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Identifying growth opportunities in the Southern African Development Community through regional value chains: The case of the animal feed to poultry value chain

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WIDER Working Paper 2017/4

Identifying growth opportunities in the Southern African Development Community through regional value chains

The case of the animal feed to poultry value chain

Phumzile Ncube,¹ Simon Roberts,² Tatenda Zengeni,³ and Paul C. Samboko⁴

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Abstract: This paper considers findings of studies analysing the development of a regional animal feed to poultry value chain in southern Africa (Botswana, South Africa, Zambia, Zimbabwe). The southern African regional poultry value chain is underdeveloped, although important changes include investments by South Africa-based multinational firms and strong growth in Zambia. Building on this growth requires coherent trade and industrial policies supporting investments across countries and practical measures to reduce barriers to intra-regional trade and transport costs. The potential to develop a regional poultry value chain is substantial, considering that the South African deep-sea trade deficit in poultry is larger in size than the Zambian industry.

Keywords: value chain, southern Africa, poultry, trade policies, industrial policies, case study
JEL classification: L66, O55, Q13, O25

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1 Introduction

Countries in sub-Saharan Africa have experienced relatively high levels of economic growth from the mid-2000s, along with rapid urbanization. This has led to the consequent increase in demand for processed food. Poultry has been in particularly high demand as this is the main source of animal protein in southern African countries, as in most developing countries (Steinfeld et al. 2006). The demand has underpinned very high growth in the commercial poultry industries in some countries in the region, led by Zambia and Mozambique, where there have been both high demand growth and favourable local conditions for the industry's growth. For example, in Zambia commercial poultry meat production grew at a compound annual average growth rate of 25 per cent from 2010 to 2014 (Samboko et al. 2016). The production of animal feed grew at a similar rate. In the largest industry in the region, South Africa, consumption grew at a compound annual growth rate of around 6.3 per cent per annum from 2004 to 2014 (Ncube et al. 2016a).

The poultry industry is a very important part of agro-processing, with strong backward linkages to the production of maize and soya for animal feed. Commercial poultry growth requires investment in breeding operations and in processing and the cold chain for distribution of the final product. Feed costs are critical to the competitiveness of poultry production as they account for around 60 per cent to 65 per cent of the production costs of a chicken (Zengeni 2014a; Bagopi et al. 2016).

Notwithstanding the growth in poultry production, the southern African region is a large net importer of poultry meat and of animal feed raw materials, with the trade deficit due largely to deep-sea imports by South Africa. The key inputs imported into the region include oilcakes required for the production of animal feed (even though there appears to be substantial potential for agricultural production of the main inputs, namely soybeans). South Africa's trade deficit in poultry was approximately 22 per cent of local consumption in 2015 (US\$274 million). Added to this is the deficit in oilcake used predominantly for poultry feed of US\$153 million and the deficit in soybeans (to be crushed locally) of US\$49 million. The total trade deficit related to the poultry industry in South Africa was thus around US\$476 million in 2015.

The growth in production in Zambia has led to it becoming a small net exporter, with sales to neighbouring countries replacing sales from South Africa and deep-sea imports. In spite of the potential for higher levels of production of the main component of animal feed in the region, it has not met the demand in South Africa.

Against this backdrop, the animal feed to poultry value chain was selected for one of four studies on regional development in southern Africa, with support from the United Nations University World Institute for Development Economics Research (UNU-WIDER). Three working papers have been produced, critically assessing developments in the animal feed to poultry value chain across four countries in the Southern African Development Community (SADC): Botswana, South Africa, Zambia, and Zimbabwe. The first paper outlined the development of the animal feed to poultry value chains in Botswana, South Africa, and Zimbabwe, drawing out key learning as it related to regional industrialization through agro-processing (Ncube et al. 2016a). The second paper built on the previous one by focusing on the growth of the regional poultry value chain as seen through the spread of South African companies in the region and Zambia's growth as a supplier of animal feed raw materials to the region (Ncube et al. 2017, forthcoming). The third paper focused specifically on the development of the animal feed to poultry value chain in Zambia (Samboko et al. 2016). This paper draws together the findings of the study, synthesizing the analysis in the three working papers, and draws out policy implications. The research was

conducted by the Centre for Competition, Regulation and Economic Development (CCRED) and the Indaba Agricultural Policy Research Institute (IAPRI).

The following three main conclusions come out of the study:

- There has been significant investment and local industrialization in the poultry value chain within countries in the region, led by Zambia.
- The poultry value chain has been characterized by the spread of large South Africa-based firms into other countries in the region.
- There is strong potential for a regional value chain in the poultry industry in southern Africa. However, this is hampered by a continued regional deficit in soybean as a key material input, and obstacles to intra-regional trade.

The stepwise changes in production in animal feed in Zambia hold out the prospect of reversing the trade deficit in animal feed components and poultry in southern Africa, which is largely due to deep-sea imports by South Africa. However, this will require regional co-operation at a practical level by countries.

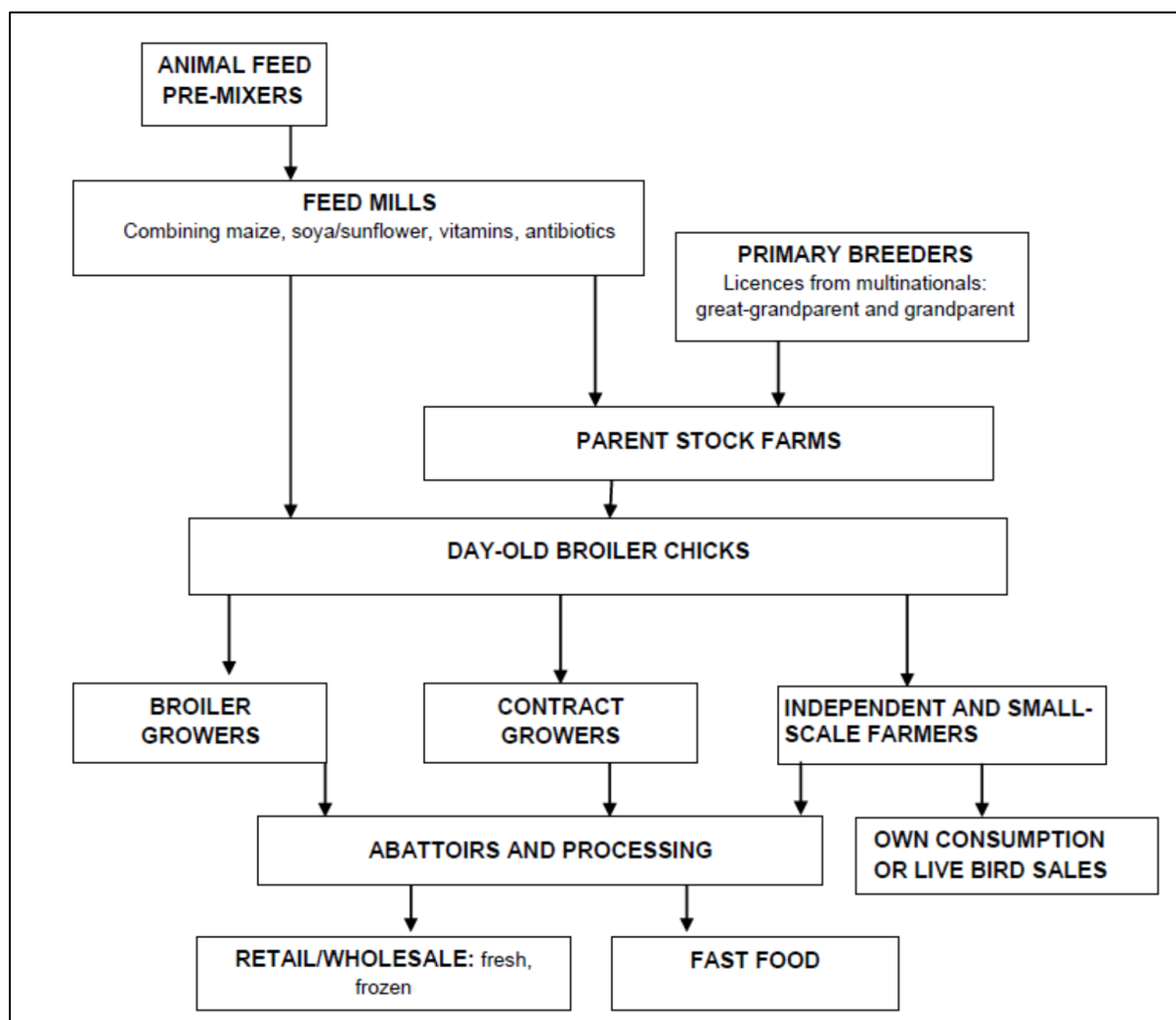
Section 2 of this working paper provides an overview of the regional poultry industry, highlighting the key players and their involvement at different levels of the value chain. Section 3 outlines issues of local and regional industrialization, following which Section 4 discusses the findings related to trade and regional integration. Also related to regional trade, Section 5 discusses the findings related to the prices of key raw materials in animal feed production. Section 6 discusses the policy dilemma between pursuing national versus regional interests and Section 7 concludes and draws together the key findings of the study.

