Competition Dynamics and Regional Trade Flows in the Poultry Sector: The Case of South Africa, Botswana, Namibia and Zambia

An African Competition Forum Four Country Research Project

FINAL REPORT

15th November 2013

Prepared by Country Researchers:

Ernest Bagopi - Botswana
Emmanuel Chokwe - Zambia
Pamela Halse - South Africa
Josef Hausiku - Namibia
Wesley Kalapula - Zambia
Michael Humavindu - Namibia
Simon Roberts – South Africa

Table of Contents

Executive Summary

The Research Programme on Competition Dynamics and Regional Trade Flows conducted under the African Competition Forum ("ACF") focuses on the links between competition and development. Research is being conducted on three key industries within the region: cement, by Botswana, Kenya, Namibia, South Africa, Tanzania and Zambia; sugar, by Kenya, Tanzania, South Africa and Zambia and finally poultry[1] by Botswana, Namibia, South Africa and Zambia. In the first phase of the research programme each country produced a country specific report that focused on the state of competition in the identified industry. These reports were based on existing knowledge and desk top research and were work shopped in Namibia in December 2012. Following on from this, countries undertook more detailed research into the specific industries. This report is a result of the second phase whereby it consolidates the four countries (Botswana, Namibia, South Africa and Zambia) findings on the commercial poultry meat industry.

The poultry industry is a very important one, involving substantial value-add to agricultural production and employment creation across the four countries. The poultry industry is well established in the region. For example, the first commercial poultry producers were established in Zambia in the 1960s and even earlier in South Africa. Botswana followed with a government decision to develop its commercial poultry industry in the early 80's.

- The poultry industry requires significant capital investment in the key facilities, and access to essential intellectual property in terms of the leading breeds, coupled with the necessary production facilities at each level of the value chain, through to processing and packaging.
- Critical to the industry in any country is access to the breeds, and competitive feed, as the two key inputs to broiler production.
- Industry requirements, namely the licences for the breeds and the production facilities required for production and processing mean that there are relatively few producers.

[1] The report on poultry focused specifically on Gallus Domesticus meat or "chicken" meat

    - While different breeds have been introduced, a very small number (two or three in each country), led by Cobb account for the great majority of local production.

- The industry is thus oligopolistic in nature, and the same firms operate across the countries in the study. This suggests that competition needs to be understood at a regional as well as national level.

- Competitive outcomes are very important to ensure consumers have competitively priced poultry products, as the main source of protein, and in having growing local production (given competition from imports from outside the region).

- The study suggests that the very largest firms in each country have been able to exert a degree of market power; however, over the past five years we have observed greater degrees of competitive rivalry coupled with major investments in new capacity and entry.

- All four countries in the study have adopted, or are considering, policies to protect and support their poultry industries.

1. Introduction

This report on the commercial poultry meat industry (specifically Gallus Domesticus species commonly referred to as chicken)[2] is part of the Research Programme on Competition Dynamics and Regional Trade Flows conducted under the African Competition Forum ("ACF"). It is one of three cross-country studies being undertaken and looks at poultry meat across four countries: Botswana, Namibia, South Africa and Zambia. The other two are on cement, by Botswana, Kenya, Namibia, South Africa, Tanzania and Zambia, and sugar, by Kenya, Tanzania, South Africa and Zambia.

In the first phase of the research programme each country produced a country specific report that focused on the state of competition in the identified industry. These reports were work shopped in Namibia in December 2012.[3] The detailed insights into competitive dynamics across the countries generated results of interest in themselves, given the importance of the products. They also pointed to ways in which more effective enforcement through cross country co-operation may be achieved. This report forms part of the second phase of the research study on the commercial poultry meat industry. It consolidates the four countries detailed research and builds insight into the industry within the region at a very practical level.

The studies point to the links between competition and development. Growth and development through regional integration initiatives depend on the decisions of companies to increase productive capacity and make long-term investment decisions across the region. However, if a few large companies dominate an industry and are able to extract supra-competitive profits, then this will be at the expense of growth. Where consumers are downstream industries, any anti-competitive conduct raises costs and undermines the competitiveness of downstream firms. The existence of supra-competitive profits (or rents) from, for example, collusive conduct, further imply that the incumbent firms will lobby political interests to create barriers to entrants including through regulations (see Khan, 2006).

[2] Throughout the report when we mention poultry we are referring to Gallus Domesticus or chicken meat

[3] We are grateful for detailed comments and feedback from the participants as well as the two expert resource persons, Professors Frederic Jenny and Eleanor Fox.

The importance of disciplining the power of large firms and of ensuring more inclusive growth, and tackling limitations on access to economic activity, have been highlighted in recent contributions on growth and development (North et al., 2009; Acemoglu and Robinson, 2012).

There are thus important linkages between broad-based economic development, regional integration and competition. Small and developing economies are likely to have higher levels of concentration and bigger competition problems than those of Europe or North America (Gal, 2003; Fox, 2012; Brusick and Evenett, 2008; Dabbah, 2010). Scale economies are therefore that much more important, as are dynamic issues to do with the process of competitive rivalry in building production capabilities and accessing inputs and markets (Gal 2003, 2009; Sutton, 2012). Optimal or effective competition is thus partly an outcome of investments in local productive capacity – to establish the competitors (Singh, 2004). While large firms are crucial to these investments, it is important that the power of such firms is checked by rivalry (Amsden, 2003). Regional integration provides scope for greater competitive rivalry in a larger market, but this will not be realised if it means smaller economies simply become subsumed by the largest regional economy.

The commercial poultry meat industry is well established within the region. While developing a poultry operation requires significant capital investment in key facilities, it provides substantial value-add to agricultural production, and employment creation. Critical to the industry in any country is access to the breeds, and competitive feed, as the two key inputs to broiler production. The industry is oligopolistic in nature, and many of the same firms operate at varying levels in the different countries in the study. This suggests that competition in the poultry industry needs to be understood at a regional as well as national level.

Each of the four countries has adopted, or is considering, policies to protect and develop their domestic poultry meat industries. While the policies may be required to incentivise the investments in large scale and competitive facilities, this implies the protection and support should be temporary in nature.

There is a danger if there is a lack of competition within a country that the benefits of these measures are captured by the large firms and their shareholders. The bigger question is how can we have a more dynamic and competitive industry at the regional level, which would mean higher levels of investment and job creation, to add value to agricultural production. In this regard, competition between the producers will mean a more competitive industry. Given the increasing demand as countries grow, this could be met from regional production rather than from imports from Europe and Brazil.

We describe the industry in terms of the different activities and markets at each level of the supply chain. We assess the nature and extent of competition at the various levels using available data, particularly on production and pricing. We examine the geographic characteristics of the markets across the region, taking into account trade restrictions and border controls. We review the trade data in this regard.

2. Broiler meat production process

2.1. The supply chain

Poultry production is essentially the combination of optimal genetic stock, in the form of breeds, with animal feed. The upstream level of the poultry meat value chain is the breeding stock level. Poultry breeders that are owners of the franchise rights or international licenses import great grandparent and grandparent stock. The type of breed that is most suited for a particular country will be influenced by that country's climate. The performance of the breed is largely measured by the number of day old chicks produced per parent bird, the feed conversion ratio and the mortality ratio. The grandparent stock produces chicks which are called parent stock. These parent stock chicks in turn produce approximately 150 eggs during an estimated 48 week period. The eggs are sent to a hatchery for incubation for about 21 days for the production of day old broilers.

The day old broilers are reared for a period between 32 and 42 days to a specified weight of between 1.6kg up to about 2.2kg. The desired weight of the bird will depend on customer requirements where, for example, fast food outlets prefer slightly smaller broilers, while larger broilers tend to be used for frozen poultry meat.

