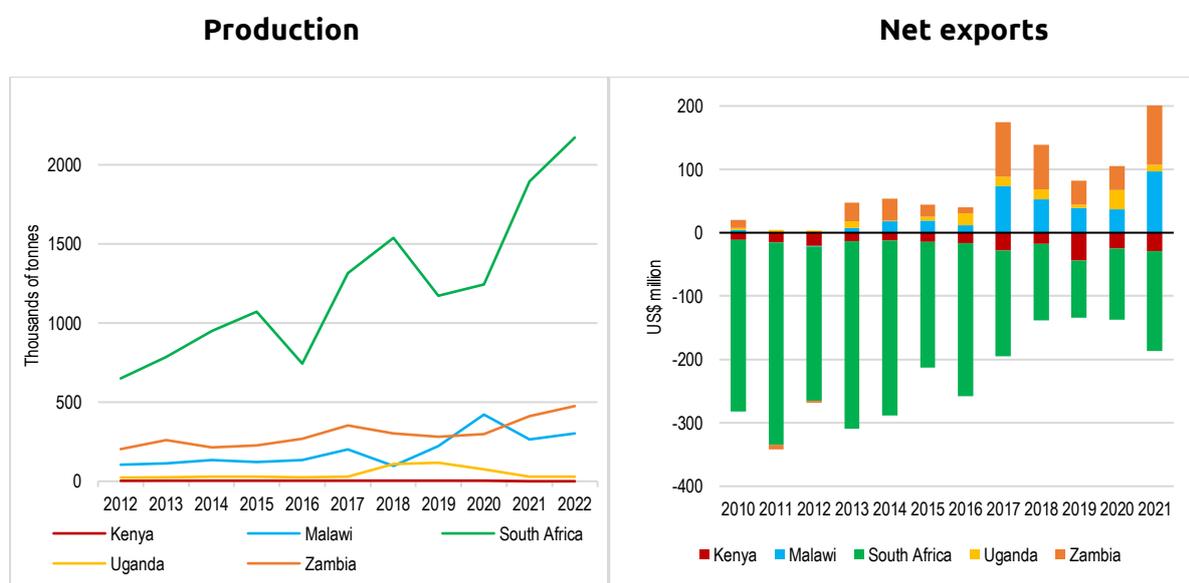


2.2.2. Soybean

Soybeans are considered the ‘green gold’ as a key source of protein. The crop is grown in tropical and subtropical climates and is one of the most valuable crops in the world, not only as an oilseed crop and for feed for livestock and aquaculture, but also as a good source of protein in the human diet and as a biofuel. The global soybean market is therefore driven by demand for the derivative products, through the crushing industry, where soymeal and soy oil are extracted. By far the most important driver of soybean demand is the animal feed industry which consumes around 80% of global soybean production (De Maria et al. 2020). A large proportion, more than 30% of soybean demand, is met by international trade (which would be an even higher proportion if we took trade in derivative products, such as animal feed, into account).

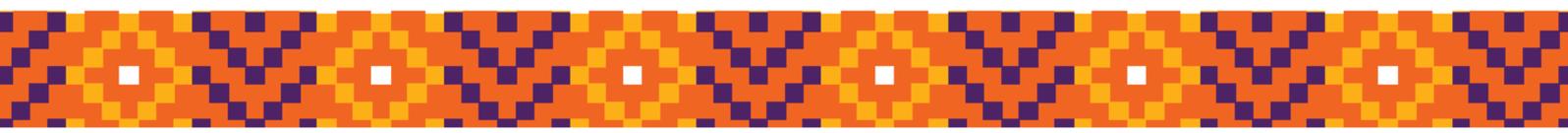
Notwithstanding good potential for growing soybeans in ESA, production in the ESA region is low, apart from in South Africa, Zambia and, more recently, Malawi (Figure 3). However, South Africa still remains in soybean deficit, as does the region as a whole, and therefore relies on imports from international markets. Zambian production has also grown over the decade from a very low base to close to 500th tonnes. Given its demand (at around 200-250 thousand tonnes per annum), it has moved from being a net importer to be a net exporter (Bell et al, 2020). Production in Malawi grew very strongly in 2019 and 2020, to over 400th tonnes, although it has fallen back somewhat, possibly due to the poor prices being received by farmers into 2021. It is also a substantial net exporter. We note that it is somewhat surprising that Zambia and Malawi are similar sized soybean producers and exporters given the much greater extent of agricultural land in Zambia, which points to massive untapped potential in that country.

Figure 3: Soybean production, net exports (of soybeans & oilcake), selected countries



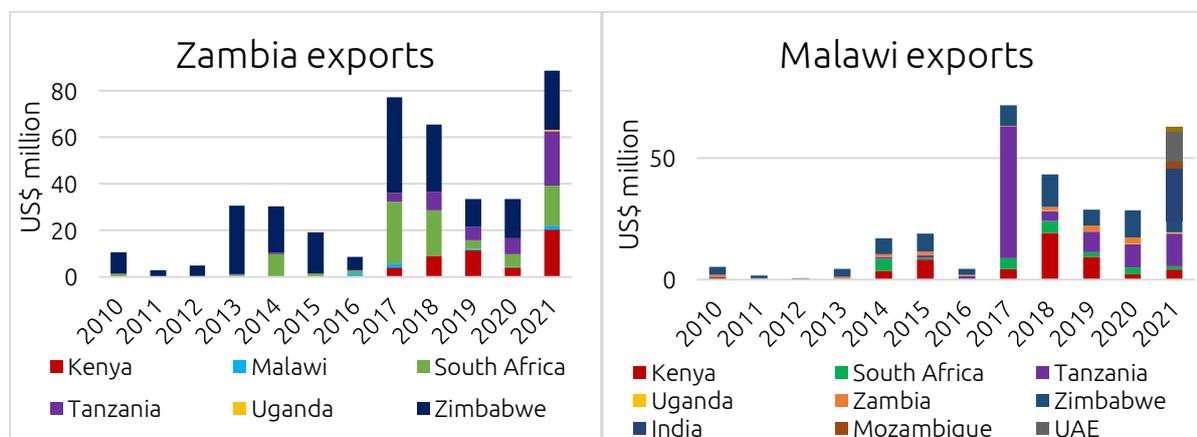
Source: FAOSTAT. 2017 – 2020 Malawi data is from the Ministry of Trade in Malawi

Kenya is a net importer with its requirements met in part by imports from Zambia and Malawi meaning that there are important regional linkages. Uganda is also an important source of supply for Kenya. Zambia has also been exporting to Zimbabwe, Tanzania and South Africa (Figure 4). Malawi has exported substantial amounts to countries outside the



region in 2021 (with \$22mn to India and \$13mn to UAE in total exports), along with exports to neighbouring countries.

Figure 4: Malawi and Zambia soybean & oilcake exports, by main destination



Source: Trade Map; Malawi 2021 data from Malawi government source

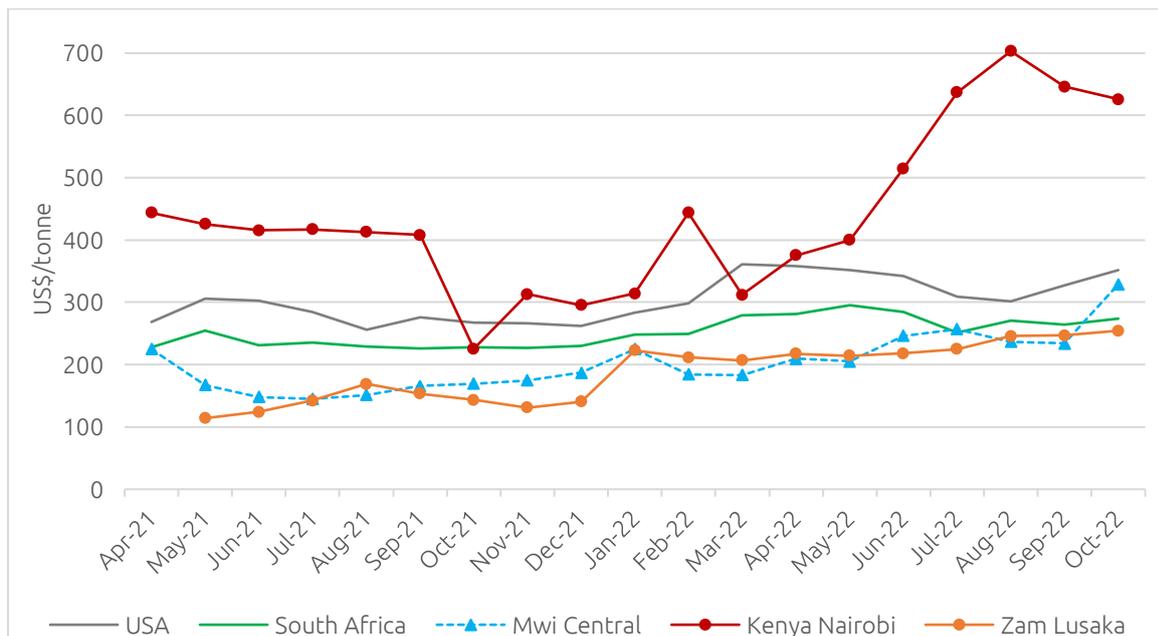
Notes: very small volume export destinations have not been included for Malawi, and in 2021 the difference is larger at just over \$30mn, as there are volumes by destination for which values were not provided.

Increased production could improve poultry competitiveness across the region including through exports from Malawi and Zambia. However, this depends on the prices of soybeans and oilcake and the terms on which poultry producers can access commercial animal feed. Achieving competitive poultry value chains, in part through the increased production of soybean in the region, depends on how poultry value chains are governed, both nationally and regionally, including the influence of lead firms (Gereffi, and Fernandez-Stark, 2011).

In order for increased soybean production to benefit the development of regional value chains through cross-border export from soybean producing countries, transport costs and competition issues also need to be addressed (Nsomba, Roberts and Tshabalala, 2021). Transport rates need to be efficient for competitive prices to be transmitted along the regional value chain.

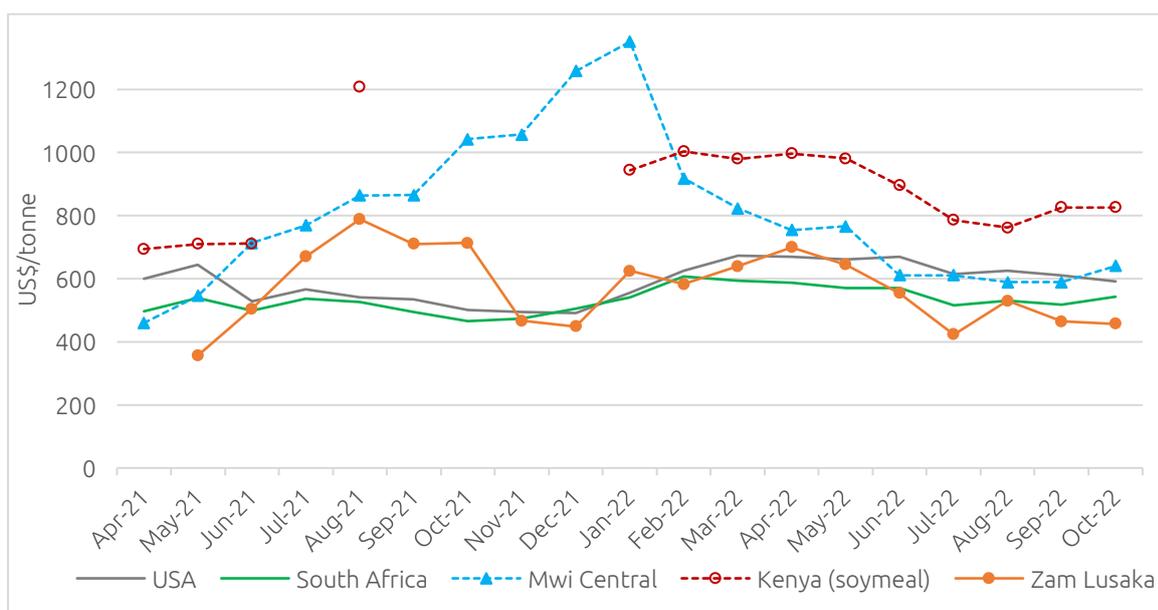
2.3. Pricing of maize and soybeans, as the main poultry feed inputs

Prices of maize in Malawi and Zambia are much lower than international benchmark prices, while the prices in Kenya have been extremely high, by margins greatly exceeding reasonable transport costs (Figure 5). This should, at least, mean a very competitive cost base for animal feed in Malawi and Zambia, even while Kenya's competitiveness is harmed by cross-border markets not working well to ensure traded goods being landed at good prices.

Figure 5: Maize wholesale prices

Source: African Market Observatory data

In soybeans there is a similar picture regarding Zambia prices, with these having been lower or around international prices, especially at the harvest time around May (Figure 6). Prices have also been very high for soymeal landed in Kenya which is imported from soybean crushers in Zambia, Malawi and Uganda. Malawi prices over 2021 followed a quite different pattern – farmers received very low prices of close to \$400/t at harvest in April but then prices trebled through to January 2022, as if there was extreme scarcity while, in fact, there were ongoing exports from Malawi of soybeans and oilcake. From mid-2022, Malawi prices followed a more normal pattern.

Figure 6: Soybean wholesale prices

Source: African Market Observatory data

3. Analysis of market structure and market outcomes by country

We draw on the AMO data, together with targeted interviews with market participants to expand our understanding of the animal feed to poultry value chain in each of the three selected countries. This enables an assessment of different explanations for market outcomes including possible anti-competitive conduct and barriers to trade in cross-border markets, as factors which may impede entry and competition by smaller rivals in poultry production.

3.1. Malawi

In Malawi a few large integrated commercial producers account for the majority of broiler production, as well as all abattoirs and processing facilities. Small and medium sized independent producers (i.e. not vertically integrated) also produce broilers, selling them live, rather than slaughtered, dressed and packed.⁶ Aside from being a source of animal protein, poultry production is also an important source of income for rural subsistence producers in Malawi. Approximately 1.3 million smallholder households keep or own chickens,⁷ while the commercial broiler/egg production system constitutes the largest proportion of the national flock.⁸

3.1.1. Market structure

Poultry farming in Malawi is a combination of commercial and small-scale rural farming. Commercial farming comprises of medium-scale independent producers and larger vertically integrated producers. Commercial broiler producers raise Ross 308 and Cobb 500, mainly close to consumers in urban and peri-urban areas.⁹ Small to medium sized independent commercial producers are increasingly raising Sasso and Kuroiler breeds. Despite this variation in breeds used, all producers seemingly compete at the downstream level of wholesale and retail sale of chickens, predominantly in live form in Malawi. This takes place in trading centres in towns across the country.