2 Overview of the regional poultry industry

The animal feed to poultry value chain describes the range of activities and processes required to produce commercial chickens or broilers. This value chain and its various components are depicted below (Figure 1).¹ We begin by summarizing the key characteristics of the value chain, then map the value chain and describe each of the processes found in the chain.

¹ A more elaborate discussion of the value chain is found in Ncube et al. (2016a).

Figure 1: Poultry value chain



Source: Bagopi et al. (2014).

Large-scale commercial producers, mainly found in South Africa, are generally vertically integrated with key inputs such as animal feed, all the way to slaughtering operations (DAFF 2014). The poultry is packaged and sold in fresh or frozen form, in pieces or whole, predominantly through retailers.² Fast food outlets have, in recent years, become more important as a route to market, particularly for the sale of poultry meat products such as chicken nuggets and fried drumsticks (Fessehaie et al. 2015).

In countries other than South Africa, a large proportion of production is accounted for by small-scale producers. For example, in Zambia and Zimbabwe such producers account for approximately 60 to 70 per cent of broiler production. These smallholders typically sell into the so-called informal market, either directly or via traders to local smaller retailers, and via butcheries to consumers and into live markets (Technoserve 2011; Samboko et al. 2016; LMAC 2014). For example, in 2014 the large-scale producers in Zimbabwe supplied between 2600 and 3000 metric

² Interview with Rainbow Chicken, 15 July 2015; interview with Daybreak Farms, 30 June 2015.

tonnes of chicken per month to the formal market (that is, supermarkets) while the small-scale producers sold between 6000 and 6500 metric tonnes of chicken per month.³

Small-scale producers are not separate from the larger commercial producers in that they source their breeding stock from larger companies. Small producers are also increasingly being brought into the large commercial value chains through acting as out-growers for the main companies, including sourcing animal feed and supplying birds for slaughter in the commercial abattoirs. The growth of the industry has therefore hinged on investments by the large regional companies, even while small-scale producers remain very significant in countries outside South Africa.

South Africa has by far the largest poultry industry in the region. It has a well-developed and co-ordinated poultry industry represented by the South African Poultry Association. The industry produced 1.9 million tonnes⁴ of chicken in 2015. Total employment in the industry was about 126 000 in 2015.⁵ The poultry industries of other countries in the region are unsurprisingly relatively small compared to that of South Africa. The Zambian poultry industry almost tripled from 2010 to 2014, to produce 126 000 tonnes in 2014, and is expected to continue growing at annual rates of around 8 per cent (Samboko et al. 2016).⁶ Estimates for Zimbabwe place total production at 132 000 tonnes in 2014 (Ncube et al. 2016a). Botswana has the smallest poultry industry, which is reflective of the size of the population. The industry produced about 39 600 metric tonnes⁷ of chicken in 2014, employing about 2350 people.⁸

There are a small number of major regional companies operating across southern Africa. These firms are led by Rainbow Chicken (a subsidiary of Remgro-controlled RCL Foods) and Astral Foods, the two largest firms in South Africa, followed by CBH Holdings and Quantum Foods. Rainbow, Astral and CBH are all integrated in South Africa from breeding and feed production through to operating large-scale abattoirs. The animal feed companies associated with the main poultry producers in South Africa account for the bulk of the poultry feed production in South Africa. The five largest poultry producers in South Africa account for over 75 per cent of the animal feed produced by members of the Animal Feed Manufacturers' Association (AFMA) (Louw et al. 2013).

The growth of the industry in the region has involved the main vertically integrated companies in South Africa, which have international relationships with global transnational corporations such as for the licensing of breeding stock. In addition to the main South African producers, which

3 Interview with Livestock and Meat Advisory Council (LMAC), 19 August 2015.

4 The figure was calculated by averaging total number of live birds slaughtered from 2011 to 2015, assuming that each bird weighs 1.85 kg according to SAPA (2016).

5 Interview with South African Poultry Association (SAPA), 6 July 2015.

6 Note that this is likely to be an underestimate as it is based on relatively large commercial producers and day-old chick production, while informal producers are still significant. Another source estimates production in 2014 at 142 000 tonnes (AgriProFocus 2016).

7 This figure was calculated from the 24 million birds produced in 2014, assuming that each bird weighs 1.65 kg, according to Bagopi et al. (2014).

8 Interview with Botswana Competition Commission, 17 November 2015.

have established and grown operations in other countries in southern Africa, there are also local companies such as Irvine's Africa (in Zimbabwe) and Hybrid poultry (in Zambia) (Table 1).

Table 1: Activities of main producers in South Africa, Botswana, Zambia, and Zimbabwe

Company name	Revenue, 2015 (ZAR billions)	Activities and entities
RCL Foods/ZamBeef	9.1	Cobb 500 licence, SA Epol Feeds, SA Cobb Breed Zamchick JV between RCL Foods and Zambeef, including Novatek in Zambia (RCL exited Zambeef JV in Zambia at end of 2016)
Astral Foods	11.3	Ross licence, SA Meadow Feeds, SA Tiger Chicks; Lohmann breed licence, Zambia Tiger Animal Feeds, Zambia
CBH Holdings	3.6*	Arbor Acres licence, SA NUTRI Feeds, SA Ross Africa licence (outside SA) Supreme Poultry
Quantum Foods	3.5	Formerly of Pioneer Foods Nova Feeds
Irvine's Africa (subsidiary of Innscor Africa, Zimbabwe)	1.2**	Profeeds and National Foods, Profeeds (Zimbabwe)
Hybrid Poultry, Zambia		Cobb breed, co-owns a processing plant with Verino Agro-Industry limited
Tswana Pride, Botswana		Ross breed, Botswana Owned by Master Farmer which has a stake in NUTRI Feeds and Ross breeders

Notes: * The figure is for 2014; CBH was delisted from the Johannesburg Stock exchange in 2015. ** The figure was converted from the reported revenue of \$97 046 274 on 30 June 2015 using an exchange rate of \$1 = R12.2975.

Source: Company annual reports and interviews.

The main South Africa-based companies' operations are briefly described below, highlighting the investments and operations across regional economies, before considering the other major companies in Zimbabwe and Zambia.

Astral, which was the largest in 2014, has poultry operations in South Africa, Mozambique, Swaziland, and Zambia and feed mills in South Africa, Mozambique, and Zambia. In Zambia, Astral operates as Tiger Animal Feeds (since 1997) and Tiger Chicks (from around 2010). Through its breeder farm and hatchery division, Tiger Chicks, it has introduced a new broiler breed, Lohmann, into Zambia. In South Africa, Astral has the breeding rights for the Ross 308 breed. As such, it has the sole rights in South Africa to purchase grandparent breeding stock, and to breed and sell Ross 308 parent stock into the South African market.

Rainbow Chicken is the fully integrated poultry-producing subsidiary of RCL Foods; it specializes in the Cobb 500 breed. It manufactures its own feed through its feed division, Epol. The company also has business interests in Zambia and Botswana. In South Africa, Rainbow Chicken has the sole breeding rights to the Cobb breed. Similar to Astral, it is the only firm in the country which is permitted to breed and sell Cobb day-old chicks in the South African market. In Botswana, RCL, through its subsidiary Vector Logistics, acquired a 49 per cent shareholding in Senn Foods Logistics (Pty) (also from Botswana) on 1 May 2014. Senn is the largest cold chain distribution business in Botswana and is involved in the distribution of dry, frozen, and chilled foodstuffs.