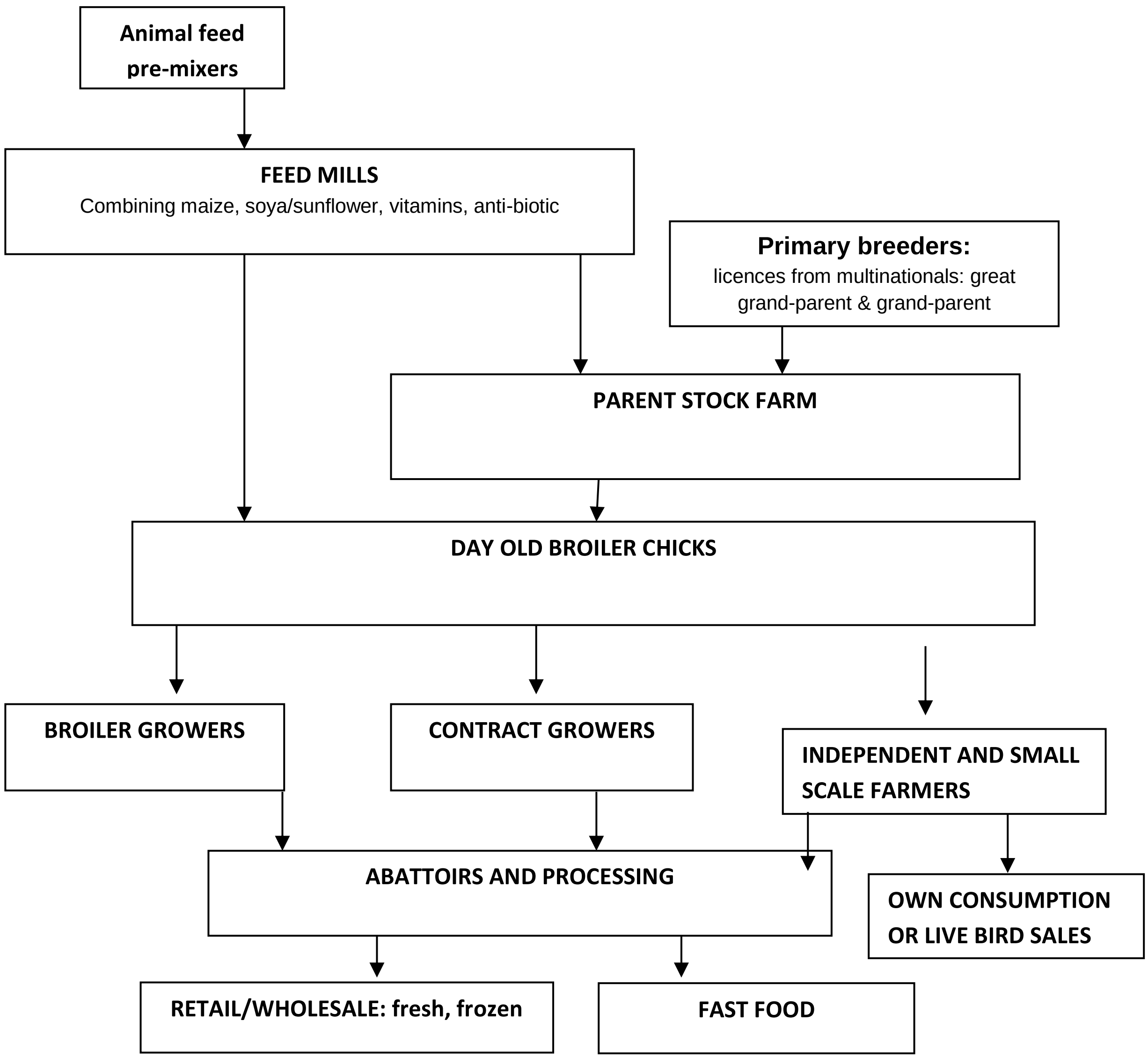
Different breeds have different conversion ratios, but a typical breed has a conversion ratio of approximately 1.67. The type of breed and its conversion ratio will influence the timeframe it will take a broiler to reach the required size.

Large integrated poultry producers have their own farms and some of them also use contract growers to rear the broiler to the desired weight. Feed is a major input into the production process and accounts for between 50% and 70% of the total input costs, depending on the breed and conversion ratio. Poultry feed is comprised of a combination of maize and soya along with small quantities of additional ingredients including vitamins. A broiler requires different types of feed at the various stages of its lifecycle such as starter, grower and finisher.

Once at the desired weight, the broilers are slaughtered and processed and sold as fresh or frozen poultry meat, or in some instances sold as live birds. Some countries' consumers such as those in Zambia have a preference for purchasing live birds. Only about 38% of the total production of broilers in Zambia is processed into Individually Quick Frozen (IQF) or whole frozen birds. This can be attributed to the fact that the broiler market is characterised by many independent small-scale farmers who do not have access to modern abattoirs and processing facilities. Consumers in Botswana, Namibia and South Africa purchase mostly frozen chicken meat products. In Namibia and South Africa between 80% and just over 90% of all chicken meat is sold frozen as either IQF bags or whole frozen birds[4]. In all four countries, chicken meat is either sold to supermarkets/ shops, butcheries, wholesalers, fast food outlets, catering companies, institutions such as schools or prisons or to informal vendors (who typically buy live birds). Figure 1 illustrates the different levels in the value chain for broiler production.

[4] South African Poultry Association Quarterly Broiler Price Report 2Q2013 "During 2012 frozen meat contributed 94.78% of total sales". Namibia Figure from Namibia Poultry Industry

Figure 1: The broiler meat production process



Source: South African Competition Commission's own diagram

2.2 Activities at different levels of the supply chain, by country

Poultry operations in each of the four countries span across the various levels of the value chain. Table 1 below provides a breakdown of the commercial breeds found in each country. The Cobb breed is present in all four countries and the Ross breed (Aviagen) is present in three of the four. Table 1 also illustrates the countries use of raw materials for their feed manufacturing as well as for poultry feed. It also provides each country's day old chick and broiler production levels.

Table 1: Operations by country

		Botswana	Zambia	South Africa	Namibia
Poultry feed raw material	% Imports: **Maize**	97%	Nil	0.1%[5]	100%
	% Local	3%	100%	99.9%	Nil
	% Imports **Soya**	100%	0%	61%[6]	100%
	% Local	0%	100%	39%	Nil
	% Imports **Other**	100%	100%	N/A	100%
	% Local	0%	0%	N/A	Nil
Poultry Feed consumption (in tonnes)	**Broiler Breeders:** Maize in tonnes (60%)	N/A	N/A	294 082	N/A
	Broiler Breeders: Soya in tonnes (30%)	N/A	N/A	147 041	N/A
	Broiler Breeders: Other (10%)	N/A	N/A	49 014	N/A
	Broilers: Maize	87 240	254,820.8[7]	1 659 444	27 000[8]
	Broilers: Soya	43 620	32 760	829 722	13 500
	Broilers: Other	14 540	10 920	276 574	4 500
Available Breed	Cobb	X	X	X	X
	Ross	X	X	X	
	Arbor Acres	X		X	
	Lohmann		X		
	Hubbard		X		
Annual DOC's produced		25.74m	65m	1047m	13m
Annual broiler production/ slaughter	Production	24m	24.84	982.4m	13m

[5] South Africa is a net exporter of maize. However, it does import small quantities during certain times of the year. The figures for local and imported maize production are calculated from AFMA's total domestic and imported maize figures (Maize availability 1 May 2012 to 30 April 2013) as per the 2012/2013 Annual Chairman's Report. A breakdown specifically for poultry feed is not available.
[6] The soya estimates are calculated from AFMA's total domestic and imported soya figures as per the 2012/2013 Annual Chairman Report (Total oil cake imports and local oilcake available for marketing). Figures for soya specifically used for poultry feed is not available
[7] This estimate figure represents total consumption in the poultry sector as at December 2012
[8] Namibia has total feed consumption of 45 000 tonnes. Figures are not available per category or per type of feed. These figures were calculated using the averages of 60% maize, 30% soya and 10% other.

2.3. Input requirements, investment costs and scale

The input, investment and scale requirements for a vertically integrated poultry operation are significant. This makes it difficult for a new entrant to enter various levels simultaneously. A firm wishing to enter on one level of the value chain (e.g. broiler producer) will be dependent on the large poultry producers for access to critical inputs (breed and feed) and slaughtering facilities.