Rural farming is mainly located in relatively less connected rural areas and these farmers use local breeds as well as in some cases the Sasso and Kuroiler breeds.¹⁰ For the purposes of this research we focus on commercial farming of broilers.

Day-old chicks supply, feed and poultry production

Malawi has no breeding operations at the great grandparent and grandparent level. All suppliers of day-old chicks obtain parent day-old chicks from either Cobb Africa (mainly through Irvines in Zimbabwe) or Country Bird Holdings (mainly from Ross Breeders Zambia, RBZ) for the Cobb and Ross breeds respectively. Shipments of breeding stock as fertilized eggs and parent day-old chicks from these hubs take place by air and overland transport (Goga and Roberts, 2023). This means that in order for producers to have access to healthy chicks, transportation of breeding stock has to be fast and efficient.

⁶ Small and Medium Poultry Farmers Association, 4 March 2022.

⁷ Government of Malawi – National Statistical Office, 2018 Population and Housing Census (PHC) – Final Report, Zomba

⁸ Interview with Small and Medium Poultry Farmers Association, 5 March 2022.

⁹ Interview with market participant, 18 March 2022.

¹⁰ Interview with Malawian market participant, 18 March 2022.

There are five main suppliers of DoCs for broiler production in Malawi, who are vertically integrated into feed and broiler production to varying degrees (Table 1). The largest of these is Central Poultry (CP), accounting for 87% of the DoC supply. This estimate includes what CP supplies into its own production of broiler birds and what it supplies to independent producers across Malawi. CP is the only supplier of the Cobb 500 day-old chicks in Malawi, and is linked to Cobb Africa through Irvines in Zimbabwe (Goga and Roberts, 2023).¹¹ It is likely that CP holds sole distribution rights in Malawi, however, this needs to be clarified. At the feed production level, CP holds an estimated 40% of the market, with Kelfoods being approximately the same size.¹²

Table 1: Suppliers of day-old chicks and market shares along the value chain, Malawi

Country	Operations	DoC market share	Feed	Broiler production
CP Feeds	<ul style="list-style-type: none"> Parent operations obtain parent DOC from Irvines (Cobb) 	~87%	~40%	~80%
Kelfoods	<ul style="list-style-type: none"> Parent Operations obtain parent DOC from RBZ (Ross) 	~11%	~40%	<4%
Conforzi / Glenae	<ul style="list-style-type: none"> Parent operations obtain parent DOC from RBZ (Ross)¹³ 	~1%		
Charles Stewart	<ul style="list-style-type: none"> Parent Operations obtain parent DOC from RBZ (Ross) 	~1%		
Thanzi	<ul style="list-style-type: none"> Parent Operations obtain parent DOC from RBZ (Ross) 	<1%		<1%

Source: Goga and Roberts (2022) and interviews with market participants

All other suppliers of day-old chicks supply the Ross 308 breed, from parent stock sourced from Zambia. The largest of these suppliers is Kelfoods, holding approximately 11% of DoC supply in Malawi.

CP is also dominant in broiler production, with a share of Malawian market of approximately 80%. We estimate from interviews that Kelfoods has a market share of less than 4%, while the shares of other integrated producers are indicated to be negligible. Thanzi entered the market within the last five years, while Charles Stewart is focused more on layers than broilers.¹⁴ Other small and medium producers, rearing broilers in urban and rural areas, account for an estimated 15% of the broiler production market, with DoCs sourced mainly from CP and Kelfoods.

¹¹ Tyson Foods, via Buchan Ltd, has ownership in Irvine's, and in Mauritius-registered Cobb Africa which holds the Cobb breed for East and Southern Africa (<https://www.just-food.com/news/tyson-and-ex-ceo-donnie-smith-invests-in-african-poultry-business/>)

¹² Interview with Malawian poultry producer, 23 March 2022.

¹³ Interview with Malawian poultry producer, 7 July 2022.

¹⁴ Interview with Malawian poultry producer, 23 March 2022.

Poultry feed production and links with vegetable oil production

There are important links between feed production and soybean crushing for vegetable oil production. This is due to soybeans being a key input into both products. In the case of Malawi, firms are integrated to differing degrees across crushing, feed and vegetable oil as well as into trading and storage, with both industries exhibiting high levels of concentration (Table 2).

Out of the five producers of poultry feed, CP is the only one fully integrated into soybean crushing activities through its sister company Sunseed Oil, with an annual soybean crushing capacity of 180,000 metric tonnes.¹⁵ The plant crushed around 70,000 metric tonnes per annum in 2021/22.¹⁶ Through Sunseed Agro, a trading company within the group, CP/Sunseed sources soybean, sunflower and maize from farmers across the country.¹⁷ It is estimated that the group buys approximately 40% of the soybean produced in Malawi each year.¹⁸ This is facilitated by storage facilities with a 40 000 metric tonne capacity, and by Globe Distributors, which operates a transportation fleet within the CP/Sunseed group.¹⁹ CP/Sunseed also exports oilcake/soymeal across the region to countries including Kenya, Tanzania and Zimbabwe.²⁰

Table 2: Main suppliers of soy oilcake and commercial animal feed, Malawi

Company	Animal feed production	Supply of oilcake	Production of vegetable oil	Soybean crushing capacity (tonnes per annum)
CP Feeds (including Sunseed Oil)	Yes	Yes	Yes	180 000
Mount Meru	No	Yes	Yes	320 000 (combined) ²¹
Capital Oil Refinery Industries (CORI)	No	Yes	Yes	
Export Trading Group (ETG)	No	Yes	Yes	
Sungold Food Processing	No	Yes	Yes	
Kelfoods/Proto Feeds	Yes	No	No	-
Conforzi	Yes	No	No	-
Amazon	Yes	No	No	-
Lenzie Milling	Yes	No	No	-

Source: compiled by authors from interviews in Malawi

Lenzie Milling is the only independent commercial poultry feed producer that is not integrated into poultry production although was formerly linked to Charles Stewart. Lenzie Milling currently has the capacity to produce 300 metric tonnes of poultry feed per month in Lilongwe and is targeting to increase this to 1400t per month through an additional mill in Blantyre.²²

Other producers of soybean oilcake than CP/Sunseed are Capital Oil Refinery Industries (CORI), the Export Trading Group (ETG), Mount Meru and Sungold Food Processing. CORI is

¹⁵ Interview with Malawian oil producer, 18 March 2022.

¹⁶ Interview with Malawian oil producer, 18 March 2022.

¹⁷ Interview with Malawian oil producer, 18 March 2022.

¹⁸ Interview with Malawian oil producer, 18 March 2022.

¹⁹ Interview with Malawian oil producer, 18 March 2022.

²⁰ Interview with Malawian oil producer, 18 March 2022.

²¹ We estimate a total of 500,000 tons of crushing capacity in Malawi. Mt Meru is around 100 thousand tonnes, while Sungold is somewhat smaller than the others.

²² Interview with Malawian feed producer, 24 March 2022.

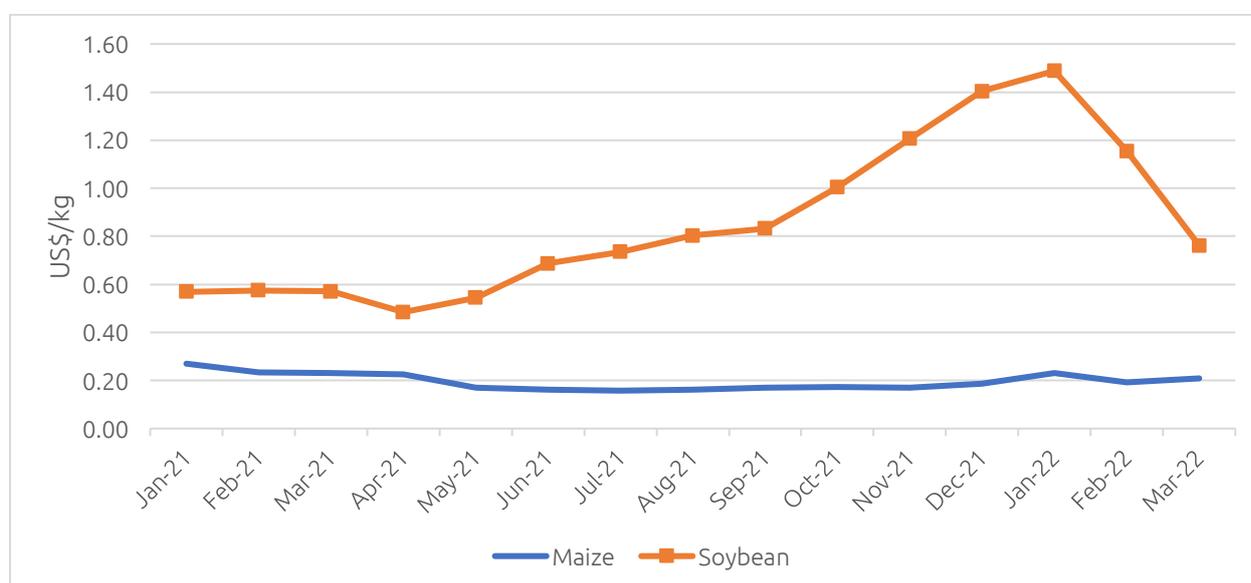
reported to be linked to CP/Sunseed, being owned by members of the same family. This would mean that there are four large competing crushers of soybeans to produce vegetable oils and supply oilcake for feed production. All entities export oilcake into the ESA region.²³

Interviews indicated that there were large price differences between oilcake being sold in the local market and oilcake sold on export markets in 2021 and early 2022, with local market prices reported to be substantially higher than export prices (see also section 3.1.3 below). While local prices in central Malawi reached just under \$1300/t in December 2021 (and even higher in January 2022, Figure 6), export prices at the time were reported to be around \$600/t. These large price differentials are not what would be expected in competitive markets and, in light of the concentrated nature of the markets, raises questions about the conduct of the main firms including the terms of sale to independent poultry producers for their key inputs.

3.1.2. Market outcomes

We start by considering the price of inputs for feed, that is, maize and soybean prices, as well as the price of day-old chicks. Feed prices appear to have changed together with steep increases in soybean prices, which trebled from \$0.48/kg at the harvest in April 2021 to \$1.49/kg in January 2022 (Figure 7). Meanwhile maize prices remained low for the year of 2021, and were in fact the lowest in the region, together with Zambia, averaging at around \$200/t or just \$0.20/kg.²⁴ Prices of day-old chicks were at \$0.65 per chick in the first half of 2021 and increased to \$0.88 in June 2021. In local currency, the prices increased from MWK495 to MWK700.

Figure 7: Prices of maize and soybean



Source: Compiled from interviews in Malawi

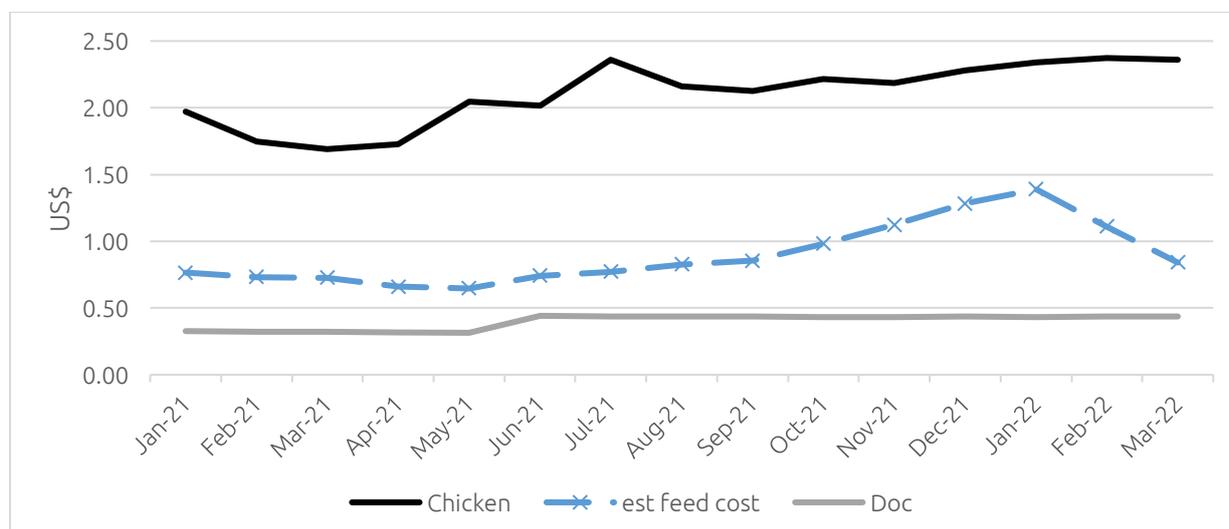
We plot these prices in terms of costs per kg of chicken meat, having calculated costs to produce a 2kg bird at a 1.9 feed conversion ratio. In terms of per kg of chicken meat, day-old chicks cost \$0.32 in the first half of 2021 and increased to \$0.44 in June 2021, while the

²³ Interview with Malawian oil producer, 18 March 2022.

²⁴ <https://www.competition.org.za/africanmarketobservatory-amo-price-tracker>

estimated feed costs increased from \$0.65 in May 2021 to \$1.39 in January 2022, per kg of chicken meat (Figure 8). This may understate the impact on independent poultry producers as feed sold by the main producers was at list prices around 15-20% above our estimated feed costs.

Figure 8: Prices of maize and soybean against feed and DoC costs, per kg of chicken meat, Malawi



Sources: Interviews with market participants

Notes: Calculations are made on a 2kg live bird using a feed conversion ratio of 1.9. Feed costs are based on the estimated quantities of maize, soybeans along with other components in feed and processing costs. The feed price actually charged by the main supplier was substantially higher than this.

Prices of chicken increased over 2021, but they did not increase by nearly as much as the price increases in feed and day-old chicks. In fact, the combination of feed and day-old chick costs mean that the costs to rear a 2kg bird increased from MWK2100 to MWK3000 for a batch of 500 birds.²⁵ Based on these costs, it was not viable by the end of 2021 for small poultry farmers to compete with the main producers in the poultry market (Gondwe et al., 2022).²⁶ Over 2021, from July onwards, small poultry producers were increasingly uncompetitive against large commercial producers.