Zamchick in Zambia is a joint venture between RCL and Zambeef since 2013, with RCL holding a 49 per cent shareholding. Zamchick manages and operates Zambeef's broiler business, including the broiler houses, chicken abattoir, and processing plant. It also operates Zamhatch, the breeding operation set up in 2013 which feeds into the broiler production division Zamchick. Zamchick produces Cobb day-old chicks. *Novatek Animal Feeds* is a segment of Zambeef with capacity of 20 000 tonnes per month of stock feed, being increased by a further 10 000 tonnes' capacity with the opening of a new feed mill in Mpongwe in the fourth quarter of 2016.

CBH is a holding company formed in 2005 incorporating integrated poultry and stock feed business operations in South Africa, operating as Supreme Poultry (Pty) Ltd and NUTRI Feeds, and poultry breeding operations in the region, operating as Ross Africa Limited. CBH currently operates in South Africa, Botswana, Zambia, Namibia, Zimbabwe, and Mozambique. The company's poultry breeding operations in Botswana and Zambia operate under the Ross subsidiaries and the animal feed production (NUTRI Feeds) operates under the Master Farmer subsidiary. CBH's Ross Breeders owns grandparent stocks of the Ross 308 breed and has the breeding and sale rights for the Ross 308 breed covering the entire African continent (apart from South Africa, where these rights are held by Astral). CBH has also introduced another Aviagen breed, Arbor Acres, into the regional market and holds the exclusive breeding rights for this breed. The introduction of this new breed followed a settlement with the South African competition regulators in 2007. This led to a decrease in the price of chicken in South Africa, and is indicative of the potential efficiencies which can be garnered from eliminating barriers to competition in the region. In Zimbabwe, CBH operates the KFC franchise.

Quantum is a South African company, a former subsidiary of Pioneer, and consists of three integrated business units, Tydstroom (broiler business), Nulaid (eggs and commercial laying hens), and Nova Feeds (animal feed). The company disposed of the abattoirs in South Africa, effectively exiting from the broiler meat production business, and is now in an agreement with Astral to supply 550 000 live birds per week to its Western Cape abattoir, and another agreement with Sovereign Foods to supply 250 000 live birds per week to its Gauteng abattoir. Quantum also has broiler and layer breeding operations in Zambia and Uganda and acquired a commercial egg business in Zambia in 2013.

Daybreak was formerly known as Afagri Poultry. Daybreak Farms processes and distributes more than a million chickens per week. It operates its own feed mill that supplies feed to its farms. It does not own breeding rights but sources Ross parent stock from Astral which it uses in its hatchery to produce day-old chicks.

Irvine's in Zimbabwe is a subsidiary of Innscor Africa Limited, a company that manufactures, distributes, and retails fast-moving and durable consumer goods (Innscor Africa Limited 2014). Innscor's portfolio of businesses includes, among others, Irvine's, animal feeds producers Profeeds and National Feeds Private Limited, a group of fast food chains, and a number of Spar franchise stores in Zimbabwe (Innscor Africa Limited 2015). Irvine's Africa holds the breeding rights to the Cobb breed in African countries other than South Africa (where these rights are held by Rainbow Chicken) and Zambia.

Hybrid is the other poultry business in Zambia along with Ross Africa (CBH) which is integrated back into grandparent production. It has been operating since 1961. It holds the licence for the Cobb breed in Zambia. Approximately 60 per cent of its broiler production is by out-growers who are provided with day-old chicks, feed, and other inputs. It also has in-house transport, logistics, and retail outlets.

Zamanita/Cargill is a former subsidiary of Zambeef which was acquired by Cargill in 2015. It is one of the largest edible oil and soya meal producers in Zambia and serves both domestic and export markets for soybean meal. Cargill plans to invest in the crusher and the refinery to expand their capacity and to bring them in line with the company's network of facilities in over 67 countries around the world.

Although on a much smaller scale, the Botswana poultry industry is dominated by large, vertically integrated players mainly from South Africa.

The investments illustrate the importance of bringing together the rights to the main breeds, large-scale investments in production facilities, and the technical and organizational capabilities in commercial poultry. The backward linkages to agricultural products in the region in the form of animal feed and its key constituents, maize and soybeans, are critical. The main poultry and animal feed companies in South Africa, Zambia, and Botswana are all interrelated and spread across the region, with (largely) South African firms leading the growth of the Zambian and Mozambican poultry industries.

As discussed in more detail below, there have also been important investments made in feed manufacturing in Zambia by companies which are independent of poultry producers. This includes investments by Emman Farming and Pembe Milling, and a substantial expansion in capacity of National Milling (Samboko et al. 2016).

3 Local and regional industrialization

The main poultry and animal feed companies in South Africa, Zambia, and Botswana are all interrelated and spread across the region. A key observation from the papers is that industrialization has been driven by South African firms expanding into the region. In this regard, investments have been observed mainly in Zambia: for example, the joint venture between RCL and Zambeef and CBH's expansions through its Ross Poultry Breeders company.

In Zambia, the entry of South African firms into the poultry industry was indeed co-ordinated and sequential. Some of the firms, for instance Rainbow Chicken (Zamhatch and Zamchick) and Astral (Tiger Animal Feed and Tiger Chicks), started by setting up animal feed operations before incorporating their breeding and broiler production operations. Rainbow Chicken's Novatek was set up in 2010 as part of the joint venture with Zambeef, followed by Zamhatch and Zamchick in 2013. Tiger Animal Feeds was set up in 1997 with the broiler and breeding division being subsequently set up around 2011. These animal feed companies, including CBH's NUTRI Feeds and pre-existing local players such as the National Milling Corporation (NMC), have installed capacity ranging between 5500 tonnes per month and 20 000 tonnes per month, with capacity utilization estimated to be between 70 per cent and 80 per cent.

In a number of instances, the breeding operations were established in order to satisfy the demand for day-old chicks, which were reportedly in short supply at the time. Due to the need for day-old chicks, particularly by small-scale producers of chicken, Rainbow Chicken's Zamhatch will be operating an agent network for the sale of day-old chicks across Zambia. A similar agent network model for the sale of day-old chicks is found in Zimbabwe, where production of chickens is predominantly carried out by small-scale producers. This model is largely followed by animal feed

companies, which typically sell animal feed in their own retail outlets, creating a one-stop shop for small-scale poultry producers where they purchase both animal feed and day-old chick stock.

Some of the key benefits from these co-ordinated investments by South African firms in Zambia (and indeed other parts of the region) include significant price reductions for both animal feed and day-old chicks. For example, day-old chicks in Zambia saw a 47 per cent decrease in price between 2012 and 2015. The fall in the Zambian price reflects the continued increases in competition and growth in scale in the poultry industry, which has been characterized by new investments in breeding by companies such as Rainbow Chicken's Zamhatch (PAOZ 2015) and CBH's Ross Breeders.⁹

These new investments have led to increased competition at the breeder level, as production has increased, leading to lower prices. The benefits of these co-ordinated investments in Zambia has spilt over into other countries in the region. For example, Ross Breeders in Botswana (a subsidiary of the Zambian Ross Poultry Breeders), gets the bulk of its breeding stock from its Zambian operations; thus, it is likely that Botswana consumers have benefited from the investments made in Zambia.