The four countries each have different climates where for example, Botswana and to a greater extent Namibia have hotter and drier climates to that in South Africa and Zambia. Poultry production is more complex in countries with tough climates like Botswana and Namibia. These dry conditions could deter entry as it could influence producers' ability to source sufficient quantities of feed domestically. We consider the investment costs and scale economies at the various levels of the supply chain and make reference to the countries unique conditions where appropriate.

2.3.1. Input, investment and scale requirements at the breeding level

At the breeding level, breeders use grandparent stock to produce parent stock. Breeders seek to select a high performing breed as measured by egg production, feed conversion, hatchability, mortality rates etc. While different breeds have been introduced, only a small number of breeds (two to three in each country except Zambia with four) account for the majority of the region's production. The most common breed is the Cobb (found in all four countries) followed by Ross which is present in three of the countries except Namibia.

An entrant at the breeding (grandparent) level could battle to access a suitable breed as the large breeders own the franchising rights to the high performing breeds. In addition to access to a suitable breed, the new entrant requires sufficient capital.

Astral has recently opened a hatchery in Mozambique that has the capacity to produce 160 000 day old chicks a week, and it is reported that this cost about than R10m[9] ($1.22m).[10] A South African poultry producer estimates that a new breeding farm and hatchery with the capacity to supply around 100 000 day old chicks a week is estimated to cost around R40m ($4.88m). In Botswana, a hatchery with the capacity of 240 000 broiler day old chicks a week is estimated to cost around BP40m ($5.26m)[11].

In addition, the grandparent level is driven by high volumes to achieve economies of scale. A new entrant's success will be dependent on access to sufficient customers and ideally an anchor customer. The most notable new breed in South Africa is Arbor Acres, which was introduced by the vertically integrated firm Country Bird Holdings ("CBH") in 2007. Astral foods, through its vertically integrated subsidiary, Tiger Animal Feeds introduced the Lohmann (Indian River) breed into Zambia in 2009.

A South African producer told the Competition Commission that access to parent chicks is not very difficult possibly because breeders at the grandparent level require such a large number of day old parent chicks to achieve economies of scale.

As breeds develop, breeders may wish to switch the types of genetics in their operation. It is likely to take a lot longer for vertically integrated operations that include grandparent birds to switch breeds. Switching between breeds could take about 18 months due to the cycle length from the time the new grandparent bird is brought in until the first broiler from the breed can be sold. However it is easier for firms operating from the parent level down to switch as evident from Sovereign Foods who switched from Arbor Acres to a combination of Ross and Cobb.

2.3.2. Input, investment and scale requirements at the feed level

A new entrant at the feed level will require access to the critical inputs being maize and soya.

---

[9] Average exchange rate for 2012 at R8.20/$

[10] Astral press: "Astral Foods opens Mozpintos hatchery in Mozambique" http://www.astralfoods.co.za/MediaArticles_ArticlesView.aspx?FileNumber=454 and Finweek: "Astral scrambles for bigger African nest egg" http://finweek.com/2012/03/09/astral-scrambles-for-bigger-african-nest-egg/ both accessed on 6 June 2013.

[11] Average exchange rate for 2012 at BWP7.61/$

A country's ability to access these key inputs influences the likelihood of new entrants. Namibia and Botswana's climates are not ideal for expansive maize and soya operations. South Africa does not produce large quantities of soya. This means that new entrants at the feed level in these countries have to acquire these inputs from scarce domestic sources or seek to import from the region, or in the case of soya, from further afield such as Argentina.

However, competitive feed operations can be established at a relatively small scale. This is evident by the number of feed mills that are located close to broiler operations. The investment costs include capital for acquiring the land and necessary machinery. A South African poultry producer estimated that a feed mill with the capacity to cater for 100 000 broilers a week will cost around R40m ($4.88m). Astral is in the process of constructing a large feed mill that will produce around 40 000 tonnes of feed a month at an estimated capital cost is around R200m (24.39m).[12]

Poultry producers seeking to expand operations into other countries tend to set up feed operations first. Astral, for example has expanded into countries such as Mozambique and Zambia by initially establishing feed operations. It has subsequently established breeding operations.

2.3.3. Input, investment and scale requirements at the broiler production level

The barriers to entry at the broiler level are relatively low. The scale for a broiler operation is much lower than that required for the breeding level. This makes small scale production possible. A new entrant requires capital for the infrastructure including bird houses and equipment. It is estimated that a small broiler operation in Botswana with the capacity of 1 500 to 2 000 broilers a week will cost about BWP1.5m ($197 109). A South African producer estimates that a large broiler farm with a 100 000 broiler capacity a week will cost about R75m ($9.15m).

[12] Astral press release "Astral breaks ground in Standerton" http://www.astralfoods.co.za/pdfs/Press%20Release%20-%20Ground%20Breaking%20of%20Standerton%20Mill%20Press%20Release%20-%2026%20October%202012.pdf accessed on 06 June 2013

At this level of the value chain there are "out growers" or "contract growers" who finance setting up their own broiler operations but have contracts with the integrated poultry producers. While various different models exist, it is common for the contract growers to buy day old chicks and feed from a large producer, and then sell the broilers back to the producer once they reach the required weight.

2.3.4. Input, investment and scale requirements at the slaughtering and processing level

Firms operating at the slaughtering and processing level require scale. South African poultry producers have told the Competition Commission that abattoirs receive low margins and therefore require large volumes of broilers to pass through its operation for them to recoup its capital investment. It estimated that unless an abattoir can slaughter at least 500 000 birds a week, it would not be economically viable.

The newly established Grain Field abattoir built in South Africa with the capacity of 800 000 broilers a week cost around R130m ($15.85m) to build[13]. Other South African producers have estimated a cost around R85m ($10.37) for an abattoir with the capacity of slaughtering and processing 100 000 to 120 000 broilers a week. This type of processing facility will have the ability to produce fresh or frozen poultry. An abattoir requires different equipment based on if it wants to sell fresh or frozen poultry. Frozen poultry requires freezer facilities and, when an injector to insert brine (particularly in South Africa's case).

Abattoirs that are not linked to large producers often battle to get sufficient volumes to make their operation efficient. This is evident by the DFC Abattoir that recently closed down in the Western Cape (South Africa).

2.3.5. Input, investment and scale requirements for an integrated poultry operation

The newly established Namibia Poultry Industries ("NPI") required an initial capital outlay of approximately N$600m ($73.17m)[14]. NPI is an integrated to operate on the parent, feed, broiler and abattoir level. It produces 250 000 broilers a week.

[13] 'Start-ups take on big players and create rural jobs' Mail and Guardian http://mg.co.za/article/2012-10-30-start-ups-take-on-big-players-and-create-rural-jobs accessed on 28 August 2013
[14] Namibia Poultry Industry

Zambeef recently announced a $95m project to start an integrated poultry operation from the breeding to processing level which will be undertaken with its partnership with Rainbow. The project, once fully operational, will have the capacity to produce 1m day old chicks per week.

Each stage of the value chain requires a mix of skills. Upstream, breeders require scientific knowledge of the genetics and breeding operation. Breeders and broiler farmers also require skilled veterinarian to prevent outbreaks of diseases. Finally abattoirs and processors require skilled workers to ensure operations function effectively.

Poultry producers also have to meet various regulations at each of the different levels of the value chain. The regulations include food safety, environmental, welfare and packaging regulations. Environmental impact assessments play a key role in the new investments due to the lengthy and bureaucratic compliance procedures involved. New entrants will also need proper bio-security to control potential disease outbreaks. While the regulations governing vertically integrated poultry operations are extensive, some producers have indicated that smaller scale operations are able to get away with not complying.

A new entrant is unlikely to be constrained by introducing a new brand into the market. While not all chicken meat producers are in agreement on brand loyalty, it appears that consumers tend to have a preference for either frozen or fresh poultry, but are not particularly brand loyal. Some chicken meat producers are of the view that consumers of frozen IQF portions are price sensitive and will buy the cheapest product regardless of the brand. Even the more affluent consumers who buy fresh chicken will be less concerned with the brand.