The domestic pricing of soybeans above import prices, as if there was a scarcity, when Malawi was in fact a substantial net exporter in 2021, requires further interrogation. Malawi produced approximately 265 000 tonnes of soybeans in 2021 (Figure 3) and exported an estimated 100 000 tons of soybeans and oilcake in the same year (Figure 9). The bulk of these exports were made by the four large traders and crushers, which are also the same firms selling oilcake to independent feed producers.

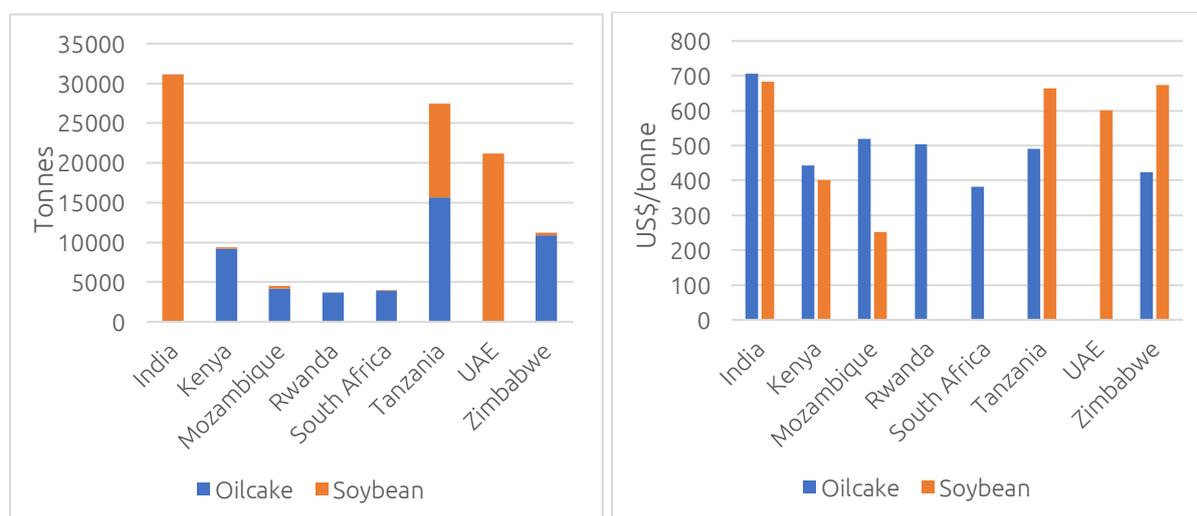
While local prices were around \$1300/t in December 2021, the average export prices were around \$500/t for the year of 2021. Export prices varied by destination and over time, however, the highest prices averaged by destination were \$700/t for oilcake and soybean exports to India (Figure 9). Given that only one of the traders and crushers of soybeans (and likely the largest crusher) is the largest poultry market player along the poultry value chain,

²⁵ Interview with Malawian market participant, 18 March 2022.

²⁶ Interview with Malawian market participant, 18 March 2022.

this evidence is indicative of CP controlling how much animal feed and chicken is produced in the market, and on what terms, through CP's position in DoCs and feed. The other major crushers do not supply animal feed themselves, however, the local pricing of soybean and oilcake reflects decisions by the major traders and processors to export at much lower prices than they were charging to local customers.

Figure 9: Soybean and oilcake exports by volume and average value, Malawi, 2021



Source: Ministry of Agriculture Malawi

Notes: very small volume export destinations have not been included

The main feed suppliers, CP and Kelfoods (Protofeeds) increased prices by 140% (in US dollar terms) from April 2021 to January 2022. As a result of increased oilcake prices, independent feed manufacturers also increased their feed prices. For example, Lenzie Milling, revised prices four times between January 2021 and March 2022, even with reformulation of feed mixes to use less oilcake.

3.1.3. Assessing market conduct

We consider the market outcomes in light of possible market conduct, taking into account a series of previous competition concerns relating to the same market participants.

Market consolidation

The concentration of suppliers in Malawi has resulted from a series of mergers and acquisitions. CP has acquired a number of businesses in related activities including: Dudu Estate broiler facility in Lilongwe; feed and storage facilities from Protofeeds; Crown Poultry in 2018; SS Poultry Agrotech in 2019; Dimakis Chickens Limited in 2021; and part of Charles Stewart's business assets also in 2021. Crown Poultry was a company in the feed and broiler market, while SS Poultry was a new entrant in the broiler breeding market (CFTC, 2020).

The acquisitions of Crown Poultry, SS Poultry, Charles Stewart and Dimakis Limited were approved by the Competition and Fair Trading Commission (CFTC) with conditions, while the Dudu Estate and Proto mergers were approved without conditions.²⁷ In 2022, CP attempted

²⁷ CFTC recognized the consolidation of market power that would arise out of the transactions but granted permission based on the failing firm defense mounted by the merging parties.

to acquire 10% shares in Kelfoods but the merger notification was withdrawn before the CFTC could conclude its investigations.

The series of mergers has contributed to the extremely high concentration levels in the poultry value chain at several levels in Malawi, with CP being the largest integrated poultry producer (CFTC, 2020). While increasing concentration levels have been a concern for the CFTC in these transactions, all the mergers have been cleared, with the failing firm defence being used in cases such as for SS Poultry Agrotech (CFTC, 2020). An important question is why SS Poultry was in the position of being found to be failing.

Kelfoods on another hand, is a product of the merger that took effect in 2014 involving four companies: Kamponji Estates Limited which comprises of layer farms; Alpha Milling Company Limited which specializes in animal feed production and supply; Ntuwanjati Poultry Company Limited which specializes in breeding broilers, layers, and hatching of fertile eggs; and Maxi Table Eggs Company which used to be a layer farm.

In the Malawian context, market consolidation and increasing concentration levels may raise competition concerns at several levels of the value chain. Key mergers removed potential rivals and effective competitors from the market leaving few alternative sources of inputs for small and medium-sized independent downstream producers and few alternative sources of chicken itself for consumers. As we see below, increased concentration levels at various levels of the value chain did in fact raise key competition concerns. It gives perspective to the observations in Roberts (2016) regarding the importance of disciplining the power of large firms to ensure more inclusive growth and development. However, herein lies the challenge that competition authorities in small, developing countries in the region continue to face – striving towards disciplining power while appreciating the need for an intricate balance between scale economies and dynamic rivalry.

Competition concerns

A number of concerns have been raised and lodged with the CFTC regarding the conduct in the poultry value chain of CP and Kelfoods.

In 2013, the CFTC initiated investigations against CP and Alpha Milling (now Kelfoods) following allegations of abuse of market power, unfair trading practices and product tying. The two entities were alleged to have sold day-old chicks to third party producers only if they also bought their feed. Producers that bought feed from entities other than CP and Alpha Milling could not buy CP or Alpha Milling day-old chicks.

It was found that those who were not regular buyers of Alpha Milling feed were refused supply of day-old chicks. Alpha Milling agents confirmed that they prioritised “regular customers” when day-old chicks are in short supply where these were customers that also bought feed manufactured by Alpha Milling.²⁸ The CFTC found that the conduct on the part of Alpha Milling was unjustified and distorted competition. There was, however, insufficient evidence against CP. The Board of Commissioners dismissed the case against CP and ordered Alpha Milling to immediately cease and desist from engaging in tying practices.

In 2014, the CFTC launched investigations into discriminatory pricing of poultry feed by CP between its own subsidiaries and third-party producers. It was alleged that the differential

²⁸ CFTC Case No. ABP/14/02 “The Foods Company Limited vs Alpha Milling Company Limited and Central Poultry (2000) Limited”, August, 2014.

pricing of feed gave an unfair advantage to CP's affiliated companies over third-party competitors in downstream markets for broiler, layer and table eggs production.²⁹ The same complaint was lodged against Alpha Milling, which was not investigated but later formed part of Kelfoods.

In its submissions, CP put forth two reasons for differential pricing. First, its affiliated companies (which included a broiler farm, a hatchery, a breeder farm and a parent stock farm) demanded bulk quantities of feed relative to smaller independent producers, which qualified them for discounts. Second, the price to its affiliated companies did not include transport, labour costs and finance costs which are ultimately incurred by CP on behalf of its subsidiaries and that CP claims these costs from its subsidiaries. The claim was that the sum of the price at which the subsidiary companies purchased the feed and the total hidden costs for this supply equalled the price at which CP sold feed to third-party producers.

The Board of Commissioners of the CFTC subsequently found that the pricing strategies implemented by CP did not amount to price discrimination. While CP provided lower feed prices to its subsidiaries, the board concluded that the prices to subsidiaries and third-party producers "were almost the same" when distribution costs were factored in.³⁰ It was concluded that the arrangement did not have a substantial effect on competition in the animal feed market, or any other related market.

It was found, however, that there was a very high threshold for feed customers to qualify for discounts. Customers had to purchase 85% of their daily production of feed, which had potentially exclusionary effects.³¹ The board moved to dismiss the case of discriminatory pricing and ordered CP to develop qualification criteria for the granting of discounts.

Following a 2020 study into the poultry sector which also highlighted competition concerns,³² the CFTC instituted investigations against CP, Charles Stewart and Glenae. The study had suggested that the integrated poultry producers engaged in conducts that aimed at eliminating competition from small poultry producers through deliberate restriction of supply of day-old chicks, which is one of the key inputs to poultry production, during the months prior to the festive season.³³ However, the CFTC also dismissed the allegations on the basis of insufficient evidence as the investigations had failed to show that the companies had withheld supply of day-old chicks to small-scale poultry farmers or made supply of day-old chicks conditional on purchase of poultry feed.³⁴

3.2. Zambia

Poultry meat is by far the most popular source of animal protein consumed in Zambia and is the cheapest kind of meat. The poultry industry is also one of the fastest growing industries in the country. The poultry industry constitutes about 4.8% of the agricultural Gross Domestic Product and 48% of the livestock sector³⁵. In terms of employment, the industry

²⁹ CFTC Case No: ABP/14/03 "MA/18/02 "Elvis Nserebo and Central Poultry (2000) Limited, November, 2017

³⁰ CFTC Case No: ABP/14/03 "MA/18/02 "Elvis Nserebo and Central Poultry (2000) Limited, November, 2017

³¹ CFTC Case No: ABP/14/03 "MA/18/02 "Elvis Nserebo and Central Poultry (2000) Limited, November, 2017

³² Commercial Agriculture for Smallholders and Agribusiness (2020) Poultry Sector Strategy - Malawi

³³ CFTC (2020) Market Study- Assessment of Competition and Consumer Protection Issues in the Malawi Poultry Industry

³⁴ CFTC Case No: ABP/21/18, Alleged Abuse of Market Dominance by Central Poultry

³⁵ Market Study – Poultry Investment, "Opportunities in the Zambian Poultry Sector and in the Katanga Region of the DR Congo", AgriProFocus Zambia, July, 2015.

provides direct and indirect employment to 80,000 people with 50,000 in permanent jobs and 30,000 seasonal employment.³⁶ The Zambian poultry sector has been growing since 2000 at annual rates of approximately 8% and 10% for broilers and layers respectively.³⁷ This growth has been attributed to a growing population and urbanisation, increased demand for chicken relative to other meat products, increased disposable income and advances in poultry breeding³⁸. This has driven the growth of and demand for poultry feed, soybean and maize.

3.3.2. Market structure

There are a few big players in the Zambian poultry industry that are integrated into broiler production. However, small and medium-scale producers account for 70% of broiler production through both independent production and by participating in outgrower arrangements with large companies.³⁹

Breeding and supply of day-old chicks

On face value, Zambia appears to have much less concentration than Malawi at the level of breeding and supply of day-old chicks, with six suppliers of day-old chicks (Table 3). However, only three firms access grandparent breeding stock and hold distribution licences – Hybrid (for the Cobb 500 breed) and RBZ (for the Ross 308 breed). RBZ is a wholly owned subsidiary of Country Bird Holdings (CBH), a regional poultry company with sole distribution rights to the Ross 308 breed in southern Africa outside South Africa under their license obtained from Aviagen. Hybrid holds the distribution licence for the Cobb 500 breed in Zambia, obtained from Cobb-Vantress. A third company, Tiger Chicks holds the distribution license for the Indian River breed (at parent stock level), also obtained from Aviagen. All other players in the poultry value chain source their parent stock or day-old chick from these three firms.

The other three breeding companies – Zambeef/Zamchick, Heartland/Zamharvest and Quantum – are dependent on parent stock sourced from the upstream breeders to produce DoCs (Goga and Roberts, 2023). Parent breeders, like grandparent breeders, are constrained by the cost of setting up facilities, as substantial volumes are needed to be cost competitive⁴⁰ but to a much lesser extent. We cannot calculate the DoC market shares of Cobb and of Aviagen breeds (Ross and Indian River) without knowing the breakdown of Zamhatch between Cobb and Ross, however, assuming a two-third to one-third split in Zamhatch DoC, then they would be roughly equal in size.

³⁶ Market Study – Poultry Investment, “Opportunities in the Zambian Poultry Sector and in the Katanga Region of the DR Congo”, AgriProFocus Zambia, July, 2015.

³⁷ Study on the Investment Opportunities in the Poultry Sector in Zambia. Investors Guide - Poultry in Zambia. AgriProFocus Zambia, website: www.agriprofocus.com/zambia. Retrieved 12/20/22

³⁸ Agric Focus Investor’s Guide Poultry in Zambia

³⁹ Interview with the Poultry Association of Zambia, 15 August 2022.

⁴⁰ Interview with Poultry Association of Zambia, 15 August 2022; Interview with Zambian feed producer, 16 August 2022.