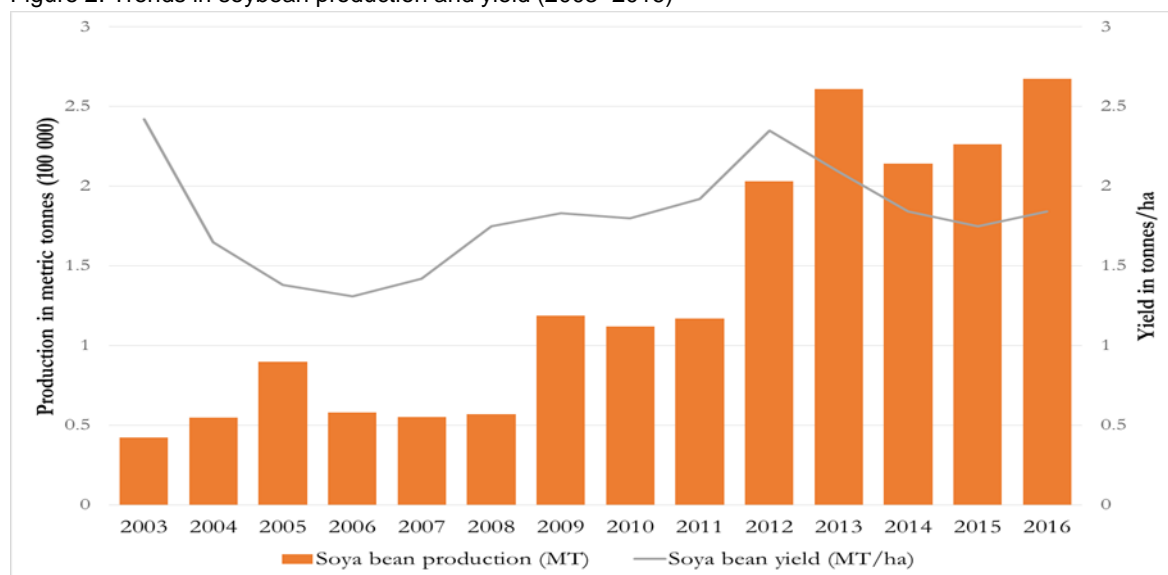
In respect of animal feed in Zambia, from 2012 until mid-2015, existing feed manufacturers expanded capacities while new firms entered the industry. South African firms' expansion into Zambia has involved the acquisition of stakes in local firms. Other new entrants in feed manufacturing and soybean crushing in Zambia include Emman Farming Enterprises in 2012/13 and Pembe Milling in 2013. Emman Farming Enterprises is a Zambian business engaged in oil production, crushing, and poultry, with a 90 000 tonnes per annum poultry feed plant based in Luanshya in Mpongwe. Pembe Milling has plants in seven countries in East and Central Africa (Burundi, Kenya, Mozambique, Rwanda, Tanzania, Uganda, and Zambia). It started by producing maize meal in 1989, in Nairobi, and subsequently expanded into other grains and animal feed across the seven countries.

In addition, a new 120 000-tonnes-per-annum feed mill has been established in Mpongwe by Novatek alongside their hatchery (Zamhatch, in partnership with Rainbow Chickens of South Africa), and is due to come onstream in the fourth quarter of 2016. The National Milling Corporation in Zambia, with capacity of 110 000 tonnes per annum, is also undertaking an expansion, with a new plant being constructed in 2016 in Chilanga. The overall impact is significant increases in poultry production capacity in Zambia, ahead of the supply of animal feed components and local demand.

There has been a substantial growth in soybean production, although not enough to fill the crushing capacity of around 400 000 tonnes per annum. There have been two major steps-up in soybean output, each time roughly doubling production and mainly due to increased land being cultivated rather than improved average yields. In 2009 production increased from around 50 000 tonnes per annum to over 100 000 tonnes per annum, and in 2010 production increased once again to over 200 000 tonnes per annum (Figure 2). The crushing capacity being put in place in 2014 to 2016 indicates that a further doubling may be anticipated. Yields have decreased since 2012, but they are still between 1.5 and 2 tonnes per hectare.

⁹ Interview with NUTRI Feeds (Botswana), 18 November 2015; interview with Ross Breeders, 20 November 2015.

Figure 2: Trends in soybean production and yield (2003–2016)

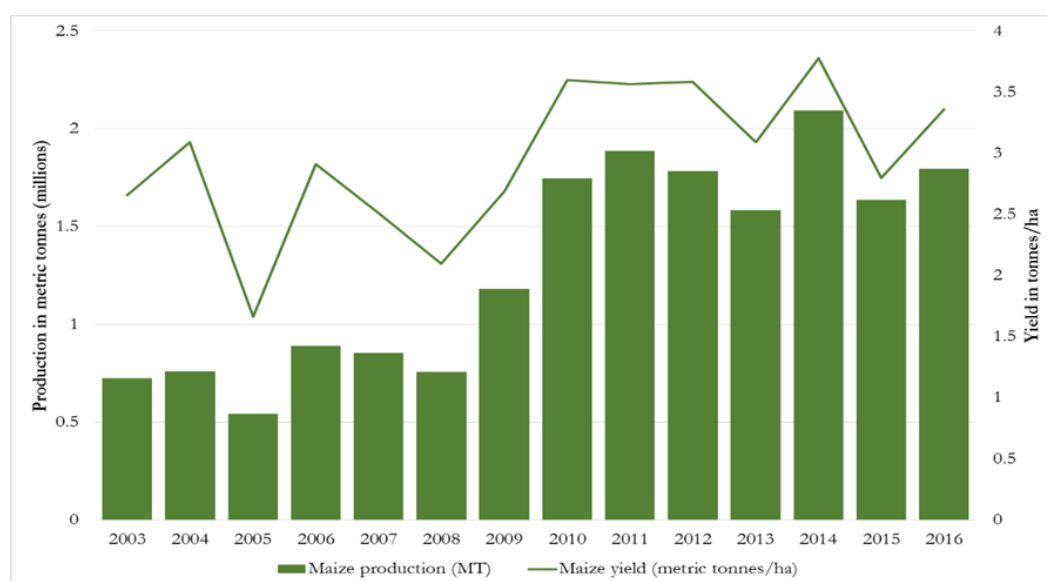


Source: Central Statistical Office, Crop Forecast Surveys, as in Samboko et al. (2016).

Zambia’s increase in soybean production has also led to significant increases in exports, mainly in the form of oilcake (see Table 2). In 2012, oilcake exports by Zambia increased to US\$132 million. Given the expansions observed across the region, some of the work undertaken sought to understand the overall effect of these investments on trade across the region.

At the same time, maize production in Zambia has also almost doubled, from 2008 to 2010 and thereafter (Figure 3). This corresponds with substantial net exports from 2011 onwards. Maize farmers are influenced by the government’s input subsidy program and price support through the Food Reserve Agency (FRA) which sets a floor price while the government agency buys surplus maize and stores it, which influences the open market price.

Figure 2: Trends in maize production and yield (2003–2016)



Source: Central Statistical Office, Crop Forecast Surveys, as in Samboko et al. (2016).

The increases in production in Zambia have enabled animal feed supply to its neighbours, while supporting growth in local poultry production in Zambia to meet local demand. The question is whether a further stepwise increase can be achieved to substantially impact on the regional trade balance and, in particular, meet the competition from deep-sea imports of animal feed and poultry by South Africa.

4 Trade and regional integration

In assessing the trade flows we distinguish between regional flows, which include intra-firm sales across borders, and the deep-sea trade, almost entirely imports. Although South Africa's imports of poultry and animal feed components are from deep-sea sources, there are important intra-regional trade flows in the animal feed part of the value chain. Zambia is a net exporter of maize, and more recently of soybean and oilcakes, to neighbouring countries. We consider regional trade in intermediate products (oilcake and its constituents) in the context of regional value chains and the implications for regional integration. This includes protectionist measures, the costs of transport, and the role and strategies of large corporations stretching across the countries in the region.

As we are mainly interested in trade as it relates to regional integration, we focus on the trade in animal feed raw materials as this is where the highest levels of regional trade are observed. Further, we do not focus on the trade in broilers as most countries have protected their broiler production industries, resulting in very low levels of broiler trade. However, it is important to note that South Africa is a net importer of chickens, with imports reaching almost US\$380 million, but these largely originate from South America and Europe. The imports reflect different chicken consumption patterns found in North American and EU countries when compared to that in South Africa. In the South African market, bone-in portions are the most widely consumed, generally in the form of individually quick-frozen (IQF) portions (SAPA 2014). In contrast, high-income overseas markets mostly consume fillets such as breast portions that are sold at a premium. Since bone-in portions are not in high demand in overseas markets, they are then sold in other markets, such as South Africa, for a lower price.¹⁰ It is alleged that overseas players, including Brazilian producers, make their margins on fillet meat and sell bone-in portions at costs that allow them to cover the tariffs and logistical costs of shipping the meat to South Africa.¹¹ Anti-dumping duties have been imposed on imports originating from Brazil and European countries since 2013 (ITAC 2013, 2015). More recently, as part of negotiations with the United States to extend the African Growth and Opportunity Act (AGOA) trade agreement, a duty-free quota of poultry imports from the United States of 65 000 tonnes has been agreed (Ensor 2015). This equates to approximately 16 per cent of poultry imports based on import data from 2014.