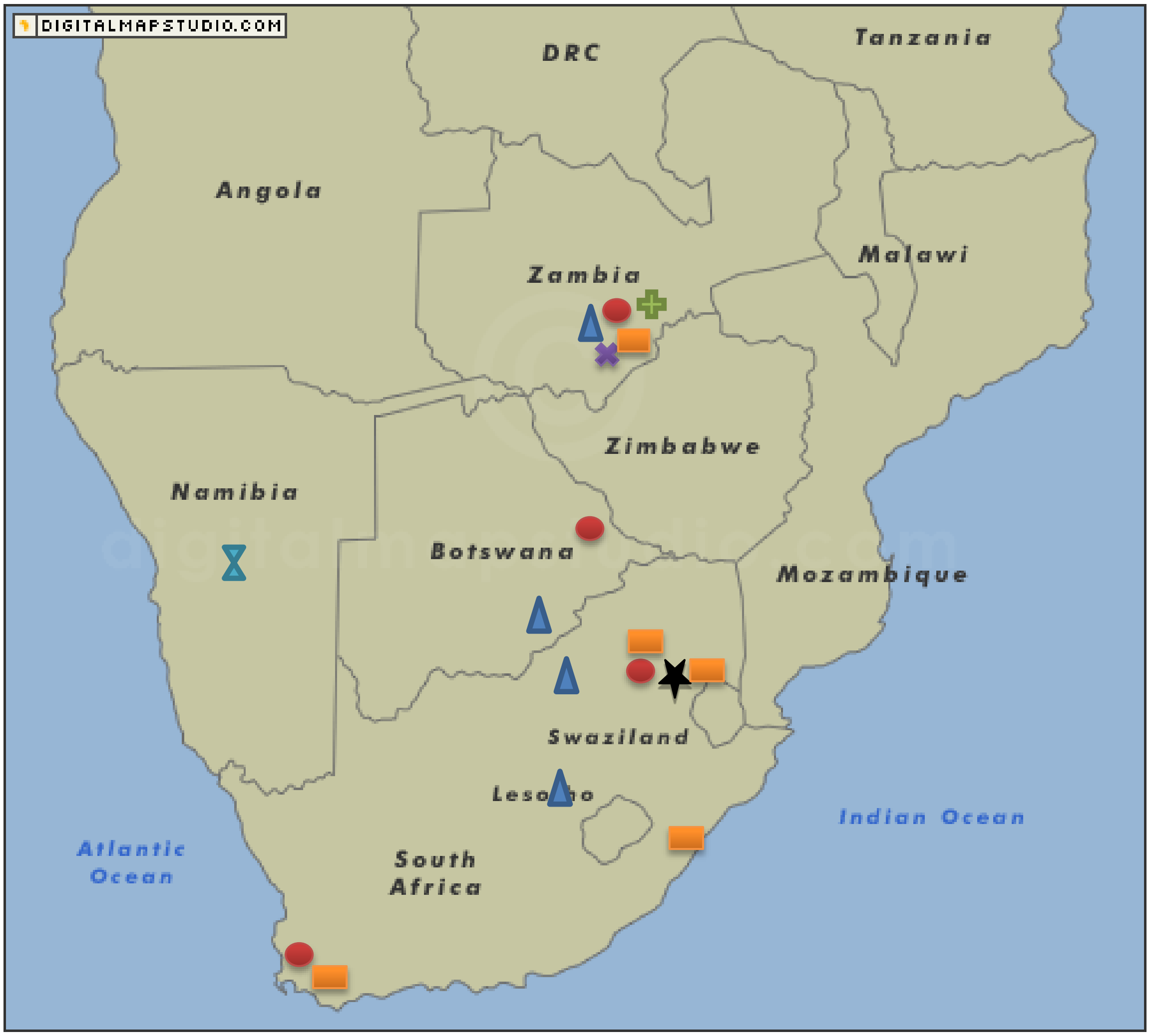
They are likely to assume that if the poultry is sold in a particular store, it will have the required quality. However some producers have indicated that new entrants often have to sell their products at discount prices to gain market share. Also consumers' preferences differ when it comes to brined chicken. Zambian producers have to comply with an industry requirement to sell only 'wholesome chicken' which is chicken that has not been brined.

3. Evolution of the poultry industry in the four countries

The poultry industry requirements discussed above mean that there are relatively few producers. The industry is therefore oligopolistic in nature, and the same firms operate across the countries in the study. The South African producers seeking to enter the other countries in the study have either set up new operations or teamed up with local producers. This makes the competition dynamics both national and regional..

The map below illustrates the major producers' breeding and abattoir operations in Botswana Namibia, South Africa and Zambia. In addition to the breeding and abattoir operations, each country has various broiler grower operations owned by the large producers, contract growers or are independent but who sell their broilers to the large producers. This section looks at each of the large companies and their operations within the region. It also looks at the role of SMMEs in the region.

Figure 2: Regional distribution of major players



Key:

Pioneer/ Tydstroom/ Bokomo/ Brink/Irvines

Astral/ Tiger/ Ross South Africa(or Africa)

Country Bird/ Dada/ Tswana Pride and Dikokotso

Namibia Poultry Industries

Hybrid

Rainbow/ Zamchick

Afgri

3.1. Main companies by country

The table in Annexure 2 provides a summary of the large producers and their operations in each of the countries in the study.

3.1.1. Country Bird Holdings Ltd / Nutri Feeds (Pty) Ltd / Ross Breeders

Country Bird Holdings Ltd (CBH) South African operations are vertically integrated from the feed level with its Nutri Feeds (Pty) Ltd operations and breeder level where it uses the Arbor Acres breed through to broiler farms and slaughtering and processing facilities. Its South African brand is Supreme Poultry (Pty) Ltd. CBH also has operations in the region. Its subsidiary, Ross Breeders Africa, holds the license for the Ross breed across Africa (excluding South Africa). Ross Breeders Zambia (Pty) Ltd operations include feed (through the Nutri Feeds brand), breeder and day old broiler operations. CBH's operations in Namibia are limited to irregular exporting of small quantities of frozen poultry. However Nutri Feeds has operations in Namibia.

CBH, through its 60% share in Ross Breeders Botswana (Pty) Ltd has breeding operations in Botswana. Ross Breeders Botswana is owned by CBH and AIDC (Botswana partner). It produces both the Ross and Arbor Acres breeds. Ross Breeders Botswana supplies day old broilers directly to the growers. Nutri Feeds (Master Farmer (Pty) Ltd (Botswana) (again CBH) has feed operations in Botswana. Ross Breeders Zambia (Pty) Ltd exports feed to its sister companies in Botswana and Zimbabwe.

CBH's business partner in Botswana has other poultry operations through AIDC (which is 100% owned by the Dada family). AIDC owns 100% in Tswana Pride who in turn owns 100% in Cold Line. AIDC together with Basha Holdings own Dikoko tsa Botswana which is an abattoir Dikoko tsa Botswana buys live birds from Tswana Pride and other independent small broiler growers. Tswana Pride purchases day old broilers for its farming operations from Ross Africa Breeders and it has abattoir and processing facilities. Finally, Coldline is the distributor for Tswana Pride products under the brand name Tswana Pride.

CBH recently secured an R231m ($28.17m) loan from the International Finance Corporation (World Bank) to increase capacity at its plant. Funds will be used to increase chick production in both Zambia and Botswana. Funds will also be used to expand the feed mill capacity in Zambia and increase broiler meat processing capacity at its Mafikeng operations in South Africa. Finally the money will be used to construct soya bean deactivation plants at two of the groups feed mills in South Africa.

3.1.2. Astral Foods Ltd / Tiger Chicks / Ross South Africa / Tiger Animal Feeds

Astral Foods Ltd ("Astral") is another large integrated South African poultry producer. It owns the franchising rights for the Ross breed in South Africa. Its breeding farm and hatchery operations are the Elite Breeding Farms, Earlybird and National Chicks. Astral's broiler farms include County Fair and Early Bird farms. Its feed is supplied internally through Meadow Feeds and it has its own abattoirs and processing facilities. The brand names are Earlybird, Festive, Goldi, Supa Spar, County Fair and Mountain Valley. Astral made significant investments in its South African operations which include about R200m on a new feed mill[15] as well as an upgrade and expansion of waste water and effluent treatment systems at Standerton and County Fair. Astral also bought a small producer, Mountain Valley (Pty) Ltd in 2011.