Table 3: Breeding and supply of day-old chicks, Zambia

Company	Activities	Breed	Volumes	Feed production
License and distribution rights holders				
Hybrid Poultry	Has sole rights to distribute breeding stock for Cobb 500, has grandparent stock supplies parent stock, day-old chicks, live and dressed broilers, layers and village chicken	Cobb 500	550,000	
Ross Breeders Zambia (RBZ)	Has sole rights to distribute breeding stock for Country Bird Holdings in southern Africa. Grandparent stock, parent stock and the provision of day-old chicks, processed chicken	Ross 308	450,000	Nutrifeeds
Tiger Chicks	Rights holder, has grandparent stock, supplies parent stock, day-old chicks and production and distribution of a variety of fresh, frozen and value-added chicken products.	Indian River	200,000	Tiger Animal Feeds
Buyers of parent stock, supplying day-old chicks				
Zamhatch Limited	Hatchery and breeding of day-old chicks, processed chicken	Cobb 500 (from Hybrid) Ross 308 (from RBZ)	450,000	Novatek
Quantum Foods	Hatchery and breeding of day-old chicks, processed chicken	Ross 308 (from RBZ)	60,000	Nova Feeds
Zamharvest (Heartland)	Hatchery and breeding of day-old chicks, processed chicken	Ross 308 (from RBZ) Sasso	-	

Source: compiled by authors

Feed production

The companies producing DoCs are integrated into feed production, including Nutrifeeds which is owned by CBH, Tiger Animal Feeds (owned by Tiger Chicks) and Novatek (owned by Zambeef). Hybrid is reported to source feed from Zambeef / Novatek. There are other large firms in animal feed including National Milling Corporation (Namfeeds), Pembe Milling, Simba Milling, Olympic Milling and Emman Farming Enterprise (Table 4). Nearly 75% of the animal feed produced is for poultry, broilers in particular.

Aside from Emman Farm Enterprises, the other major soybean crushers do not supply animal feed but produce vegetable oil and sell the oilcake onto other feed producers including those integrated with poultry production.

Table 4: Soybean processors and animal feed producers, Zambia

Company	Animal feed production	Supply of oilcake	Production of vegetable oil
Soybean processors⁴¹			
Emman Farming Enterprise (EFE)	Yes	Yes	Yes
Zamanita (ETG)	No	Yes	Yes
Mt. Meru	No	Yes	Yes
Global Industries (Wilmar)	No	Yes	Yes
Large Feed Suppliers			
National Milling / Namfeed (Seaboard)	Yes	No	Yes
Tiger Animal feeds	Yes	No	No
Novatek Animal Feeds (Zambeef)	Yes	No	No
Simba Milling	Yes	No	No
Olympic Milling	Yes	No	No
Ross Breeders (Nutri feeds)	Yes	No	No
Pembe Milling	Yes	No	No
Smaller Feed Producers			
High Protein Foods	Yes	No	Yes
Consolidated Mining Reef (CMR)	Yes	No	Yes
Antelope Milling	Yes	No	No
Perfect Milling Limited	Yes	No	No
Acropolis Enterprises Limited	Yes	No	No
Chigayo Animal Feed	Yes	No	No
Yielding Feeds Limited	Yes	No	No

Source: compiled by authors'

Note: Alliance Ginneries invested in a substantial new soybean crushing facility in 2021. There are small soybean processors such COMACO community enterprises, Golden Lay egg producers which also makes its own feed, and Agri Options Ltd which is primarily a trader of fertilizer and grain, as is Quality Commodities.

Soybean is mainly grown by smallholder farmers, even though the crop is also now grown on a commercial scale by large-scale producers, as well as by cooperatives. Contract farming arrangements in soybean production are not very common in Zambia. Firms such as Zamanita (ETG), Mount Meru and Global Industries purchase soybeans from the farmers for the processing of edible oils as well as to trade. ETG buys more than half of all soybeans produced in Zambia.⁴²

The large firms producing animal feed in Zambia are mainly owned by meat producers with integration into the animal rearing operations. For example, approximately one third of Novatek's production is for internal consumption within the Zambeef Group, while the remaining two thirds is sold within Zambia. Most bulk sales of feed take place in Lusaka and Copperbelt Provinces in Zambia. Stock feed generally cannot be imported into Zambia unless a special dispensation is granted. This is due to the biosecurity risks and requirements relating to non-GMO crops.

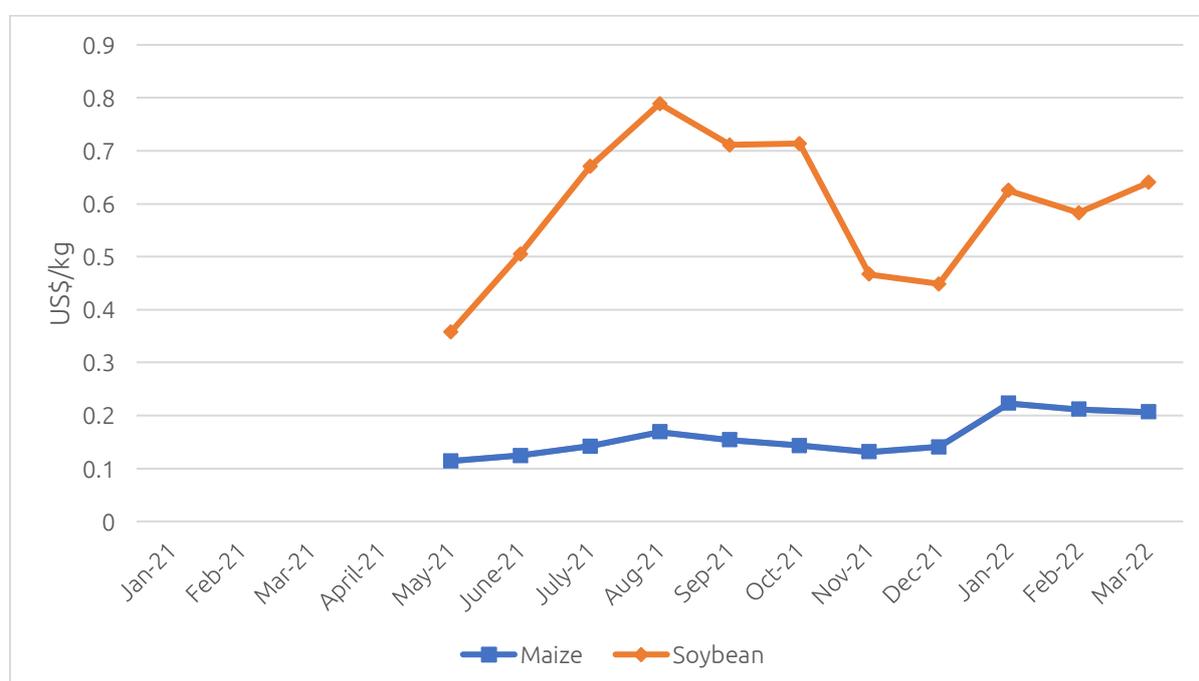
⁴¹ Mt Meru, EFE and Global Industries each have crushing capacity of around 100th tonnes per annum, while ETG's Zamanita plant is around 200th tonnes. See <https://www.foodbusinessafrica.com/country-focus-grains-and-milling-industry-in-zambia/>; https://www.tabj.co.za/agriculture/emman-farming_enterprises.html

⁴² Communication with ETG Director, 24 November 2022.

3.3.3. Market outcomes

In 2021 there were substantial increases in soybean and DoC prices while maize prices remained low (Figures 10 and 11). Prices of soybeans in Lusaka increased from \$350/t around harvest in May 2021 (prices in producing areas were reported to be even lower) to a high of US\$780/t just three months later in August 2021, even while there were substantial exports. Prices fell from September with the introduction of an export ban before increasing again towards the end of the year after a relaxation of the export ban in October. Feed prices increased in line with soybean prices, however, the large feed producers source soybeans at the harvest in April/May, have substantial storage facilities, and likely long-term supply arrangements with crushers and so would not face the higher spot prices.

Figure 10: Prices of maize and soybeans, Zambia



Source: Poultry association of Zambia and African Market Observatory data

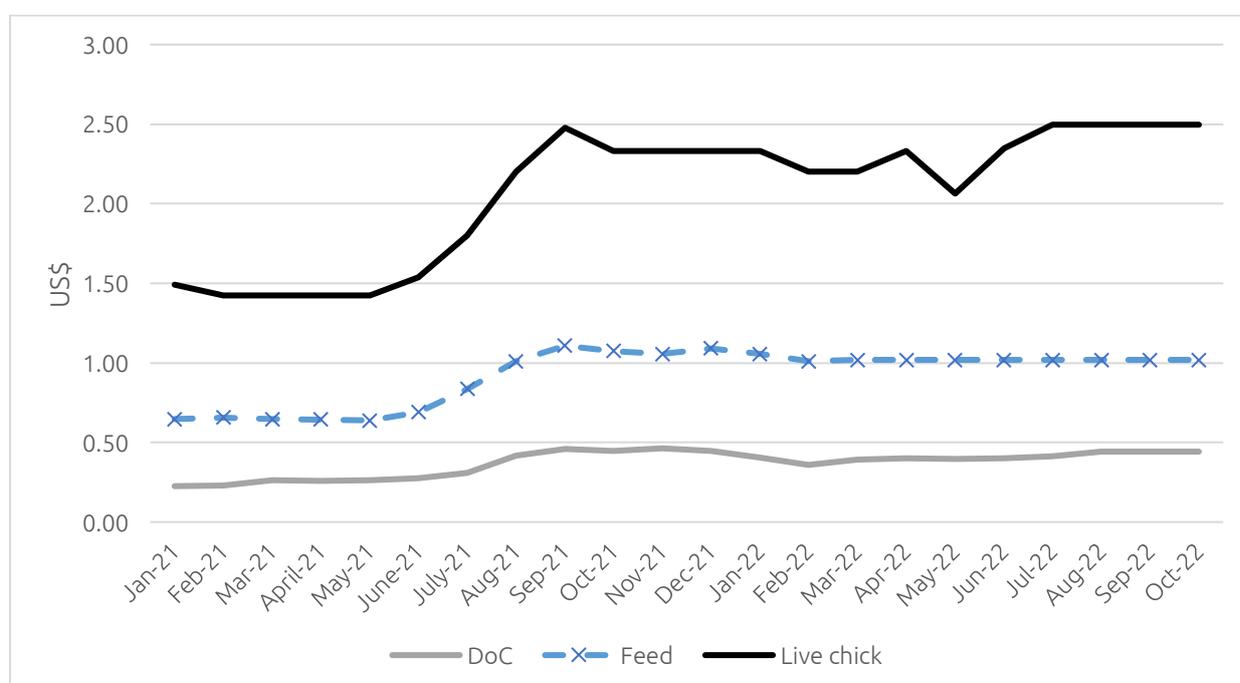
In the first half of 2021, prices for DoCs were relatively low, at \$0.46 per chick in February, before increasing substantially in mid-year to reach \$0.93 in September. There have previously been concerns in Zambia regarding DoC prices. Prices were around \$0.85 in 2012 and these reduced by 39% to around \$0.52 in 2015 after attention from the competition authority and increased competition at the breeding level as a result of major investments by breeding companies (Ncube et al., 2017). In 2018, the Competition and Consumer Protection Commission of Zambia (CCPC) again took action, charging four Zambian hatcheries for fixing trade conditions and setting production quotas for DoCs through cartel conduct, after having initiated investigations in 2013 (see section 3.3.4 below). The investigations revealed that hatcheries required poultry farmers to make orders for day-old

chicks four weeks in advance with no economic justification.⁴³ This resulted in the ability to control supply levels, and the price of day-old chicks.

It is unclear why the prices of day-old chicks increased so substantially in 2021 despite three firms with breeding licenses (Hybrid, Ross and Tiger) and another three procuring parent stock (Zamchick, Zamharvest/Heartland and Quantum).⁴⁴ Producers in Lusaka cited shortages in the supply of day-old chicks, with producers having to wait up to 6 months to receive their consignments over the last two years amid increasing prices.⁴⁵ While there have been constrained supplies by the major producers, the same producers are exporting breeding stock to other countries in the region (Goga and Roberts, 2023).

The impact of higher input prices has flowed through to the prices of chicken. Prices in Zambia per kg of chicken meat (for live chickens) increased by 57% from May to September 2021 (Figure 11). This is a higher price than in Malawi despite input costs being lower. Malawi’s highest price point over the studied period was \$2.36.

Figure 11: Feed and DoC costs, per kg of chicken meat in live sales, Zambia



Source: Poultry Association of Zambia and African Market Observatory data
 Notes: Calculations are made on a 2kg live bird using a feed conversion ratio of 1.9. Feed prices are for Finisher Feed from the main suppliers.

3.3.4. Assessing market conduct

Competition issues regarding coordination and concentration in the Zambian poultry sector have been observed from as far back as 2013. Mergers evaluated by the CCPC include the 2013 approval of a merger between Bokomo Zambia Limited and Mega Eggs Limited, and a second merger between Zamchick Limited and Rainbow Chickens Limited of South Africa. In

⁴³ <https://diggers.news/business/2018/03/28/ccpc-fines-hybrid-ross-quantum-and-tiger-chicks-for-bad-business-practices/>

⁴⁴ Interview with the Poultry Association of Zambia, 15 August 2022.

⁴⁵ Interview with Zambian poultry producer, 19 August 2022.

granting authorisation to the transactions based on there not being substantial lessening of competition, the CCPC placed conditions that the parties would continue to honour the agreements that Zamchick and Mega Eggs had entered with the local suppliers. Further, the parties were directed to ensure that no existing jobs would be lost by virtue of the transaction for at least one year, and to develop a full range of value-added products in conformity with their submission in the CCPC.

In 2021, CCPC approved a merger application involving Aviagen European Holdings Limited and Ross Breeders Zambia Limited.⁴⁶ While this did not change the industry structure within Zambia, the merger related to the configuration of Aviagen's holdings across the region. Aviagen is a global poultry breeding company supplying grandparent stock and parent stock to customers in more than 100 countries worldwide including the Arbor Acres, Indian River and Ross breeds. The nature of the merger transaction was such that Aviagen and Ross Breeders Zambia Limited had agreed to establish a joint venture (Ross Central Africa) for the purposes of promoting the breeding of grandparent stock in Zambia and increasing the availability of the supply of parent stock to various customers in Zambia. CCPC granted conditional authorization to the proposed transaction because preliminary investigations and assessments had revealed that the transaction was likely to raise competition concerns that could lead to substantial lessening of competition and abuse of dominant position of market power. One of the conditions was that Aviagen undertook not to restrict companies in Zambia from importing grandparent and parent stock of other breeds under the Aviagen group. Prices of day-old-chicks, however, increased in the second half of 2021, following the merger.