4.1 Oilcake, maize, and soya trade

Maize and soybean meal are two key inputs to animal feed. South African imports of oilcakes used in the production of animal feed, mostly made up of soybean oilcake, are larger than the imports of poultry. Argentina is the main source of South Africa's imports, accounting for 54 per cent of the total share of oilcake imports in 2014.

¹⁰ Interview with Daybreak, 30 June 2015.

¹¹ Interview with Daybreak, 30 June 2015.

Only two countries have been engaged in soybean, maize, and soybean meal (Zambia only) exports on a large scale – Zambia and South Africa. By far the main trade is in oilcake. Zambia has been a net exporter of oilcakes since 2010 (Table 2). The majority of these are soybean oilcake destined for Zimbabwe, with the remainder going to Namibia, Botswana, and South Africa. Zambia has also been a net exporter in most years of soybean, largely to Zimbabwe (Table 3). Indeed, demand from Zimbabwe was reported in interviews to have exerted upward pressure on local prices in Zambia.

Table 2: Trade in oilcake (US\$ millions)

		2010	2011	2012	2013	2014	2015
Botswana	Imports	29	30	30	32	-	-
	Exports	2	3	4	3	-	-
South Africa	Imports	530	593	618	582	502	326
	Exports	198	191	236	201	245	232
Zambia	Imports	10	22	25	20	21	24
	Exports	17	28	132	81	75	34
Zimbabwe	Imports	23	71	59	134	62	55
	Exports	8	9	18	12	8	5

Source: Trade Map (ITC 1999–2015), HS code 23.

South Africa has some exports of oilcake to neighbouring countries, with the main markets being Namibia and Zimbabwe, and given the large imports to South Africa this may effectively be transshipments. The growth in exports to Namibia is explained by the fact that in 2012 Namibia started producing chickens and therefore the established companies had to rely on imported raw materials, particularly feed and day-old chicks, to support domestic production.

Table 3: Soybean trade (US\$ millions)

		2010	2011	2012	2013	2014	2015
Botswana	Imports	1.5	1.9	2.6	1.7	0.2	-
	Exports	-	-	-	-	-	-
South Africa	Imports	1.0	0.9	0.9	3.4	51	53
	Exports	51	23.6	95.0	11.0	2.0	3.0
Zambia	Imports	0.0	1.1	0.3	1.15	0.8	1.1
	Exports	6.0	1.1	1.4	2.4	13.9	6.6
Zimbabwe	Imports	9.6	1.8	0.3	2.9	8.8	8.6
	Exports	-	-	0.1	0.6	1	0.1

Source: Trade Map (ITC 1999–2015), HS code 1201.

South Africa has generally been a large importer of the processed material, soybean oilcake, a by-product of the processing of soybeans for oil, to use in the animal feed industry. In the last five years (2011 to 2015), South Africa has imported on average 660 000 tonnes per annum of soya bean oilcake from Argentina (it also imports other residues such as bran and sharps), compared to an average of 143 000 tonnes of soybeans in 2014 and 2015.

Up until 2012, South Africa also had substantial exports of soybeans to its neighbours even while there were large imports of oilcake, as there was limited local crushing capacity. This changed with the implementation of the South African Department of Trade and Industry (DTI) soybean strategy (DTI 2012), which supported large investments in processing capacity. Through this strategy and financing from the Industrial Development Corporation in 2013, South African

soybean crushing capacity has been substantially expanded to approximately 2.1 million tonnes per year.¹² However, given that the country only produces 1 million tonnes per year,¹³ there is now an over-investment in soya crushing capacity. As a result, imports of soybeans have increased while those of oilcake have reduced somewhat. South Africa does not have a realistic prospect of producing enough soya to move to a net export position, given its water and land availability.

In contrast with Zambia and South Africa, Zimbabwe and Botswana do not have significant exports over the period under review and have been running trade deficits. In the case of Zimbabwe and Botswana, this reflects production constraints in the key raw materials (i.e. maize and soya).

South Africa and Zambia have maintained substantial net exports of maize in almost all years (Table 4). As a result, the region as a whole has been in a net export position. This is reflected in maize prices in South Africa and Zambia, which are generally the lowest in the region, and prices in South Africa have been in line with those of deep-sea exports (for the computed export parity values, see Figure 4). As the trade data does not distinguish between yellow and white maize trade, it is difficult to ascertain from the data how much is destined for animal feed and how much is for human consumption. It has been reported that almost 75 per cent of the maize exported from South Africa is yellow maize, mostly destined for Asia (FAO 2015b).

Table 4: Maize trade (US\$ millions)

		2010	2011	2012	2013	2014	2015
Botswana	Imports	10	17	20	50	48	-
	Exports	-	-	-	-	-	-
South Africa	Imports	11	30	75	11	37	148
	Exports	309	841	396	767	608	211
Zambia	Imports	2	2	2	6	5	3
	Exports	36	190	420	153	66	201
Zimbabwe	Imports	57	122	269	108	114	174
	Exports	-	1	1	2	1	1

Source: Trade Map (ITC 1999–2015), HS code 1005.

Zambian exports of maize increased between 2010 and 2014, reaching a peak of US\$420 million in 2012, even surpassing those originating from South Africa. Much of these exports were to Zimbabwe. In fact, recent reports indicate that the Grain Marketing Board (GMB) in Zimbabwe has been engaged by the Food Reserve of Zambia to use its storage facilities as they have excess storage capacity (Mtomba 2015). Zimbabwe has the highest imports in the region.

5 Regional raw material prices, competitiveness, and competition

Raw material costs are crucial for the competitiveness of poultry production, reflecting the fact that animal feed is by far the largest single cost in producing broilers, contributing between 60 per cent and 70 per cent to the overall cost of producing a bird (Zengeni 2014b).¹⁴ Competitiveness is

¹² Interview with AFMA, 15 July 2015.

¹³ Interview with AFMA, 15 July 2015.

¹⁴ Interview with CBH, 03 July 2015; interview with Daybreak, 30 June 2015; interview with Tswana Pride, 18 November 2015.

also dependent on accessing the correct type of breed of day-old chicks at a competitive price. This section outlines the prices of key raw materials of animal feed – maize and soybeans – and how the evolution of the country-specific production of these raw materials has affected trade within the region as a whole.

5.1 Maize prices

Maize is the main cost component in the production of animal feed. The price of maize is important not only because of the contributing role it plays in the domestic production of animal feed, but also because of its importance at a regional level given the significant observed levels of trade in maize. Two of the players considered in this contribution – South Africa and Zambia – are the largest producers of maize in the region and, consequently, are net exporters of the commodity. Also, of all the regions considered, maize prices are lowest in South Africa and Zambia.

An assessment of the evolution of maize prices over the period has shown that between 2009 and 2011/12 the South African maize prices were increasing, whilst Zambia observed increasing competitiveness, especially in 2011 and 2012, when its average prices dipped below South African export parity levels, before increasing somewhat in the following years (Figure 4). From 2011 to 2015 Zambian prices had been broadly in line with South African prices at around US\$200–250 per tonne. Zambia's maize exports to South Africa were recorded at US\$6 million in 2015.¹⁵ Since 2013 the average Zambian maize prices have traded between the South African average export and import parity levels, with Zambian prices being closer to the South African export parity levels. Large South African firms have imported maize from Zambia, and have reported the import price being as low as US\$200 per tonne on average.¹⁶ It is not apparent whether these quoted prices were prices in Zambia or landed prices in South Africa. What is clear is that prices in Zambia would need to be sufficiently low to ensure that transport costs were overcome so as to land the maize in South Africa at competitive prices, in particular given that road freight costs between Zambia and Gauteng in South Africa are significant and have been quoted at around \$100/tonne (Vilakazi and Paelo 2017, forthcoming). A likely explanation for the observed imports by large companies such as CBH is that, given their size, they are able to command more competitive prices when dealing with Zambian maize suppliers such that when the significant transport costs are taken into account the landed price in South Africa is still competitive.