Astral's Zambia subsidiary, Progressive Poultry Ltd Zambia (Tigerchicks), has parent and day old broiler operations where it uses the Lohmann breed (Indian River). Its feed operation in Zambia is called Tiger Animal Feeds (Africa Feeds Ltd Zambia) which produces poultry feed as well as a variety of other animal feeds including dog, fish, horse and cattle feed. Tiger Animal Feed's poultry operations target small scale and commercial farmers. However it also exports feed to Zimbabwe. Tiger Animal Feeds is in the process of expanding its production capacity to increase its exports to the broader region. In addition, its Early Bird and County Fair operations export chicken meat to Namibia. Astral has also recently invested in a hatchery in Mozambique.

3.1.3. Pioneer Foods Group Ltd / Bokomo Foods

Pioneer Foods Group Ltd has a subsidiary, Pioneer Foods (Pty) Ltd ("Pioneer") which is another of the large vertically integrated South African poultry producer with operations in the region. In South Africa, Pioneer's chicken production operations are conducted through the Tydstroom division. At the breeding level, Bellevue Chix imports day old

[15] Astral press release "Astral breaks ground in Standerton" http://www.astralfoods.co.za/pdfs/Press%20Release%20-%20Ground%20Breaking%20of%20Standerton%20Mill%20Press%20Release%20-%2026%20October%202012.pdf accessed on 06 June 2013

grandparent Cobb chicks. Tydstroom has both its own broiler farms and contract growers.

Feed is supplied through Nova Feeds. Product names are Tydstroom, Grovy Range, Happy Hen and Kekkel en Kraai. Tydstroom poultry operations are predominantly located in the Western Cape and it tends to focus primarily on fresh poultry. Recent investments include their purchase of DFC breeder and broiler farms in the Western Cape. Tydstroom also acquired Tonko Chickens (Pty) Ltd in Gauteng in 2011 that included an abattoir and a processing plant.

Pioneer also has poultry operations in the region through Bokomo Foods. Its Zambian operation is Bokomo Zambia (Ltd) and is active on both the day old chicks and feed level. It switched from the Ross to the Cobb Avian 48 breed. Bokomo Zambia does not have broiler farms or abattoir facilities but rather sells the day old chicks. Its feed operations cater for its parent stock. However it also supplies small quantities on request to small scale businesses who buy its day old chicks.

In Botswana, Bokomo Botswana and Firetree own Cotesloe (trading as Irvines Botswana). Irvine supplies day old Cobb chicks to Richmark Poultry- owned by Pioneer Foods and Brink Holdings. In addition, Irvines distributes its day old chicks through Feed Centre Botswana (who have five (geographic distribution centres (owned by Mont-Trade)) to other growers. There is no shareholding link between Bokomo and Mont-Trade. Richmark Poultry has abattoir and processing facilities, and its brand name is Richmark Poultry. It distributes its processed poultry through Senn Foods (owned by the Brink Family) to hotels and retail stores (Brink family owns about 50% of the Spar supermarket chain shops in the country).

3.1.4. Rainbow Chicken Ltd

Rainbow Chicken Ltd ("Rainbow") is another large vertically integrated South African poultry producer. It uses the Cobb breed and also has both its own farms and contract growers. Vector Logistics does the logistics for Rainbow. Rainbow has expanded its operations through its acquisition of Bushvalley. More recently it bought 64.2% of Foodcorp as an attempt to diversify away from poultry. In addition, Rainbow has recently purchased a 49% stake in Zambia's Zamchick for $14.25m. Zamchick is a subsidiary of

Zambeef. Zambeef is a diversified Zambian agribusiness with operations in Zambia, Nigeria and Ghana.

The company is integrated to the feed level where feed is supplied through Novatek, which is the largest feed operation in the country and is a major producer of soya. Approximately 30% of Novatek feed is used internally, and the rest is sold on the open market or exported to Zimbabwe. While Zambeef is not involved in poultry production at the breeding stock level, Zamchick has a broiler and processing operations.

3.1.5. Hybrid Poultry Farm

Hybrid Poultry Farm ("Hybrid") is the largest Zambian poultry producer. Its operations at the breeding level use the Cobb 500 breed. Hybrid supplies day old chicks to Zamchick as well as other small scale farmers who, in some instances act as contract growers. Hybrid's processing activities occur through Verino which sells two brands- Country Choice and Eureka Chickens. It distributes its chickens to major chains such as Shoprite, Pick n Pay and Spar.

3.1.6. Afgri Ltd

Afgri Ltd's poultry division is another large integrated South African poultry producer. Its breeding operations occur at the breeding farm Midway Chicks and it uses the Ross bread. In addition, its feed is from the Afgri Animal Feeds. Its broiler operations occur at the daybreak farms. It also has abattoir and processing plants. In 2011 Afgri purchased Rossgro which boosted its poultry production capacity. It has also made an investment in Nigeria where it has bought a 51% stake in a poultry company called BnotHarel Nigeria

3.1.7. Galaunia Farms

Galaunia Farms was established in 1962 as a crop production farm in Zambia. In 1980 it diversified and started dairy and poultry operations. In its poultry operations, it operates at the broiler and processing levels. It buys its Day Old Chicks from Ross Breeders Zambia Limited. The company produced 1.8m broilers in 2012 and its brand name is Crest Chicken. Galaunia Farms is owned by the Galaunia family.

3.1.8. Namibia Poultry Industry

The most notable new entrant in the region is NPI that started production in May 2012. NPI forms part of the NMI group of companies that include Namib Mills (Pty) Ltd and Feedmaster (Pty) Ltd. Climate conditions are not conducive to produce sufficient volumes of inputs (maize and soya) into feed. Namib Poultry therefore imports the raw materials for feed from South Africa and then manufactures the feed through Namib Mills. NPI also imports parent stock (Cobb) who then produce the broilers at their hatcheries. They have broiler farms and abattoir and processing facilities.

3.2. New entrants and opportunities for SMMEs to participate in the poultry industry

There are numerous poultry producers with small operations. These smaller producers typically operate only on one level of the value chain and are most commonly broiler farmers. Small independent farmers are in some instances contract growers for larger producers as described above.

In an effort to build sustainable local poultry production, the Botswana government financed about 245 broiler growing farms. These smaller farmers engage with the large producers at the other levels of the value chain and sell their broilers to the large abattoirs.

In Zambia, many smaller, independent farmers purchase day old chicks from the larger breeders. They are able to buy feed from any feed manufacturer. These independent growers grow the broilers for their own consumption or they sell the broilers either live or home dressed, typically on an informal basis. A more developed small integrated operation in Zambia is Panda Hill. It started operations in 2007 and has operations on both the feed and broiler levels. It imports the Hubbard breed fertile eggs from Zimbabwe, which are then hatched to produce the day old parent stock. The day old broiler chicks are then sold to small businesses to raise and sell as semi-processed whole frozen or live birds. On the feed side, National Milling Corp is a subsidiary of Seaboard Corporation of the US that provides feed to the poultry industry. Other players in the feed market include, Simba Milling Ltd, and Olympic milling Ltd.

The main player in Namibia, NPI, is looking to expand its operations by encouraging the involvement of SMMEs by establishing small chicken outlets through a franchising format. There are currently two other small scale poultry operations, Zambezi Poultry farm which has been in operation for about 10 years is a very small operation that produces about 1200 broilers per week. It imports feed and day old parent chicks from Zambia. The second producer is Naukluft Poultry that started operations in 2013. It is slightly larger and sells about 20 000 live broilers a week to the coastal region (Swakopmund and Walvis Bay). It buys its day old parent chicks from South Africa. The farm is planning to expand its operations by developing a small abattoir.

While the South African poultry market is for the most part dominated by the 5 large producers, there are also medium and small poultry producers. SAPA classifies medium producers as those that slaughter between 120 000 and 250 000 birds per week. SAPA has 32 commercial medium size farmer members. The Department of Agriculture, Forestry and Fisheries estimates that there are about 2 264 developing farmers.