In terms of cartel conduct, as noted above there have been several investigations. In 2018 the CCPC found that Hybrid Poultry Farm Zambia Limited, Ross Breeders Zambia Limited, Quantum Foods Zambia Limited and Tiger Chicks were involved in collusive practices in breeding stock. The said hatcheries independently set a time requirement for pre-booking that was viable and auditable. Investigations revealed that there was no justification for the hatcheries to have a common policy as each hatchery had different production capacities, customer base, number of agents and employees and would therefore not all take the same time to sort out orders from poultry growers, neither did each hatchery need four weeks to supply day old chicks to farmers. In this regard, the four hatcheries were indirectly setting production quotas and thus violated section 9(1)(d) of the Act.

3.3. Kenya

Kenya has a substantial poultry industry owing to the large consumption in cities such as Nairobi. In the production of livestock in Kenya, chicken rearing for domestic and commercial purposes is the most important, closely followed by goats and cattle.⁴⁷ The majority of the commercial breeders are close to Nairobi. Poultry feed accounts for 41 percent of feed manufactured in Kenya (KNBS, 2019).

⁴⁶ In a newspost since deleted, Aviagen reported on 14 June 2021 that in early 2021 'Aviagen® South Africa successfully completed its first Grandparent (GP) export to our exclusive Ross® distributor in Zambia, Ross Breeders Zambia' <https://tmea.aviagen.com/news-room/press-releases/aviagen-south-africa-completes-successful-first-gp-export-to-zambia/>

⁴⁷ The poultry population has been on a steady increase indicating a growing demand from a population of 49,889,366 in 2018 to 59,020,492 in 2021. A large proportion of these are of the kienyeji local breed which is slower growing and less reliant on commercial feed. Counties with the leading population of commercial breeds are Kiambu, Muranga Nairobi, Nakuru, and Machakos.

There are some noteworthy factors that shape the Kenyan poultry value chain. These include that local production of poultry has to compete with cheaper imports given that Kenyan produced poultry products are relatively highly priced. In addition, imported inputs for the production of feed (such as maize and soybean) form a crucial part of the feed industry, both in terms of competition amongst feed producers but also in terms of the competitiveness of the value chain. We unpack these factors in terms of market structure, market outcomes, and competition issues with links to regional integration.

3.3.1. Market structure

Breeding and day-old chick supply

The level of breeding and supply of day-old chicks is highly concentrated with only two major suppliers of day-old chicks that each have links to regional and international breeding companies and animal feed production.

Kenchic is the largest supplier of day-old chicks holding 70% of the share of the market (Table 5). It supplies the Ross 308 breed as broiler day-old chicks, from parent breeding stock sourced since 2013 from RBZ in Zambia.⁴⁸ Kenchic is vertically integrated into feed (through a partnership with Unga as highlighted below) and to the production of broilers at the downstream level. Kenchic also has a network of contract farmers, where farmers are supplied day-old chicks and feed (through Unga), together with vet services. Once the farmer rears the broilers, Kenchic buys them back for slaughtering and dressing.

Isinya is the second largest supplier of day-old chicks at the commercial level, and supplies the Cobb 500 breed, which is likely to be sourced as parent stock from Irvine’s in Zimbabwe. Isinya supplies a reported 200,000 day-old chicks in a week (including for layers) and is vertically integrated into feed production.⁴⁹ Isinya also produces broilers at the commercial level.

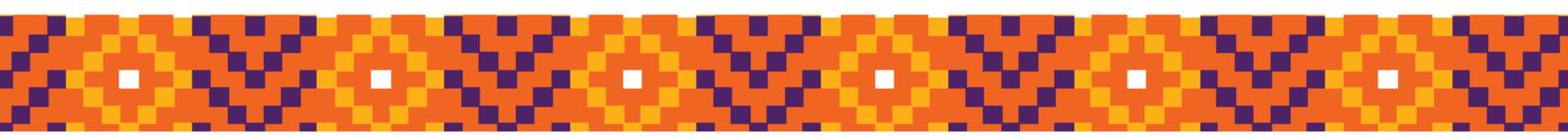
Table 5: Main breeders and day-old chick suppliers, Kenya

Kenchic	Isinya
<ul style="list-style-type: none"> • Estimated 70% market share of supply of day-old chicks, holding Ross 308 from GP level • Largest commercial broiler producer • APDL is the parent company, Seaboard also a shareholder • APDL has a joint venture with Aviagen in Aviagen East Africa • Kenchic has a long-standing partnership with Unga Feeds, with common shareholding 	<ul style="list-style-type: none"> • Likely to source Cobb 500 from Irvines (Zimbabwe) at PS level • Vertically integrated into feed and broiler production • Produces 200,000 day-old chicks a week (for both broilers and layers)

Source: compiled by authors

⁴⁸ According to an announcement made when Aviagen East Africa was established. Kenchic also supplies Hyline egg-layer day-old chicks and the Kenbro bird as a free-range bird that can be used for the farming of both meat and eggs. <https://www.kenchic.com/farm-centre>

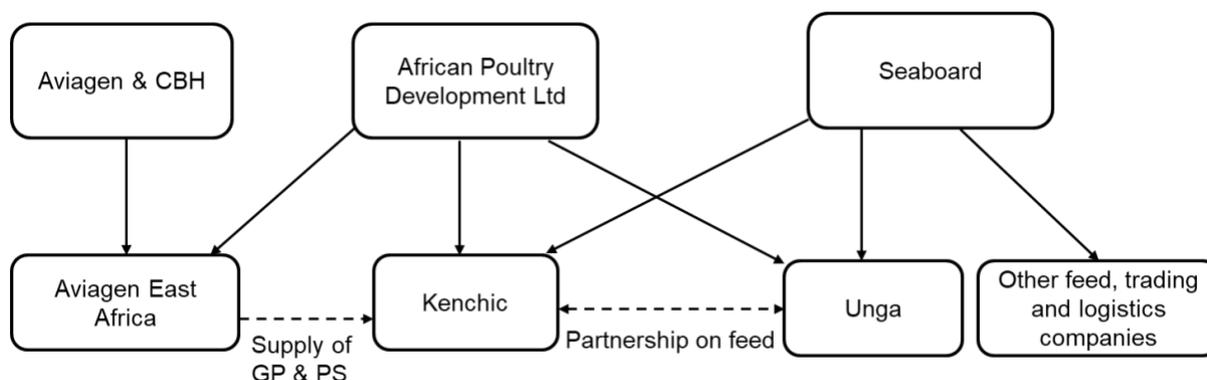
⁴⁹ It also supplies Lohman Brown layers. <https://isinyafeeds.co.ke/who-we-are/>



Kenchic has ownership links and alliances with firms at various levels of the value chain which are worth noting (Figure 12). The parent company of Kenchic is African Poultry Development Ltd (APDL) incorporated in Mauritius,⁵⁰ which is also a holding company for Interchick Ltd and Tanbreed Poultry Ltd in Tanzania, Kenchic Uganda Ltd in Uganda, and Hybrid Poultry Farms Ltd in Zambia (which is the Cobb breeder in Zambia).⁵¹ APDL is reported to represent the largest group of integrated poultry companies in Zambia, East and Central Africa.⁵²

APDL, through a joint venture with Aviagen, is the part owner (together with Country Bird Holdings, which owns RBZ) of Aviagen East Africa. Aviagen East Africa consists of grandparent farms and parent stock hatcheries of Aviagen breeds, which include Ross 308.⁵³ Kenchic’s links to Aviagen - through APDL and in agreements to source breeding stock from RBZ – are evidently important for DoC supply in Kenya given Kenchic being the dominant supplier of DoCs in Kenya. The relationships also mean that the upstream companies with strong associations (Aviagen, CBH, APDL and Seaboard) can track DoC supplies across borders in the region, including in Kenya.

Figure 12: APDL, Kenchic and Seaboard ownership links and alliances



Source: Compiled by authors

Kenchic’s links to Seaboard are also noteworthy. Seaboard has related ownership links into feed production in Unga and trading across Kenya, in Zambia (where it is an owner in National Milling and United Africa Grains), Uganda (where it is an owner in Unga Milling), South Africa and Mozambique. Seaboard partnered with South Africa’s largest soybean crusher through a merger in 2021. APDL is identified as an affiliated company by Seaboard.⁵⁴

⁵⁰ Incorporated in 2007, with parent company Seaboard Corp

https://opencorporates.com/companies/mu/C073845/statements/subsidiary_relationship_object

⁵¹ <https://tmea.aviagen.com/news-room/press-releases/aviagen-secures-local-supply-through-a-greenfield-investment-in-east-africa-with-the-establishment-of-aviagen-east-africa-limited/>; Cobb Europe has held workshops in March 2019 with RCL Foods in South Africa, and with Hybrid on behalf of APDL Group, the holding company of Hybrid, see <https://www.poultryproducer.com/cobb-europe-drives-innovation-in-southern-africa/> accessed 13 December 2022. The director of Hybrid (the Cobb breeder in Zambia) is quoted as saying “We always enjoy bringing the teams together across the ADPL Group,” said Richard Keeley. It is also noted in the article that ‘senior poultry leadership from customers across Africa will be invited to the Europe, Middle East and Africa technical school in Harderwijk, Netherlands, in July’.

⁵² <https://tmea.aviagen.com/news-room/press-releases/aviagen-secures-local-supply-through-a-greenfield-investment-in-east-africa-with-the-establishment-of-aviagen-east-africa-limited/>

⁵³ <https://tmea.aviagen.com/news-room/press-releases/aviagen-secures-local-supply-through-a-greenfield-investment-in-east-africa-with-the-establishment-of-aviagen-east-africa-limited/>

⁵⁴ <https://www.seaboardcorp.com/investors/seaboard-portfolio/>

Kenchic’s partnership with Unga, the largest feed producer in Kenya, means vertical integration along the value chain. Unga supplies Kenchic with feed for its breeding and hatchery business and supplies Kenchic’s contract poultry farmers who sell their chickens back to Kenchic for processing.⁵⁵ This then guarantees offtake for both Kenchic and Unga. Contract farmers are required to buy feed from Unga, while other independent farmers sourcing DoCs from Kenchic are not subject to restrictions on where they buy feed.

Feed

The feed industry in Kenya has many suppliers (more than 120), yet there is strikingly high levels of concentration. It is estimated that a single firm, Unga, holds two-thirds of the entire animal feed market and over 50% of the poultry feed market.⁵⁶

Interviews indicated that the industry can be described in terms of tiers of producers (Table 6).⁵⁷ In the first tier is the four largest producers, producing between 100,000 and 500,000 tonnes per year, with large-scale production and good quality feed.⁵⁸ Unga is the clear market leader, while the much smaller Pembe, Isinya and Sigma are similar in size in terms of poultry feed.⁵⁹ Tier two has approximately 30 companies producing between 5,000 and 100,000 tonnes per annum. Tier 2, although operating at a lower scale than tier one, has reportedly improved in terms of the quality of the feed produced which is able to compete with tier one producers.⁶⁰ Tier 3 has many producers (estimated around 100) which provide very little competition to the other tiers in terms of scale and quality.

Table 6: Poultry feed producers, Kenya

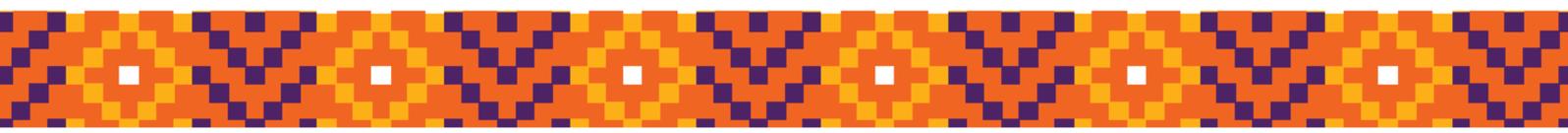
Producer Category	Capacity (tonnes per annum)	Identified players
Tier 1	100,000 – 500,000	Unga Ltd; Pembe Ltd; Isinya Feeds; Sigma Feeds
Tier 2	5,000 – 100,000	Approx 30 companies including Jubilee, Suguna, Empire, Belfast
Tier 3	<5,000	Approx 100 companies

Source: Compiled by authors drawing on interviews

Unga’s leadership is bolstered by the close links with Kenchic for the supply of feed. The other producers in tier 1 are also reported to have links to processing, trading and storage businesses across the region, such as Pembe Milling having a plant in Zambia and Sigma Feeds having close relations with CP/Sunseed Oil in Malawi.⁶¹

Over the year to October 2022, feed manufacturing in Kenya is reported to have contracted by around 20% in volume terms, with an estimated 30 feed producers (mainly in Tier 3)

⁵⁵ Interview with Kenyan feed producer, 26 October 2022.
⁵⁶ Interview with AKEFEMA, feed producers and with CAK, 25-27 October 2022.
⁵⁷ Interview with poultry feed producer, 27 October 2022.
⁵⁸ Interview with poultry feed producer, 27 October 2022.
⁵⁹ Interview with AKEFEMA, feed producers and with CAK, 25-27 October 2022.
⁶⁰ Interview with poultry feed producer, 27 October 2022.
⁶¹ Interview with poultry feed producers, 25 – 27 October 2022.



going out of business.⁶² The contraction has been attributed mainly to the rising and fluctuating costs of importing inputs amid the drought that Kenya experienced in 2021 and 2022.⁶³ Despite this, producers in tier one have not experienced significant contractions in terms of production volumes and interviews have suggested that their margins have been maintained, as prices have been adjusted upwards when input prices rose.⁶⁴ In these price adjustments, Unga has been seen to be the price leader, where all other major players follow their price movements.⁶⁵

The sourcing of inputs is key for competitiveness in the production of feed. Given low levels of production, Kenya heavily relies on the imports of maize, soymeal and sunflower (as well as minerals and vitamins) for the production of feed.⁶⁶ Key sources of imports are Zambia, Uganda and Malawi (to a lesser extent) in terms of maize and soymeal, and Tanzania in terms of sunflower. Prices of the commodities in these markets, along with the related costs to transport them to Nairobi, play a critical role in the ability of Kenyan feed producers to compete. Furthermore, there are no soybean processors in Kenya, given the low level of production of soybeans, and feed producers therefore source soymeal from processors in the above countries. The way processing industries are structured in these countries has consequences for the sourcing of inputs in Kenya.⁶⁷

Soybean processing industries are concentrated in Malawi, Zambia and Uganda, ranging between two to four major producers in each country (with common major companies across countries). Mount Meru, ETG and Global Industries are global and regional commodity traders that are integrated into soybean crushing for vegetable oil production and also into storage and logistics which ensures they have stocks throughout the year (Table 7).