The latest estimates of 2016 prices in South Africa have shown a slight increase in local prices, due to the drought experienced in much of southern Africa. For South Africa the impact of the drought has likely resulted in shortages in supply which have pushed prices up. The Zambian prices have sustained a continued decline from the observed peak in 2013. It is important to note that Zambian prices are also sustained by the price floor decided by government at which the Food Reserve Agency will buy from small farmers.¹⁷ Indeed, Zambia had good harvests in 2015/16 and, as a result, allowed substantial exports in 2016 after ensuring its local stocks were maintained. Interestingly, some of the firms which imported maize from Zambia are those which also have operations in Zambia (CBH and RCL) indicating the beginnings of a regional value chain and

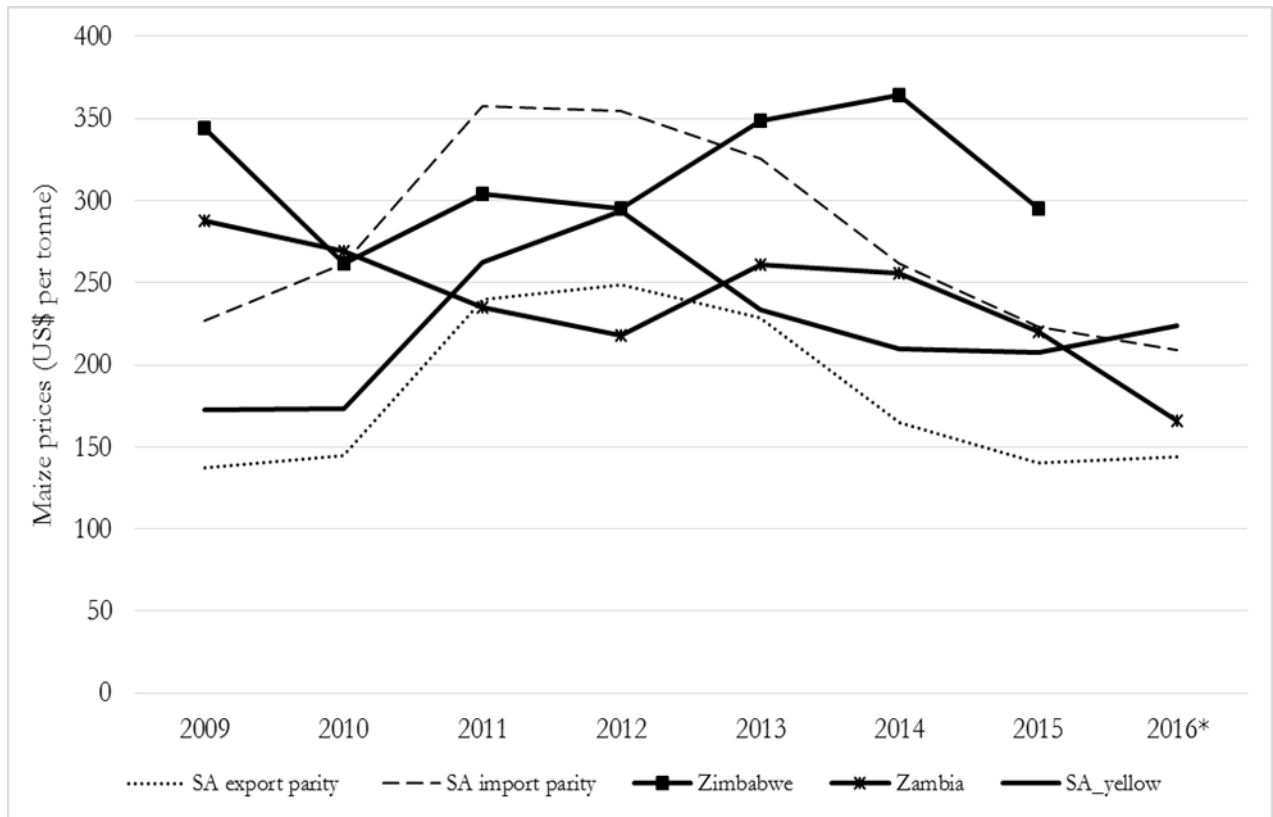
15 Quantec data, <http://quanis1.easydata.co.za/TableViewer/tableView.aspx>.

16 Interview with Country Bird South Africa, 3 July 2015; interview with Epol, 16 July 2015; interview with Afgri, 27 July 2015.

17 This price was maintained at 75 kwacha per 50 kg bag in 2016 or close to US\$150/tonne.

suggesting some intra-firm trade which maybe at different prices to those quoted for arms-length purchases and which are influenced by the government regulatory interventions in Zambia.

Figure 3: Maize prices



Note: * The 2016 prices are up to September and July 2016 for Zambia and South Africa; data for 2015 was updated from SAFEX.

Source: FAO (2015a); SAFEX; Zambia National Farmers Union; Stockfeed Manufacturers' Association.

In respect of the other countries in the study we observe that the lack of sufficient production of maize in both Zimbabwe and Botswana, for different reasons, has led to them depending on imports for their supply of critical inputs. Zimbabwe's maize and soybean production has decreased since the implementation of the land reform programme (Takala-Greenish 2015). Botswana, on the other hand, has generally been a maize and soya importer given that the country is located in a semi-arid region which has low levels of rainfall, making it not conducive for crop production.¹⁸ Therefore prices of these critical inputs are determined by the import prices in these markets. For example, Zimbabwe's prices are a reflection of the Zambian prices in recent years following the banning of importation of GMO maize from South Africa. This also shows the impact that regulatory and policy factors can have on the development of a regional value chain.

5.2 Soybean prices

While competitive pricing of maize is important, this needs to be complemented with competitive pricing of soybeans to ensure a low cost base for animal feed. Increased production and competitive pricing of soybeans and oilcake in the region is one of the missing pieces for

¹⁸ Interview with Botswana Poultry Association, 17 November 2015.

developing a regional value chain. As the region has, however, remained a net importer of soybean and oilcake, prices continue to be set by deep-sea imports from South America. As noted above, South Africa's soybean imports were relatively low up to 2013, given the lack of processing capacity, and, as such, the main imports were in the form of oilcake. The recent implementation of the soybean strategy in South Africa and the increase in domestic crushing capacity led to a sharp increase in imports of soybeans by South African firms in 2014 and 2015.

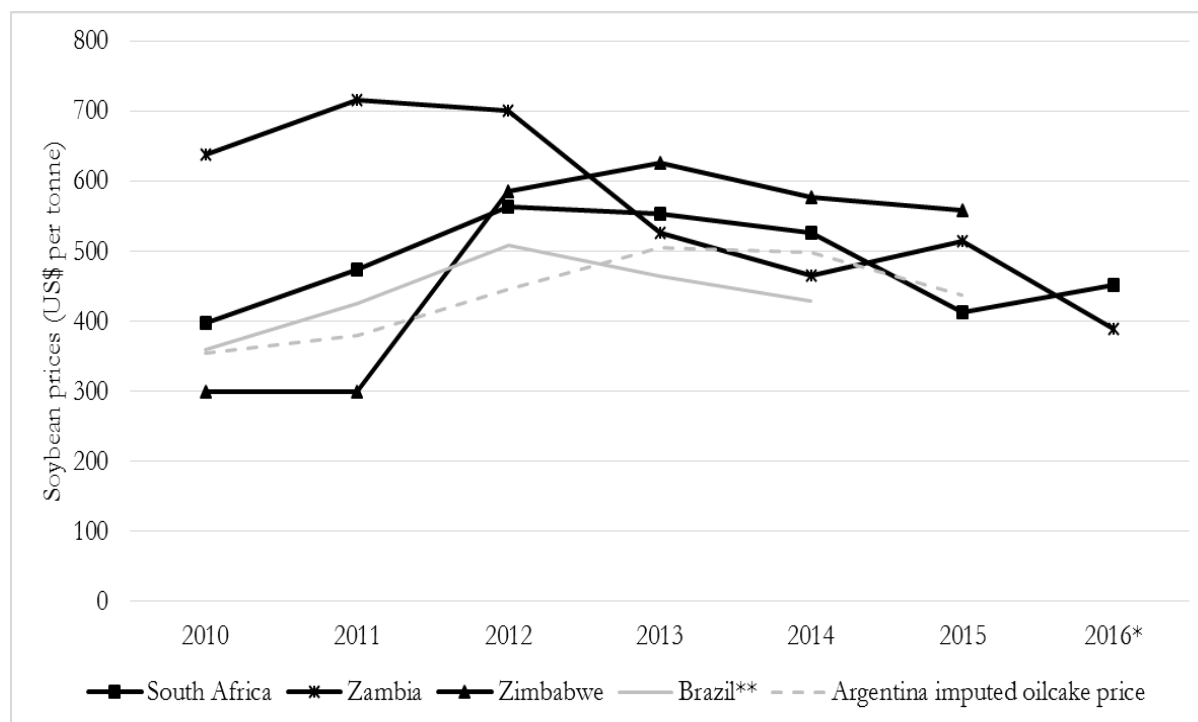
Soybean prices for South Africa and Zambia remained above the Free On Board (FOB) prices in Brazil for the period 2010 to 2014. The prices for Zimbabwe were initially below the FOB prices from Brazil but increased significantly, by almost 100 per cent, between 2011 and 2012 to well above the FOB prices from Brazil. That regional prices are above FOB prices for Brazil reflects the rationalization that landed imports have set the prices in local markets (Figure 5). While the time series for Brazil is incomplete, we would anticipate this trend to have continued into 2015 and 2016. The main change in pricing at a regional level has been the observed continued downward trend in Zambian prices between 2011 and 2016. Between 2013 and 2014 the Zambian price level fell below South African prices. This decrease in pricing may be associated with higher production levels and exports to neighbouring countries, and in particular exports to South Africa in 2014. In 2015, Zambian prices increased once again to close to import levels (around US\$100 per tonne above South African prices), while in 2016 prices have dipped below those in South Africa based on quoted prices in September 2016.