However, there have been various smaller poultry producers in South Africa that have recently either gone out of business or have gone into business rescue. Darling Poultry went into business rescue where Darling Breeder and Broiler farms were subsequently bought by Pioneer. Mountain Valley was taken over by Astral and Bushvalley by Rainbow. Argyle is currently under business rescue and Sangiro was liquidated but has recently been refinanced by the DTI.

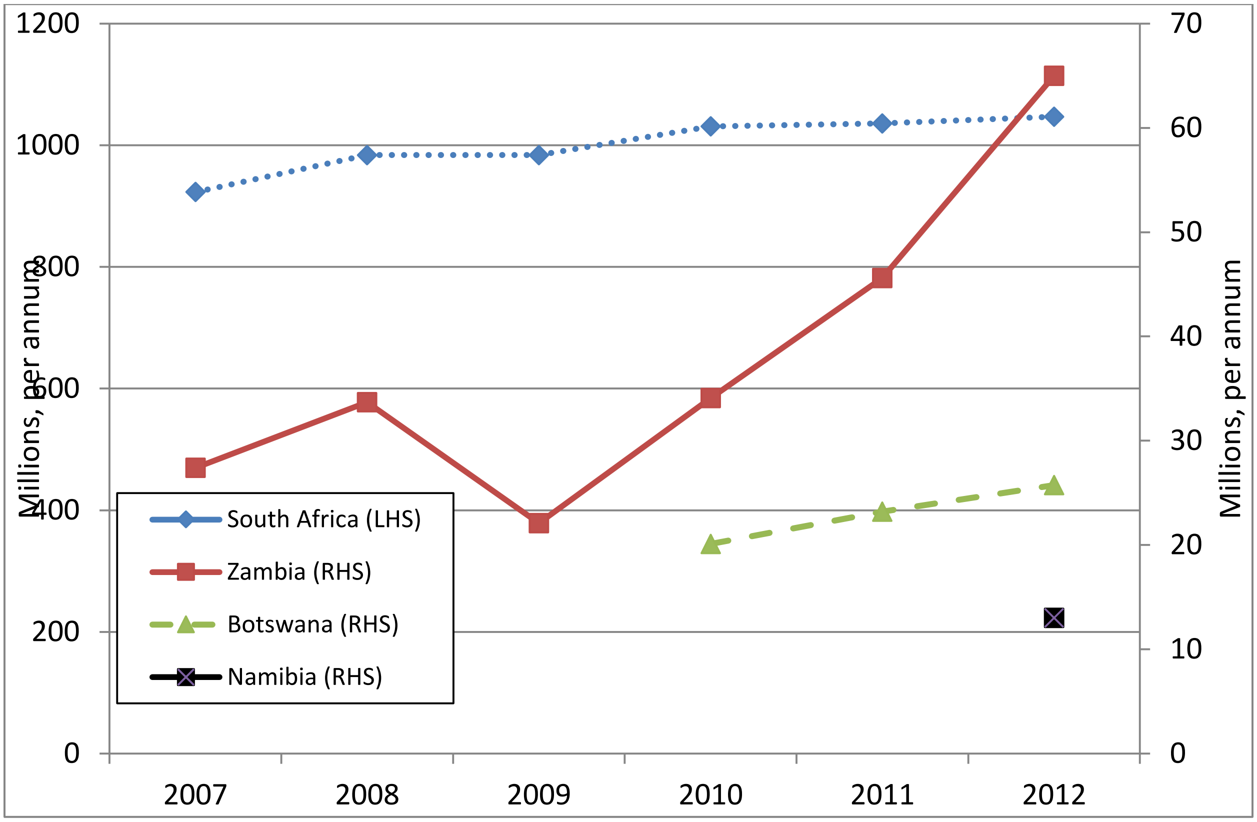
4. Growth of the poultry industry across the four countries

We assess the nature and extent of competition at each level using available data, particularly on production and pricing. South Africa is by far the largest producer, but the fastest growth has been recorded in Zambia, which is linked to major investments in new capacity. Botswana and Namibia have both been seeking to develop their industries by using infant industry protection to incentivise investments in local production.

4.1. Production

Figure 3 illustrates the production of day old broiler chicks for South Africa, (left axis), and Botswana, Namibia and Zambia (right axis). South Africa is by far the largest producer. It recorded slow but relatively steady growth in production of broiler chicks between 2007 and 2012. During the same period Zambia production more than doubled from around 27 million in 2007 to 65 million in 2012. This growth has not been steady with a sharp decline in 2009. It is notable that some of this increased production is aimed at exports to neighbouring countries such as the DRC, Tanzania and Mozambique. While Botswana's production lagged that of Zambia's in 2010, the gap between the two countries widened significantly over three years. Botswana's infant industry protection has supported growth in day old chick production but when compared to other countries regionally it is still very small and it reflects the small size of the local population. Namibia only started significant poultry meat production during the last 12 months so only its 2012 figure is reflected.

Figure 3: Production of day old broiler chicks[16]



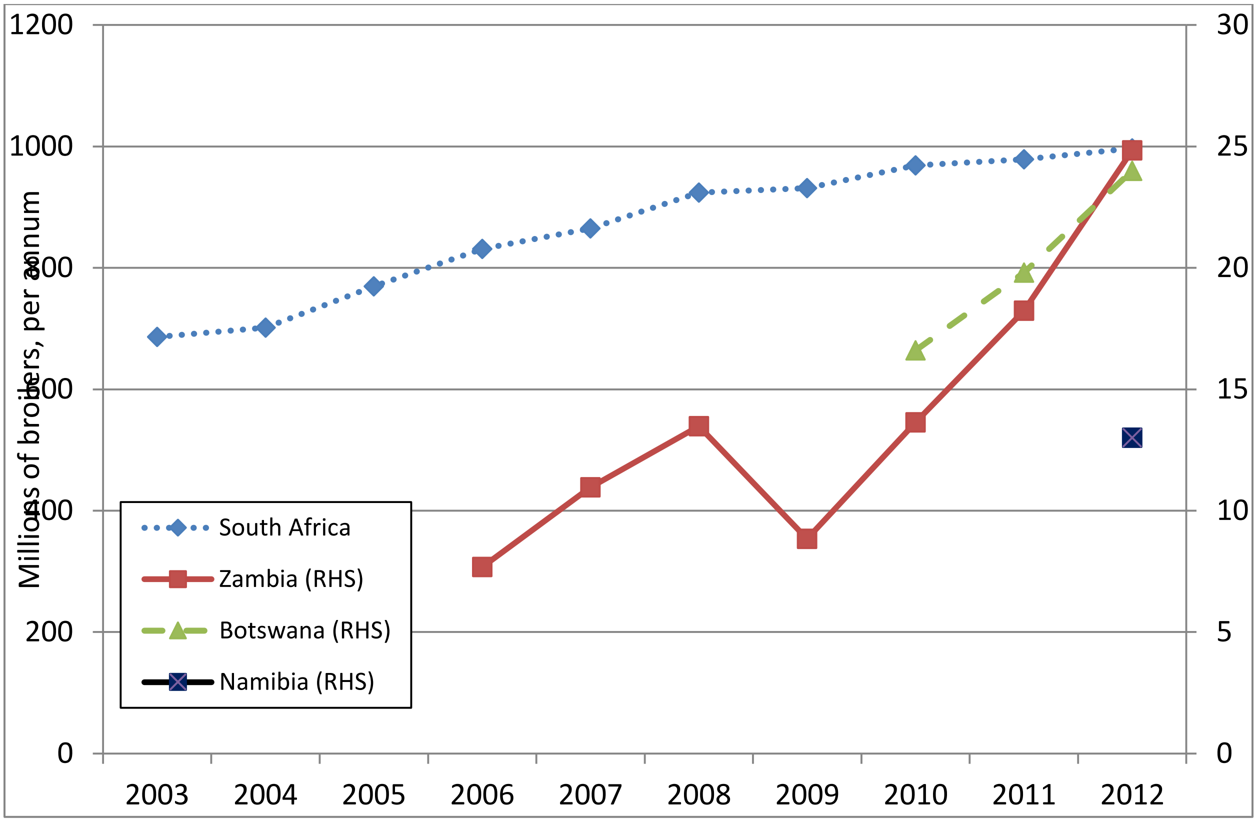
Source: Poultry Associations of South Africa, Zambia, Botswana Ministry of Agriculture and NPI

Figure 4 illustrates the production of broilers for South Africa (left axis) and Botswana, Namibia and Zambia (right axis). The longer time period for which we have data for South Africa reflects that growth rates were high between 2004 and 2008. However, growth in the production of broilers eased off between 2009 and 2012. This trend appears to be consistent with the country's economic growth rate. Similarly to the production of day old chicks, the production of broilers in Zambia has more than doubled, but it is still less than half the total number of day old chicks reflected in Figure 3. This could be attributed to the high number of day old chicks and broilers that are sold live.