Our interviews in Kenya indicated that transport costs are around \$200/t from Lusaka to Nairobi.⁶⁸ However, large integrated processors and traders with fleets of trucks are likely not to bear these transport costs, but rather incur more efficient rates. For example, ETG, Mount Meru and Uganda's Mukwano have extensive fleets of trucks. Nsomba, Jangale and Vilakazi (2019) and Competition Authority of Kenya (2019) found trucking rates of \$0.04/ton/km to be in line with an expected efficient transport rate along the main corridors in east and southern Africa, taking into account crossing multiple borders (Nsomba et al., 2022). This translates into an efficient transport rate between Lusaka and Nairobi of around \$80/t, adjusted to take into account increases in fuel costs we estimate it to be approximately \$120/t.⁶⁹

⁶² Interview with CAK, 27 October 2022. There has also been a sizeable new entrant.

⁶³ Interview with poultry feed producers, 25 – 27 October 2022.

⁶⁴ Interview with poultry feed producers, 25 – 27 October 2022.

⁶⁵ Interview with poultry feed producers, 25 – 27 October 2022.

⁶⁶ Interview with poultry feed producer, 25 October 2022.

⁶⁷ Interview with poultry feed producers, 25 – 27 October 2022.

⁶⁸ Interview with poultry feed producers, 25 – 27 October 2022.

⁶⁹ These compare with road freight transport costs over the same distance within Brazil (and so without any border crossings) of around \$60/t before fuel price increases in 2022, and \$90/t after the 2022 fuel increases.

Table 7: Soybean processors exporting into Kenya

Malawi	Zambia	Uganda
<ul style="list-style-type: none"> • Sunseed Oil/CP • ETG • Mount Meru 	<ul style="list-style-type: none"> • Mount Meru • Parrogate/ETG • Global Industries/Wilmar 	<ul style="list-style-type: none"> • Mukwano • Mount Meru • Bidco Uganda (JV with Wilmar)

Source: Compiled by authors drawing on interviews;

Note: Alliance Ginneries is a new entrant into Zambia and is also going to export; Uganda's Mukwano also produces a vegetable oil branded Sunseed as does Malawi's Sunseed Oil.

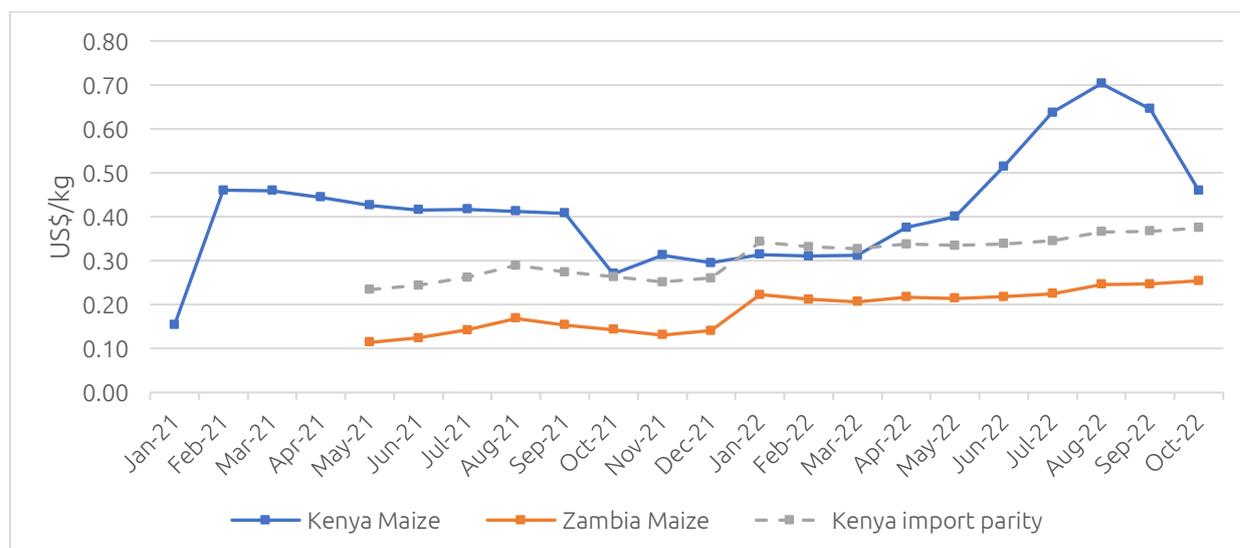
This would mean that against the prices of efficiently imported inputs into Nairobi, there are potentially very high margins being made by traders and/or processors, at the regional level. This has important consequences for competition in the trading of inputs at a regional level and at the feed production level of the Kenyan poultry value chain. Taken together, there are noteworthy implications for the competitiveness of the Kenyan value chain, discussed further below.

3.3.2. Market outcomes

We begin by comparing the prices of inputs (maize and soybean) within Kenya relative to Zambia as one of the main sources of these imports (Figures 13 and 14). Based on an efficient transport rate of \$120/t, we estimate the import parity price in Kenya. This allows for the establishment of approximate excess margins at specific points in time as well as average estimated mark-ups on imports between January 2021 and October 2022. These can be attributed to large, regionally connected processors and traders with access to efficient rates.

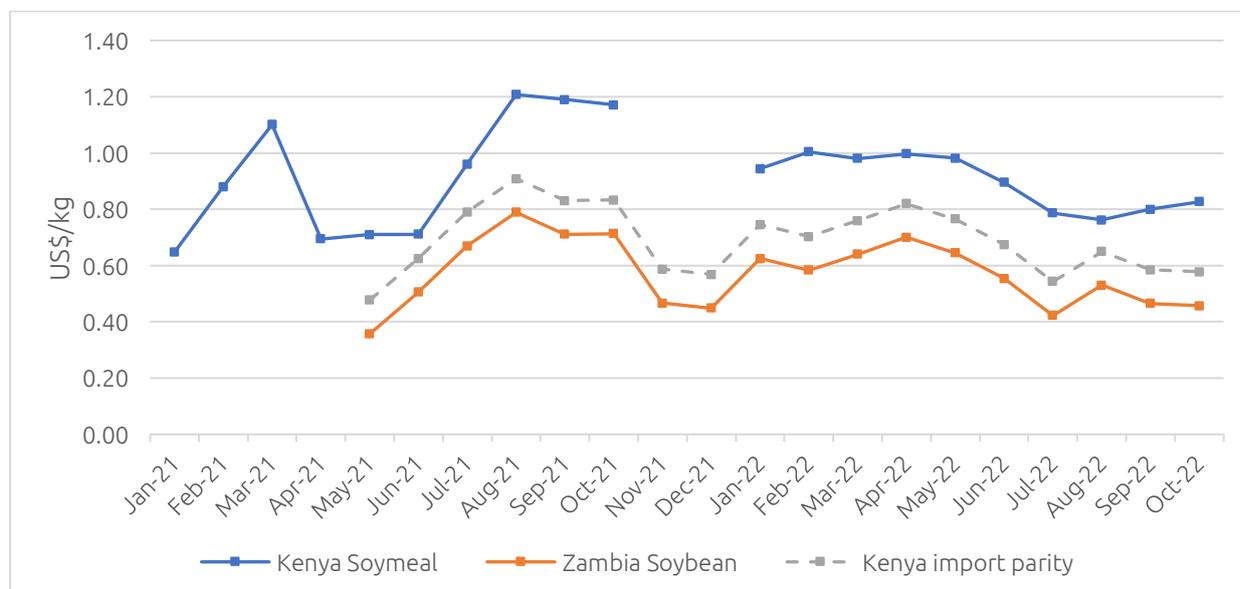
In the case of maize, we see trends based on the fact that Kenya has maize production (including in areas relatively unaffected by the drought) with the harvest in Kenya beginning from around early September through to early October. Prices in Kenya have been typically at import parity (the market clearing price for a net importer) in the harvest months and for around five months thereafter in 2021/22. As local supplies, presumably being bought by smaller local traders, compete with imports in these months it appears that there have been no unusual excess margins or mark-ups being made.

However, when Kenya is reliant on imports shipped by the large trading companies (as stocks of locally produced maize have run out), we see prices that are well above import parity. With the efficient transport rate, we see excess margins at an average of \$0.12/kg or \$120/t, giving an average mark-up of approximately 37%.

Figure 13: Kenya maize prices against Zambia

Source: African Market Observatory data and interviews

In the case of soymeal where there are effectively no local suppliers in Kenya, we do not see convergence of inland Kenyan prices with import parity prices, with more consistent mark-ups being earned throughout the period observed (Figure 14). We calculate excess margins averaging approximately \$300/t, or more than 30%, over import parity at efficient transport rates of \$120/t. Even taking the reported high transport costs of \$200/t there are excess margins of \$220/t.

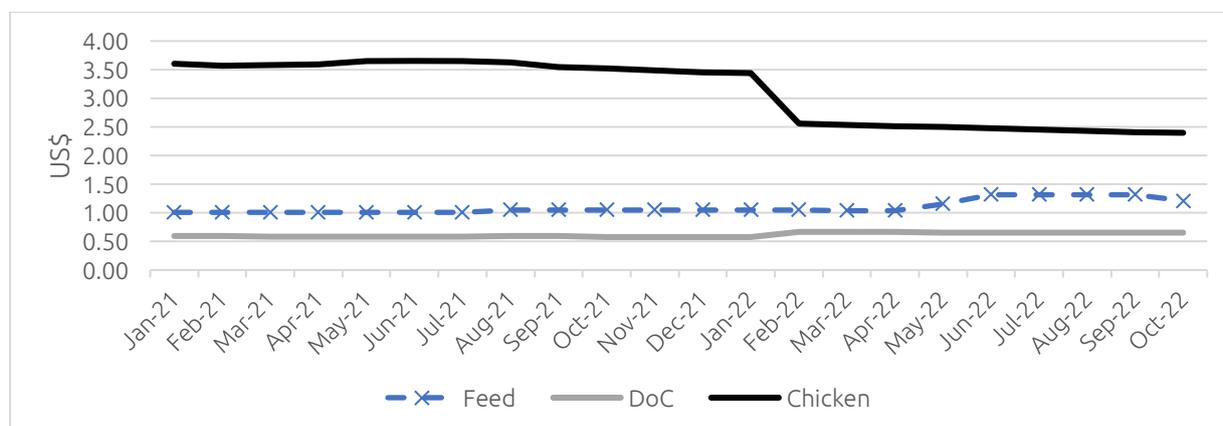
Figure 14: Kenya soymeal prices against Zambia

Source: African Market Observatory data and interviews

Note: Interviews indicated that soymeal prices are similar to or lower than soybean prices (as the oil extracted is typically more valuable than the meal)

Given that prices of feed inputs are relatively higher compared to producing countries in the region, we examine the effect of imported input prices on the prices of poultry feed. It is striking that while prices of inputs have been high and volatile, the volatility is not reflected in the price of feed. Indeed, feed prices were stable through 2021 to April 2022, when the price increased from \$0.55/kg to reach \$0.69/kg in June 2022 (Figure 15).

Figure 15: Feed and DoC costs, per kg of chicken meat, Kenya



Source: African Market Observatory data and interviews

Notes: Calculations are made on a 1.8kg live bird using a feed conversion ratio of 1.9

We probed this further through interviews, with respondents highlighting some very important factors relating to competition in feed supply. First, high delivered import prices of inputs have rendered smaller feed manufacturers uncompetitive. By comparison, large feed producers have managed to maintain and protect their margins. This may be because of scale economies which are linked to low-cost production of high-quality feed, together with the ability to source inputs at efficient prices (through regional ownership links and alliances), enabling large producers to maintain their margins. It is not clear the extent to which large feed producers have been subject to the high prices above reasonable transport costs for imports indicated in Figures 13 and 14.

Second, the high feed and DoC prices have negatively impacted the poultry industry which contracted by around 20% in 2021, with feed and poultry producers going out of business. A reported 30 feed producers falling within tier 3 of the feed industry that were registered with the Association of Kenyan Feed Manufacturers (AKEFEMA) closed down during 2021.⁷⁰

Third, when the lead feed producer Unga increases prices, other feed producers in tier 1 and tier 2 follow, even while there is an overall contraction in demand.⁷¹

3.3.3. Assessing market conduct

The market outcomes point to a number of concerns around conduct. The extremely high levels of concentration are partly due to mergers in activities related to feed manufacture. However, it is important to reinforce the point that Kenya relies on competitive supplies across borders and, as such, concentration in supplies to Kenya poultry value chains also depends on mergers in other countries. In addition, the close knit relationships between international and local firms along the value chain and across borders have resulted from

⁷⁰ Interview with Kenyan feed producer, 27 October 2022.

⁷¹ Interview with Kenyan feed producer, 27 October 2022.

international mergers (including to form joint ventures) which need to be assessed taking into account all the markets which are impacted.

The Kenyan mergers are thus just a small part of the picture of merger activity which impacts on Kenya. Mergers in Kenya in activities related to the main companies and products have included:

- Unga Holdings Ltd & Ennsvalley Bakery Ltd – acquisition of 52% majority shareholding in the bakery industry. The transaction was approved unconditionally on 13th March 2015.
- Max Grains limited acquired the maize milling business of Kenblest limited. The transaction was approved unconditionally on 9th December 2020.
- Kenblest processors Limited & McNeel millers limited. The proposed acquisition of control of the wheat milling business of McNeel millers limited by Kenblest processors limited. The transaction was approved unconditionally on 9th December 2020
- Bidco Land O’ Lakes limited & Aaryan investments limited. Bidco Land O’ Lakes (BLOL) is a joint venture formed in 2016 between Kenyan-owned Bidco Africa and American-owned Land O’ Lakes. The proposed acquisition was of 50% of the issued shares in BLOL by Aaryan Investments limited. The transaction was approved unconditionally on 7th April 2022.