Soybean oilcake imports have, until very recently, been far more important than soybean imports. As such, also presented in Figure 5 is the imputed price of soybean oilcake landed in South Africa from Argentina. This imputed price was calculated by dividing the recorded value of imports from Argentina by the volumes imported. This compares with prices for soybeans in Argentina and Brazil of \$428 and \$493 per tonne respectively.

An assessment of the imputed landed price for soybean oilcake shows that the imputed price has generally been much lower than local South African soybean prices, reflecting the transport cost differential (including inland transport in South Africa). Given the observed competitiveness of South American imports into the region, an important evaluation for the regional value chain is the potential for producers in Zambia to compete with South American supply for the main inland demand in South Africa. Zambian soybean prices from 2013 to 2016 have fluctuated around price levels in South Africa, meaning that the transport costs to land in the South African market could not be absorbed and thus making regional trade unsustainable. This is further emphasized by the ability of Zambian producers to supply into other neighbouring countries such as the DRC, Zimbabwe, and Botswana, where they compete with imports from other countries. This possibly underlies the inefficiency in overland transportation when compared to the cost of deep-sea transportation.

A big question that remains is what it will take for Zambian production to reach producer prices recorded in Argentina and Brazil. An important obstacle is the cost of fertilizer, which has to be imported to Zambia. If overland transport costs can be reduced through improved arrangements within southern Africa then a stronger regional value chain can be realized by lowering input costs (such as of fertilizer) and making exports more attractive.

Figure 4: Soybean prices



Note: The 2016 prices are up to September for both Zambia and South Africa; data for South Africa and Zambia was updated from the SAFEX and Zambia National Farmers Union websites respectively. The price from Zambia National Farmers Union is an average of the Central province converted at \$1 = ZMW10.1.

sSources: FAOSTAT for Brazil, Zambia and Zimbabwe. SAGIS (2015); Trademap for Argentina imputation.

In conclusion, the overall decrease in price of soybean in Zambia, as shown in Figure 5, is a welcome development when thinking about developing a regional value chain, especially given the relatively high exports to South Africa in 2014. However, despite the decrease in prices, these are still higher than the imputed landed price of the processed product imported from Argentina, which raises important questions about the conditions which would be necessary for Zambia to reach the scale and cost structure to enable a switch from deep-sea sources for both soybeans and oilcake. Reducing the Zambian soya price would require investment to support agriculture production and storage facility. The need to invest in storage facilities is important given that one of the largest feed producers in Botswana indicated the poor quality of soybeans from Zambia due to a lack of storage.¹⁹ An additional area of concern is the lack of regional-oriented policy development, particularly as it relates to trade agreements. The recent enactment of preferential trade agreements between Mercosur countries and Southern African Customs Union (SACU) countries, in this case specifically related to soybean oilcake (Paradza 2016), undermines any endeavours aimed at establishing a regional value chain for the poultry industry. In particular, it undermines the recent investments in crushing capacity made across Zambia and South Africa. It is important that policymakers are able to co-ordinate effectively when making policy decisions which have an impact on the development of regional value chains.

¹⁹ Interview with NUTRI Feeds (Botswana), 18 November 2015. Note that commercial soybean production in Zambia is of the same or better quality (with higher and less variable protein content) as in South Africa.

5.3 Competitiveness and competition

The cost build-up through to the price of broiler chicken for South Africa and Zambia indicates the significance of the different inputs (Table 5). It is important to bear in mind that performance needs to be taken into account in the conversion of inputs to the output through the different stages of processing. Increased investment in Zambia by a range of market participants at different levels of the value chain has brought more competitive pricing from day-old chicks and feed through to the broiler price. There are still much larger mark-ups of the price of processed chicken in Zambia than in South Africa. This means that while the live chicken cost in Zambia in 2015 was just 7.4 per cent higher than in South Africa, the producer price was 22.0 per cent higher, even after adjusting for a 30 per cent brining level in South Africa.

Feed is the largest cost of producing chicken, accounting for 50–70 per cent of the live cost of producing a chicken, a proportion which reduced substantially in both South Africa and Zambia from 2012 to 2015. The decline is due to both a decline in feed prices and improved performance (the feed to meat conversion ratio).

Day-old chicks are the second most important primary raw material in the producing of poultry meat. While the price of day-old chicks in South Africa marginally increased from US\$0.37 in 2012 to US\$0.38 in 2015, in Zambia prices decreased by about 39 per cent over the same period, although prices are still above those in South Africa. The decrease in day-old chick prices in Zambia is due to increasing competition at the breeding level as a result of major investments by companies, and indications show that competition will increase as Zamhatch completes its hatchery, which is in line with those of the current top two producers (Samboko et al. 2016).

Table 5: Cost build-up, 2012 and 2015, US\$

	South Africa		Zambia	
	2012	2015	2012	2015*
Feed cost, kg	0.54	0.39	0.58	0.39
Feed conversion ratio	1.67	1.54	1.67	1.65
Size of bird	1.8	1.8	1.8	1.8
Feed cost per broiler	1.61	1.08	1.74	1.16
Day-old chick	0.37	0.38	0.85	0.52
Other costs in broiler production	0.24	0.24	0.25	0.15
*Live chicken (1.8 kg) cost	2.22	1.70	2.84	1.83
*Live chicken (1.8 kg) price	2.64	2.02	3.90	2.44
Live chicken cost per kg	1.23	0.95	1.58	1.02
Abattoir cost/processing per kg	0.29	0.29	0.30	0.30
Processed chicken, per kg, cost	1.52	1.24	1.88	1.32
Processed chicken, per kg, producer price	1.64	1.33	3.01	2.11
Brining levels	30%	30%**	0%	0%
Producer price, per kg adjusted for brining	2.13	1.73	3.01	2.11
Fresh poultry producer price (portions)	2.88	-	-	-
Processed chicken, per kg, retail price (frozen portions)	2.93			

Note: * Data for Zambia has been adjusted from 1.5 kg to 1.8 kg; abattoir processing costs and the profit margin have been assumed to have been constant since 2012. ** Information on brining levels is from various industry players. Recent regulations passed by the Department of Agriculture, Forestry, and Fisheries have decreased the brining limit to 15% for IQF and 10% for whole chickens (fin24 2016).

Source: Bagopi et al. (2014); Ncube et al. 2016a; Samboko et al. (2016).