[16] Namibia's NPI's broiler DoC mortality rate is unknown, thus the 13m per annum excludes the mortality rate

Some of Zambia's growth in poultry meat production could be attributed to an increase in the population and disposable income of the population. Botswana has experienced a steady increase in broiler production in the later three years.

Figure 4: Production of broilers



Source: Poultry Associations of South Africa[17], Zambia and Botswana Ministry of Agriculture, Namibia data derived from NPI

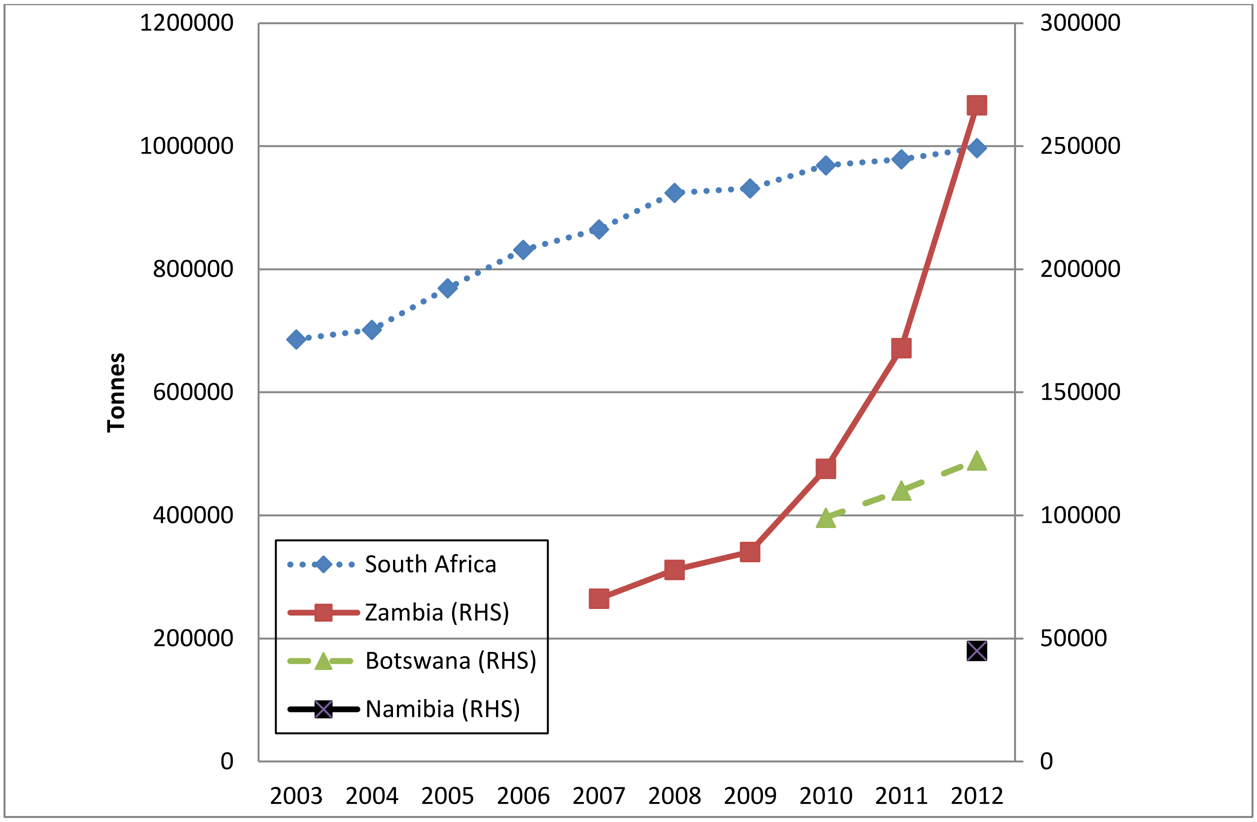
The data on feed production illustrated in Figure 5 below reflect similar trends. Notable is the even higher growth of feed production in Zambia. This is associated with strong growth in agricultural production and processing activities leading to substantial feed exports. Zambia has had substantial growth in soya production and investments in crushing mills to produce vegetable oil, with the oil cake being used in feed. The country has recently become self-sufficient in soya production and will start to export in 2013/14.

The increase in feed production in South Africa between 2004 to 2008 ties in with the increase in demand for broilers as described above. The rate of growth in feed production eased during 2009 to 2012.

[17] The figures for South Africa are the number of broilers slaughtered

Botswana imports raw materials for its feed manufacturing mostly from South Africa. Its feed production has also increased over the last few years.

Figure 5: Production of poultry feed



Source: Zambia[18], Botswana Ministry of Agriculture and Namibia data derived from NPI, South Africa Animal Feed Manufacturers Association

4.2. Capacity Utilisation

Most of the large South African poultry producers were producing at full capacity during 2011 and into 2012. They increased capacity through acquisitions of smaller producers who were under financial distress. This distress is attributed to the decrease in margins that was largely blamed on imports. During the last financial year only one of the top 6 producers in South Africa (Sovereign Foods) was able to show a profit. This has resulted in

[18] Zambia figures represent the production by the top five producers of feed

large producers seeking ways to cut costs and could result in a decrease in capacity utilisation.

In Namibia, NPI is producing at half its total capacity and is likely to double/ produce at full capacity in the near future as it matures. Botswana's capacity utilisation during 2012 was estimated to be at about 90%.

The current average utilised capacity of the top four (4) poultry companies in Zambia at the breeder level is 80.2%[19]. Due to the ever increasing demand for poultry meat in Zambia, these companies are continuing to invest to expand their output. Over time, poultry breeders in Zambia have been expanding their capacity by either acquiring new land or investing in more equipment on their farms.

4.3. Employment

The poultry industry is a significant source of employment for various skill levels. While not a labour-intensive industry as such, given the capital investments required, it is a labour absorbing industry – with increased production requiring higher levels of employment. This section provides a snapshot of estimates of employment to demonstrate the magnitude of employment creation.

In South Africa, the total number of direct employees in the broiler industry for 2012 was 48 118[20]. This includes those employed in hatcheries, rearing, processing and distribution. If related industries are taken into account, then the total amounts to 107 857 employees. This makes it the largest source of employment in the agricultural sector[21].