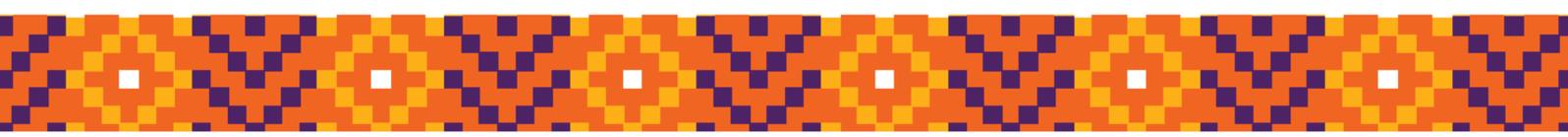
In terms of markets and arrangements in animal feed, in 2019 the Competition Authority of Kenya initiated investigations into the conduct and practices of the undertakings engaged in the manufacturing and distribution of animal feeds in Kenya. The investigation was initiated on Authority’s own motion under the provisions of section 31 (1) of the Act. The relevant sections of the Act were sections 21(3) (a) (b) (e) and (f). In these sections, the act prohibits any agreements, decisions, or concerted practices that: directly or indirectly fix purchase or selling prices or any other trading conditions; divide markets by allocating customers, suppliers, areas, or specific types of goods or services; limits or controls production, market outlets or access, technical development or investment; applies dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage.

The investigation findings established that the agreements between Unga Feeds and its distributors provided for a resale price maintenance condition, obligating the distributors in the appointed territories to sell the products at the recommended price. Unga Feeds subsequently amended the anti-competitive clauses of the agreements as directed by the Authority. Our assessment here points to the importance of considering the network of arrangements and market outcomes in Kenya along the value chain, as well as in a regional context.

4. Comparative analysis of Malawi, Kenya and Zambia

4.1. Overview

Comparative analysis across the three countries highlight some key similarities, differences and noteworthy cross-cutting issues in the context of competition and regional integration.



We compare market structure and outcomes across the three countries, with a summary in Table 8, and identify key questions.

Table 8: Summary market structure and outcomes

	Malawi	Zambia	Kenya
Breeding	<ul style="list-style-type: none"> One dominant supplier (CP) with GP to parent, supplying Cobb 500 DoCs, 87% share All other players supply Ross 308, import fertilized eggs from Zambia at PS level Price increases in breeding stock, high prices reflective of market power held by single supplier (unilateral) 	<ul style="list-style-type: none"> Cobb 500, Ross 308 and Indian River main breeds Concentrated: 3 licensed producers at GP level, additional 3 suppliers at PS level High prices reflective of market power held by few suppliers, coordinated conduct uncovered before 	<ul style="list-style-type: none"> One dominant supplier (Kenchic) supplies Ross 308, from RBZ in Zambia GP, 70% DoC share Isinya, supplies Cobb 500
Feed	<ul style="list-style-type: none"> Sufficient maize and soybean grown locally; net exports Prices of soybeans and feed increased to levels in importing countries, undermining competitiveness Production concentrated, two producers with 80%; horizontal links to storage, trade and veg oil production 	<ul style="list-style-type: none"> Sufficient maize and soybean grown locally; net exports Prices of feed increased to levels in importing countries, notwithstanding low priced maize and soybean Production concentrated, few large suppliers with horizontal links to storage, trade and veg oil production 	<ul style="list-style-type: none"> Bulk of inputs imported, regional soymeal processors crucial One dominant producer with 50% share, few other large (tier 1) producers and many smaller Tier 1 producers have price-setting power - have maintained margins over last year while industry contracted
Broiler production	<ul style="list-style-type: none"> Combination of commercial and rural farming Commercial farming uses breeds supplied by integrated producers Commercial and rural farmers compete in downstream retail One integrated producer (CP) commands 80% of the market High chicken prices, yet small and medium scale producers struggle to compete 	<ul style="list-style-type: none"> Mainly contract farming—production contracts between poultry producers and contract growers. This means broiler production is still concentrated and is linked to upstream breeding and DoC supply High chicken prices, increased input costs passed onto consumers 	<ul style="list-style-type: none"> Poultry prices higher than other countries studies Participation and this level unclear between urban and rural farming as well as integrated and independent producers

Source: Compiled by authors

Increased production of soybeans has not translated to competitive market prices of oilcake/soymeal and poultry feed across the board and has negatively impacted on the competitiveness of small and medium scale producers of feed and poultry given that oilcake/soymeal is a significant cost component in production.

There is a lack of transparency in soybean and oilcake prices at the wholesale level.⁷² The high levels of concentration, especially in the trading and crushing of soybeans mean that a few traders and producers are able to control the volumes and set the prices in multiple markets including animal feed, vegetable oil and exports. This illustrates the need for

⁷² See Nsomba et al. 2022.

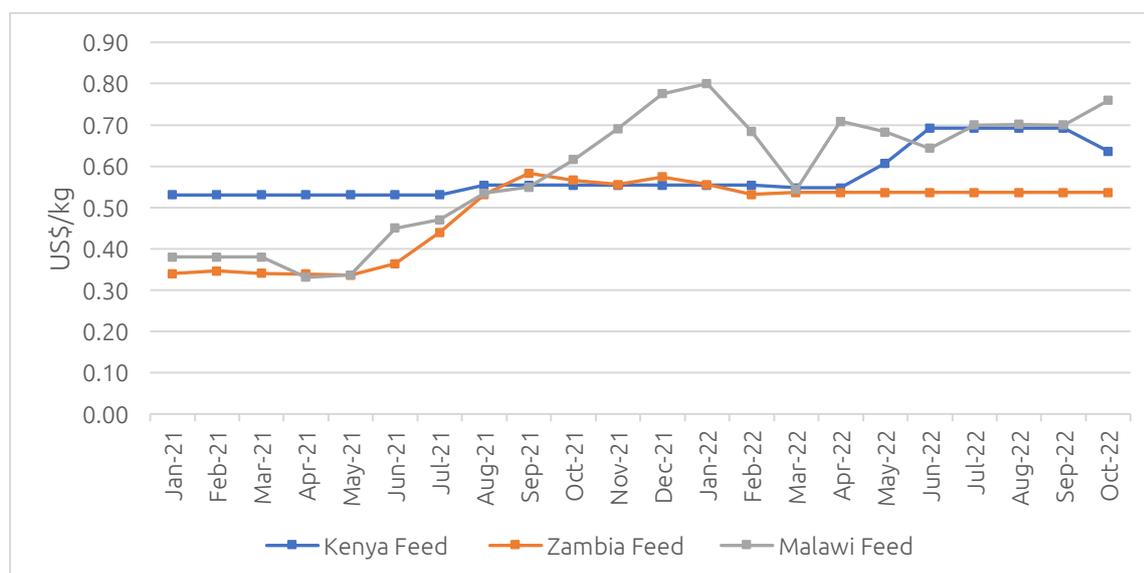
regional competition enforcement that tracks markets across borders, including through sharing information and coordination with national competition authorities.

4.2. Comparative prices and implications through the value chain

We compare the market outcomes in the studied countries at levels of feed production, day-old chicks supply and chicken prices to understand the competitiveness of the value chain at the country levels and in regional terms.

For feed (for which we use broiler finisher feed for comparisons), Kenyan prices remained relatively stable between January 2021 and April 2022 hovering between \$0.53 and \$0.55 in that period (Figure 16) despite significant fluctuations in the prices of maize and soybean. The prices therefore do not appear cost-reflective on a monthly basis. Kenyan feed prices were 30% higher than feed prices in Malawi and Zambia in the first half of 2021, prices were increased in Kenya by 25% from April to June 2022, apparently to maintain the margins of the main producers. Currency movements are not the reason for most price changes observed. The stability of prices in Kenya in US dollar terms was alongside the fairly steady depreciation of the Kenya shilling from mid-2021, suggesting prices were set in US\$ terms. The Malawi prices also did not reflect currency movements (the Malawi kwacha only depreciated substantially, by 25%, in May of 2022). In Zambia, the US\$ price change in June to September 2021 did result from appreciation in the currency as local prices stayed stable.

Figure 16: Comparative broiler finisher feed prices



Source: Prices of feed of the main feed suppliers in each country, from interviews with market participants

By comparison, feed prices in the net exporters, Zambia and Malawi, increased and surpassed Kenyan prices in August and November 2021 respectively. This occurred even although in Zambia maize and soybean prices remained consistently much lower than in Kenya over 2021 and 2022. In contrast, soybean prices in Malawi increased sharply from May 2021 to peak in January 2022. This is consistent with the feed prices also increasing in Malawi, but it is not consistent with the fact that Malawi remained a substantial net exporter of soybeans and oilcake.

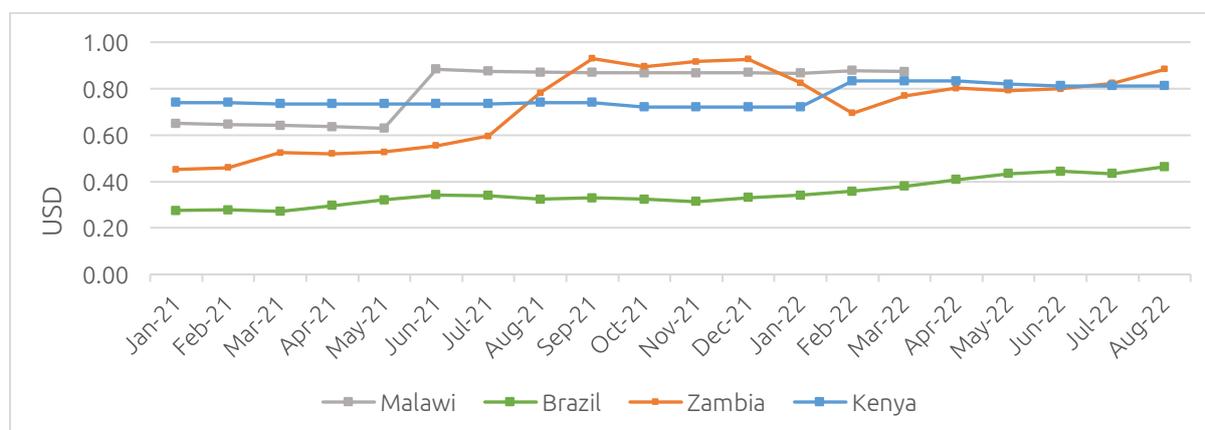
Prices across all three countries do not reflect what would be expected from cost-reflective competitive markets. In Zambia and Malawi price-setting appear to reflect market power and price-setting by the major feed producers integrated into crushing. In Kenya, the feed producers are subject to the prices from the main sources of soymeal, namely the small number of large crushing companies operating across the region. The Kenyan feed producers integrated with these businesses are in a favourable position, as reflected in the large excess margins in the soymeal pricing by businesses present across the region, including as traders in Kenya, to independent Kenyan buyers.

The arms-length market prices which independent small and medium firms are being charged are not the prices that vertically-integrated firms, and those with partnerships across the region, have paid. This is the case for feed producers with relationships with crushers as well as poultry producers with links with large feed producers. Understanding the ownership links and alliances are important to assess whether smaller producers are being squeezed through discriminatory pricing and other terms.

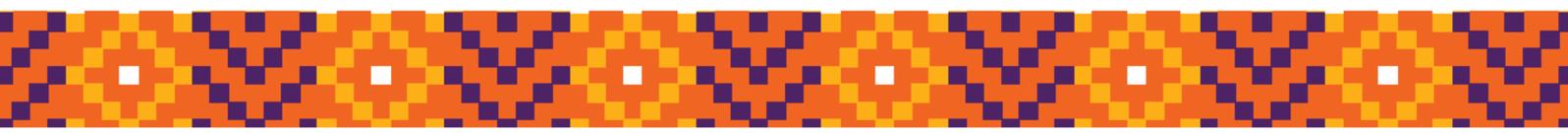
In terms of **day-old chicks** across the three countries a similar picture emerges. Zambia is a net exporter and apparently low-cost producer (given low-cost feed inputs). However, Zambian DoC prices increased substantially, to above those in Kenya, as did Malawi prices. We use prices in Brazil as an international comparative benchmark. Brazil is the largest poultry exporter in the world due to a competitive costs base including in terms of day-old chicks (Goga and Bosiu, 2019). Prices in Brazil in 2021 were around \$0.30, close to levels in the EU, and far below those that we see in the ESA region (Figure 17).⁷³

In the first half of 2021, Zambia had the lowest prices of the three African countries at between \$0.45 to \$0.52 per chick. This is also close to prices in South Africa over the whole of 2021 of around \$0.56. Zambian prices then doubled, to above \$0.90 in the last quarter of 2021, before falling back somewhat. Similar price increases have been seen in Malawi two months earlier. The higher breeding stock prices directly raise the costs of poultry producers and undermine their competitiveness both vis-à-vis imports as well as with vertically integrated poultry companies.

Figure 17: Comparative prices for day-old chicks



⁷³ By May 2022, prices in Brazil had increased to \$0.43, which compares with prices in the UK which had increased over the previous 12 months to \$0.50 by May 2022 (see <https://www.bbc.co.uk/news/business-61466479>)



Source: Poultry Association of Zambia, interviews in Kenya and Malawi, and Conab via Brazilian researchers

The increased prices have been attributed to constraints in the supply of chicks. However, Zambia is an export hub for breeding stock to the region, including to Kenya and so it is not clear why there should be supply limitations and what could justify the very sharp price increases to levels above Kenya. In Zambia, small-scale producers have been reporting shortages, particularly since late 2020 through to mid-2022, while exports of day-old chicks have been rising throughout the period.

There are high levels of concentration and substantial market power on the part of a very few DoC producers. These producers are also linked across the region through licencing arrangements for the breeding stock, as well as ownership through holding companies and joint ventures. This means buyers have few alternatives to which they can turn. There are essentially three companies across the region holding distribution rights of the Ross 308 and Cobb 500 breeds – CBH/RBZ, Irvine's and Hybrid – while Tiger Chicks holds the rights to the Indian River breed from Aviagen. These companies supply parent stock, and thus monitor the production capacity, of a very few other companies. The increase in prices together with increases in exports (as shown in Goga and Roberts, 2023) implies an exertion of market power by breeders in the Zambian market. The price increase in the Malawian market where just one firm is dominant in DoCs which it produces from breeding stock sourced from Irvine's (under the Cobb Africa licence) also appears to reflect price-setting power.

The concentrated nature of distribution rights of the commercial breeds raises competition concerns given that these firms have the ability to control who accesses breeds and at what price. The vertically integrated poultry producers are both the suppliers to, and the competitors of, independent producers. Given the essential nature of high performing breeding stock for commercial broiler production, the large producers are able to undermine or exclude independent producers if they exert collective or unilateral market power. Such concerns were part of the competition case brought by the CCPC in Zambia in 2018. The regional footprint of the main companies is an important dimension to take into account in evaluating arrangements and their effects.