While there have been a number of developments as far as regional industrialization and integration are concerned, these have not led to the levels of competitiveness required for the region to replace imports of poultry, feed, and components. The region has a low cost base due to the most important single input, maize. In addition, there have been investments in large-scale production, along with the co-ordination from breeding through to processing and logistics required for competitive production. The investments have brought greater competitive rivalry between companies. This has been bolstered by several competition investigations into the industry in South Africa and Zambia, which have uncovered anti-competitive conduct designed to increase prices and exclude smaller rivals.

There are a number of additional obstacles to the emergence of Zambia as an agricultural producer which can underpin competitive poultry production. The first is the supply and pricing of soybeans in Zambia, which are still priced higher than the imported processed soybean meal from Argentina destined for South Africa. There are a number of reasons for this, including fertilizer costs to farmers and the lack of repayment of VAT charged on raw materials to animal feed producers.

The second obstacle is inefficiencies and high transport costs within the region. These are compounded by trade barriers, particularly non-tariff barriers, and the absence of a practical cross-country strategy to build the regional value chain to compete against imports. The next section highlights issues of industry protection in the region.

6 Regional integration versus national interests

Industry protection is found at various levels of the poultry value chain, despite regional integration drives such as the SADC Free Trade Agreement (FTA). Industry protection has been effected through both tariff and non-tariff barriers (NTBs), with NTBs a much more prevalent method of undermining trade (Mevel and Karingi 2012). The barriers exist at various levels of the value chain, reinforcing regional fragmentation. The challenges are compounded by the four countries falling under different and overlapping trading blocs. South Africa and Botswana are member of SACU while all four countries are members of SADC. Zambia and Zimbabwe are members of COMESA. As such, various trade agreements and arrangements are at play.

For SACU countries trading with other regions, there are no import duties on the majority of raw materials. In particular, imports of raw materials such as day-old chicks, maize, and soya products from the SADC region do not face import duties (SACU 2016). However, there are still low duties of 8 per cent and 6.6 per cent on soybeans and soya meal respectively under the Most Favoured Nation (MFN) agreements. For South Africa, these duties are as a result of the government's soybean strategy (DTI 2012).

When it comes to the trade of chicken, SACU's tariff structure still supports duty-free imports from SADC countries due to the FTA. However, under the MFN agreements, duties on chicken imports range from 12 per cent to 37 per cent, with the higher duties applying to bone-in portions (SACU 2016). An even higher rate of 82 per cent is charged on mechanically deboned meat imported under MFN; this was imposed as a measure to deal with duty circumvention, as some importers were abusing this code to import chicken since it formerly had a lower duty.²⁰

For Zimbabwe, which participates in SADC and COMESA in Africa, imports of raw materials from COMESA countries, South Africa, and SADC countries are duty-free except for animal feed, which carries a 15 per cent duty for SADC countries. However, under MFN, Zimbabwe charges duties ranging between 5 per cent and 40 per cent, with the highest relating to animal feed. On finished products, Zimbabwe has high rates of duty of 40 per cent (or US\$1.50 per kg) on all chicken products under the MFN applicable rates (ZIMRA 2013). Moreover, a 15 per cent duty rate still applies under the SADC trade regime, indicating that the poultry industry is being treated as a sensitive industry which requires a longer tariff phasing-down period.²¹ The region's tariff structure increases with the degree of processing.

While most of the trade, particularly between SADC countries, is duty-free or at least faces low duty rates, countries in the region have instituted NTBs in order to protect both the upstream and the downstream levels of the animal feed to poultry value chain. Most countries in the region have some form of NTBs for the poultry industry, particularly in the countries in the study. In Botswana an import permit is required to import maize and the Botswana government does not issue the import permit until the importer can show that they have sourced 30 per cent of their requirements

20 Interview with South African Poultry Association (SAPA), 6 July 2015.

21 Interview with Zimbabwe Competition and Tariff Commission, 21 March 2016.

locally.²² Botswana also has a ban on imports of chicken under infant industry protection, except for those with special permits.²³ Finally, delays at the border also cause constraints because the people who issue the requisite permits at the border only work between 7 am and 4.30 pm. Thus, if a truck arrives outside this timeframe it has to wait until the following day to be cleared.²⁴

In Zimbabwe, the government has completely banned the importation of final goods in order to protect the industry. As such, chickens and animal feed imports are banned. However, the importation of fertilized eggs and soybeans, soybean meal, and maize is permitted, subject to an import licence. Zimbabwe has applied for extensions for its tariff phase-downs (moving towards duty-free imports).²⁵ Through the protection of both the poultry and the animal feed production industries, the Zimbabwean government ensures the promotion of these industries and linkages to other sectors such as soya crushing.²⁶ Liberalization of the poultry industry/value chain would adversely affect those sectors. However, the Zimbabwean producers import the bulk of their raw materials for both animal feed and chicken production. As such, the protection effectively aims for value addition of imported raw materials.

Zambian firms highlighted the lack of free trade in both the SADC and COMESA regions, particularly with countries such as Zimbabwe. On top of the import bans already mentioned, Zambian grain exporters are reportedly made to pay US\$20 per truck which enters Zimbabwean soil. The Zambian government, however, also restricts access to its own market for poultry and grains. In addition, exports of maize are restricted through the issuing of export licences in order to ensure food security, and the Food Reserve Agency effectively sets a floor price for maize through the price it offers to small farmers. The level of this price evidently has a knock-on effect on the competitiveness of the poultry industry.

7 Conclusion

In spite of the positive performance over the years – increased investment resulting in increased production, lower prices, and increased trade – the animal feed to poultry *regional* value chain still appears to be underdeveloped. While, as noted above, industrialization across the region has led to increased levels of production and trade, these levels do not appear, from our analysis, to have achieved the levels of scale efficiencies attained by deep-sea import sources. A key factor in this regard, in particular with respect to Zambia, relates to the gap between the current scale of production and that enjoyed by the deep-sea sources of soybeans and soybean meal (Brazil and Argentina). Notwithstanding the substantial increases in production, a further major increase is required if the region is to be less reliant on deep-sea imports, of both animal feed and poultry.

The above findings are significant given that the largest source of demand for animal feed and poultry products is South Africa, with a much higher consumption level than the other countries within the region. The fact that South Africa is a net importer of key raw materials of animal feed products from deep-sea sources indicates that there exist opportunities for intra-regional trade, particularly with the expansion of production of these raw materials in Zambia. An inability to

22 Interview with NUTRI Feeds (Botswana), 18 November 2015.

23 Interview with Botswana Competition Authority, 17 November 2015.

24 Interview with NUTRI Feeds (Botswana), 18 November 2015.

25 Interview with Zimbabwe Competition and Tariff Commission, 21 March 2016.

26 Interview with Zimbabwe Competition and Tariff Commission, 21 March 2016.

achieve competitive intra-regional trade undermines the further development of the regional poultry value chain.

Competitiveness in terms of costs, processes, and capabilities is naturally an important determinant of a firm or country's participation in a regional or global value chain. The development of regional value chains in southern Africa is dependent on competitive production located within the region, on the competitiveness of production located at different levels across country borders. At present, national policy priorities within countries in the region are at odds with regional trade agreements and objectives, and with the requirements for competitive regional value chains. As a result, tariff and non-tariff barriers are hampering production, investment, and employment creation in the region.

Trade barriers, particularly NTBs, have impeded the formation of a regional value chain. This is compounded by the high transport costs which remain (Vilakazi and Paelo 2017, forthcoming). The NTBs, ranging from import limits to complete bans on finished goods, have contributed a great deal to the current structure of the value chains where there is openness to international markets and global traders play a substantial role.

In conclusion, the regional value chain for poultry in southern Africa is underdeveloped, although there have been important developments and strong growth in a number of countries. Building on this growth requires coherent trade and industrial policies to support investments across countries, from agricultural production through to the final products, coupled with practical measures to reduce the barriers to, and transport costs of, intra-regional trade, especially into South Africa. Further, better co-ordination is required at the regional level, particularly in relation to the manner in which trade agreements are structured given the recent preferential trade agreement in favour of imports of South American soybean oilcake into SACU countries. The potential is very large when one considers that the South African deep-sea trade deficit in poultry is approximately the size of the Zambian industry (without taking into account South African imports of animal feed and its constituents). Moreover, local demand is set to continue growing with urbanization and rising incomes.

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