Consumer effects

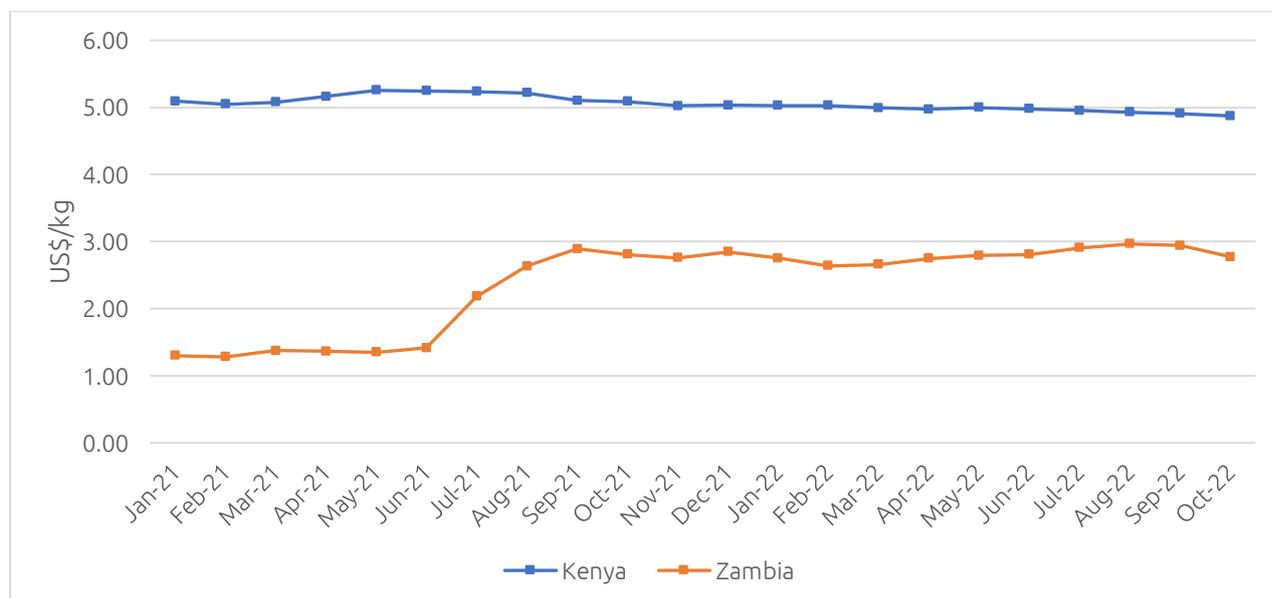
To consider the effects on consumers and to provide insights into margins of independent poultry producers we compare retail prices of chicken meat in Kenya and Zambia in frozen form, and also do a comparison between all three countries of the prices of live chickens (Figures 18 and 19).

The difference in pricing is striking. Kenyan retail prices for frozen chicken were three times those in Zambia, between January and June 2021, and two thirds higher after the Zambian increases from June to September 2021.⁷⁴ We consider these prices together with the prices of feed and day-old chicks. We note that while prices of feed and day-old chicks in Zambia increased from June 2021 to levels above Kenya, the frozen poultry prices increased but not close to the levels seen in Kenya. Instead, the prices are similar to those in South Africa which may reflect import competition. It suggests that the main suppliers of frozen poultry in Zambia have feed costs in line with their low input costs of maize and soybeans, and are

⁷⁴ As these are retail prices, the retailer margins are included as well, which is a factor to control for across countries. There are also questions about different pack sizes and different outlets. Frozen poultry sold in supermarkets is also a small part of consumer spending.

not paying the very high arms-length feed prices that were being charged to independent producers. That is, the high feed prices in Zambia have been squeezing the margins of independent poultry producers. In Kenya it appears as if producers are able to pass on the higher costs to consumers.

Figure 18: Comparative frozen chicken meat prices, excluding VAT, per kg



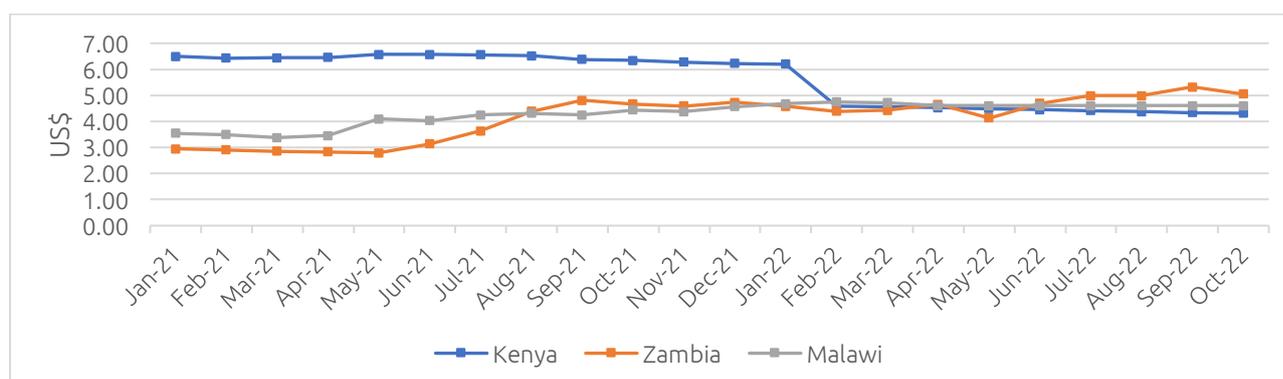
Source: Kenya National Bureau of Statistics and Poultry Association of Zambia

Note: VAT in both countries is 16%, poultry products are not VAT exempt

By comparison, the live chicken prices which had been much cheaper in the first half of 2021 in Malawi and Zambia than in Kenya, came remarkably into line in 2022 (Figure 19). Our assessment of margins suggests that, with the escalating soybean and feed prices in Malawi from late 2021 along with increased DoC prices, small independent producers had negative margins in the second half of 2021 (Gondwe et al. 2022).

Zambian live poultry prices increased by around 70% comparing September 2021 with prices in the first half of the year. For much of the following 12 months' Zambian prices were higher than in Malawi even while feed prices were substantially lower than Malawi and Kenya suggesting that higher input costs have been passed on to consumers of live chickens in Zambia with good margins.

Figure 19: Comparative live chicken prices, per chicken



Source: Interviews in Kenya and Malawi and Poultry Association of Zambia

Kenyan prices by comparison are consistent with a squeeze on independent producers of live chickens from February 2022, as reported in interviews with smaller producers going out of business and an overall contraction in the industry.

4.3. Ownership, alliances and trade

The regional extent of operations of the main firms in key inputs across countries is essential to understanding their market power, given the licencing arrangements and trade flows in key products along the value chain. There are major producers in oilcake and trading across the countries, in the form of ETG, Mt Meru and Global (Wilmar). There are cross-shareholdings and common ownership in the largest feed businesses through companies such as Seaboard (National Milling and Unga), Pembe, and others.

In poultry breeding stock the holdings of Tyson (Cobb-Vantress) through Buchan and Cobb Africa, and by Aviagen through APDL, Aviagen Central Africa, Aviagen East Africa, and Ross Central Africa, coupled with licencing and supply arrangements, mean there is a network of intertwined companies with relationships which undermine competition between them. APDL's shareholding in Hybrid in Zambia (an important Cobb breeder) and in Aviagen companies supplying Ross mean there are direct ownership relationships between competitors. APDL being an associated company with Seaboard and with its share-holdings in the dominant DoC and feed supplier in Kenya (Kenchic and Unga) reinforces the relationships. Further investigation is required to obtain information on all the shareholdings, arrangements and partnerships which exist in order to be able to analyse their implications.

5. Conclusions and recommendations

The potential for substantial expansions in soybean and maize production to ensure competitively priced animal feed and poultry production across the region is being stymied by markets which are not working at all well. The prices of maize in Zambia and Malawi have been substantially below international prices and the prices of soybeans in Zambia have also been in line with international prices or lower at harvest times. This is consistent with the huge potential for expanded agricultural production. However, at the same time, prices to poultry producers of feed, as well as day-old chicks, have been very high and the poultry industries within and across countries is not competitive or inclusive. We briefly summarise the market outcomes before pointing to the implications.

Market outcomes are highly problematic including:

- Prices in Kenya for maize and soymeal at extremely high levels undermining the competitiveness of feed and poultry producers.
- Feed prices in Zambia and Malawi, which increased to above levels in Kenya, have been undermining the competitiveness of poultry production in these countries.
- Prices for soybeans in Malawi trebled over 2021 from extreme lows paid to farmers of around \$400/t, to extreme highs at the end of the year of \$1300/t, even while exports continued at reasonable prices of \$600-700/t. This implies exporters were removing volumes from the local market to create an artificial scarcity.

- Day-old chick prices increased sharply in Zambia and Malawi, above levels in Kenya, and far above international competitive benchmarks. This places poultry producer at a substantial competitive disadvantage from the outset.

The uncompetitive pricing is consistent with the exertion of market power under conditions of extremely high levels of concentration at different levels:

- In large-scale commercial soybean crushing to produce oilcake and soymeal for animal feed, along with vegetable oil, there are very few regional producers, with apparently very high mark-ups being charged, for example, to buyers in Kenya even after taking into account transport costs.
- The main oil crushers and millers are integrated with large traders and are exchanging pricing information across the region on a daily basis through the East African Grains Council.
- Unilateral dominant firms in feed production and day-old chick supply in Kenya have pricing power to set prices to independent buyers to protect margins over high input costs; they may also be obtaining favourable prices for inputs from associated companies in the region, while the margins of independent firms are squeezed.
- In Malawi there is a tight oligopoly in soybean processing and feed supply, and a single dominant firm in breeding stock through to commercial poultry production. The escalation of soybean prices through the year after the harvest, even while exports at lower prices have not been made available to local buyers, indicates the exertion of market power to subject independent producers to a margin squeeze in the second half of 2021. There are preliminary indications of the same conduct into 2022.
- Zambia has oligopolistic market structures in soybean processing, feed supply and day-old chick supply. High feed and day-old chick prices are being charged, along with high poultry prices (even while prices of frozen poultry are relatively constrained by competition from imports). Independent producers are subject to the high feed and DoC prices, and constrained supply of DoCs, which undermine their ability to compete. Large integrated producers extract high margins from selling inputs as well as from poultry sales.

The concentration at the national level is reinforced by the regional reach of the major producers, and common ownership and associations between them. There are therefore substantial policy and competition concerns in each country requiring attention, within a regional picture. Farmers are impacted with relatively low prices for their produce, while smaller downstream producers and consumer of poultry products are charged high prices.

Competition cases have highlighted the potential for collusive conduct. The market structure and the market outcomes that we have described are consistent with important red flags in cartel screening and require proper investigation (see Harrington, 2007; Marshall and Marx, 2012; Roberts, 2020). Our assessment also suggests exclusionary and possibly discriminatory conduct, including through the exertion of unilateral market power.

The competition issues ought to be addressed as part of strategies to ensure the improved competitiveness in poultry production across east and southern Africa. In so doing, the benefits from agricultural production of the main components of feed will flow through to lower costs of poultry production. This requires a regional view of competition issues and increased regional integration in order to ensure that agricultural potential in countries such as Malawi and Zambia leads to improved competitiveness in poultry production across the region.

We also see that the development of the industry depends on the decisions and behaviour of large enterprises which are influenced by economic policies. Similar to the findings of Bagopi et al. (2016), we see that the development of the poultry value chain as well as pricing and costs across the studied countries highlight the challenges of ensuring both local investment and competitive outcomes. However, without support for local productive capacity there cannot be competing firms in the first place (Bagopi et al., 2016). Yet the concentrated nature of the poultry industry has undermined wider participation of small and medium enterprises, and the realisation of substantial economic gains to local economies.

Given these findings, we propose the need to reshape the poultry value chain, and agricultural markets more widely, through three closely related areas for action.

First, we need appropriate policies to support resilient and inclusive regional value chains. This means investing in the necessary infrastructure and support for farmers and agro-processors. There must be substantial expansions in irrigation, storage and logistics. It should be self-evident that investing in better use of water is essential yet much of African agriculture is rainfed and at the mercy of more frequent and severe weather shocks. Better transport logistics is a part of the picture. The price wedge between producing and consuming areas is partly due to the high costs of cross-border transport (although margins have been far in excess of this). Estimates of \$150-200/t from Zambia to Kenya compare with \$60-90/t for the similar distances of over 2000km in road transport in Brazil from growing areas to the main ports and coastal cities.⁷⁵

Government policies need to support smaller producers, including through cutting down the barriers they face (Vilakazi et al. 2020). A package of measures should include access to routes to market for these businesses, providing development finance and effective support for skills and technology adoption. These are part of green and inclusive industrial policies tailored to sectors and value chains, investing in shared infrastructure, advisory services and finance as part of a green industrial policy for food (Andreoni et al. 2021). Real economic transformation requires sustained support for the capabilities of African entrepreneurs and farmers.

Second, it is essential to monitor markets in real time as climate change implies more frequent and deeper shocks. Through collating prices within and across countries at different levels of value chains the AMO can assess where markets are not working well. It can identify where there are excess margins and obstacles which harm smaller producers and consumers, in particular. Through providing a robust knowledge base, the AMO is an

⁷⁵ The CAK (2019) also pointed to a number of issues undermining more efficient markets for transport services.

agent for change for healthy, inclusive and resilient markets, identifying the mix of policies, investments, regulatory reform and competition enforcement required.

Third, we need effective referees for markets. This is a role for competition authorities. Some African countries have built strong national competition institutions and the Competition Commission of COMESA (the Common Market of Eastern and Southern Africa) has established regional merger review and is extending its work to enforcement. However, our assessment points to the imperative to ramp-up the powers and capacities of these institutions to make regional markets work more effectively. It means national authorities tackling national arrangements alongside cross-border market division and price fixing cartels. Inquiries need to place the onus on dominant firms to justify conduct which undermines smaller businesses.

These three main areas are mutually reinforcing if we are to achieve healthy, growing regional food value chains based on investment in the future. Moreover, they are central to realising the vision of the African Continental Free Trade Area of sustainable and inclusive continental development with efficient regional trade.

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