In Zambia the poultry industry employs an estimated 80 000,[22] of which 50 000 are permanent and 30 000 are seasonal jobs. This level of employment covers the entire value chain from feed production to broiler processing. The Botswana poultry industry employs about 2 350 people. In Namibia, the NPI employs about 600 people. In

---

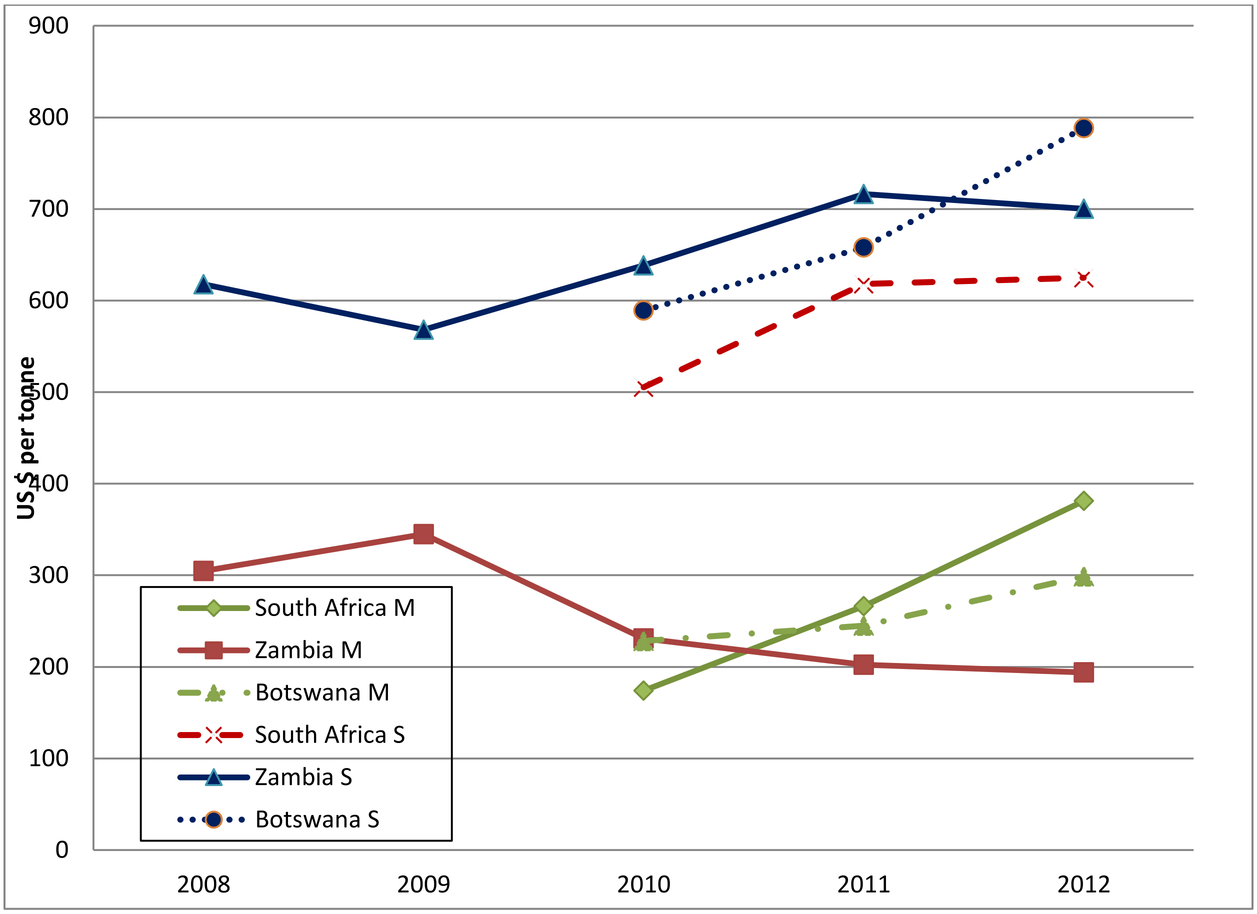
[19] Average capacity utilisation data from Hybrid Poultry Farm, Ross Breeders Zambia, Bokomo and Panda Hill Hatchery
[20] South African Poultry Association (SAPA
[21] South African Poultry Association (SAPA)
[22] Poultry Association of Zambia, 2012

addition, local traders who import and export poultry are estimated to employ about 912 people.

4.4. Pricing

A producer's ability to compete will depend critically on access to low cost feed. A country's competitiveness within the region and particularly in South Africa's case against cheap imports will be influenced by the domestic cost of feed. Poultry feed costs are largely driven by the cost of the two main inputs being soya and maize. Figure 6 charts maize and soya prices for South Africa and Zambia. It illustrates that soya prices are significantly higher than maize prices. In Zambia, maize prices have been supported by a government floor price; although in 2011 and 2012 the Zambian maize prices were below those in South Africa. The Zambian soya price rose sharply between 2009 and 2011 before easing in 2012. The decrease could be attributed to an increase in domestic supply as a result from earlier investment in soya growing and milling. This price is still somewhat higher than in South Africa, where the price is influenced by imports from South America. Growing local production with investments in farming in Zambia would be expected to see more competitive local prices over time.

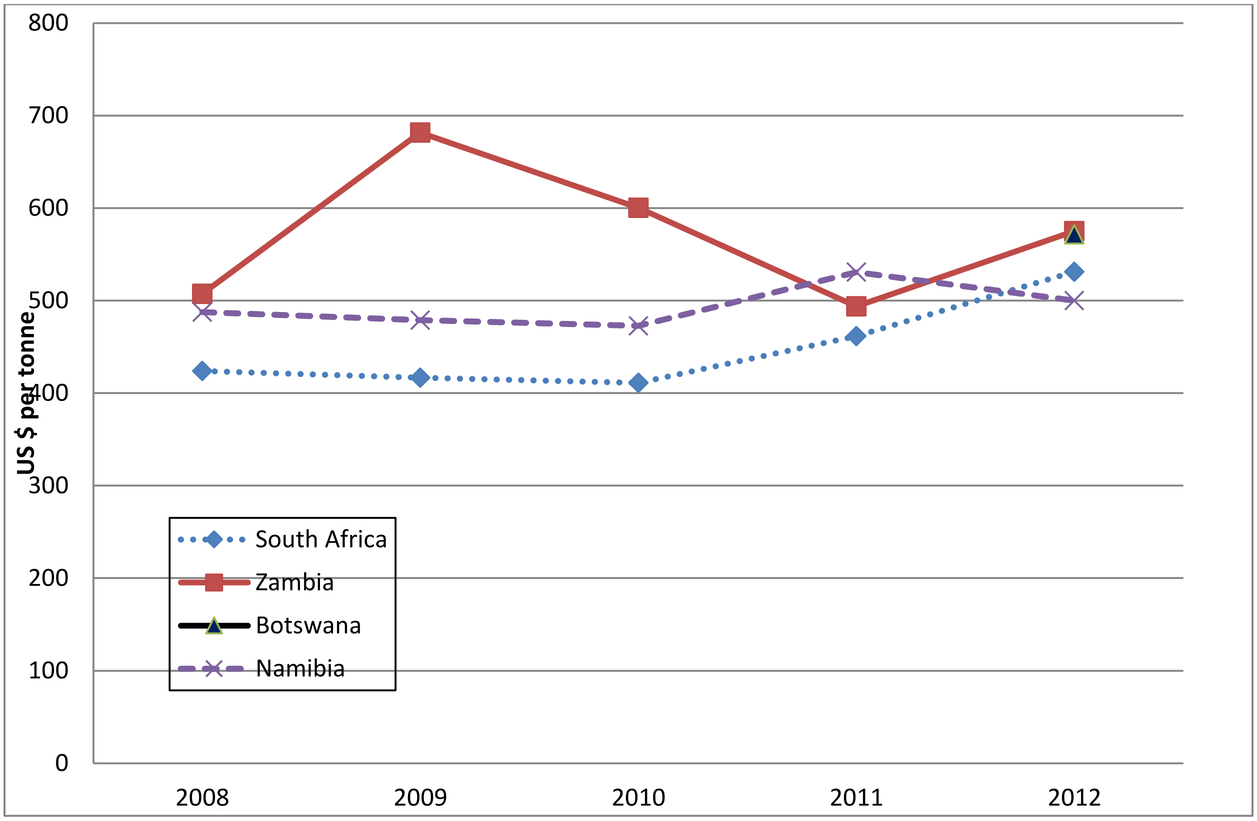
Figure 6: Maize and soya prices



Source: South Africa SAFEX prices, Poultry Association of Zambia, and Botswana

Figure 7 provides the average broiler feed prices for the four countries. As expected, Namibia's broiler feed price largely tracks that of South Africa's. Zambia's feed price has declined from a high in 2010. This could be attributed to greater investment in the feed industry slowly paying dividend as per its long term poultry plan and lower maize prices.

Figure 7: Broiler feed prices



Source: Poultry Associations of South Africa, Poultry Association of Zambia, Botswana- submissions by growers and abattoirs Namibia data derived from NPI

Figure 8 illustrates the price producers receive for frozen poultry meat. South African producer prices eased in 2012 to below that received in 2009. However as the feed price graph above illustrates the cost of the producers main input has increased gradually. This explains the pressure on producer margins (as will be discussed later).

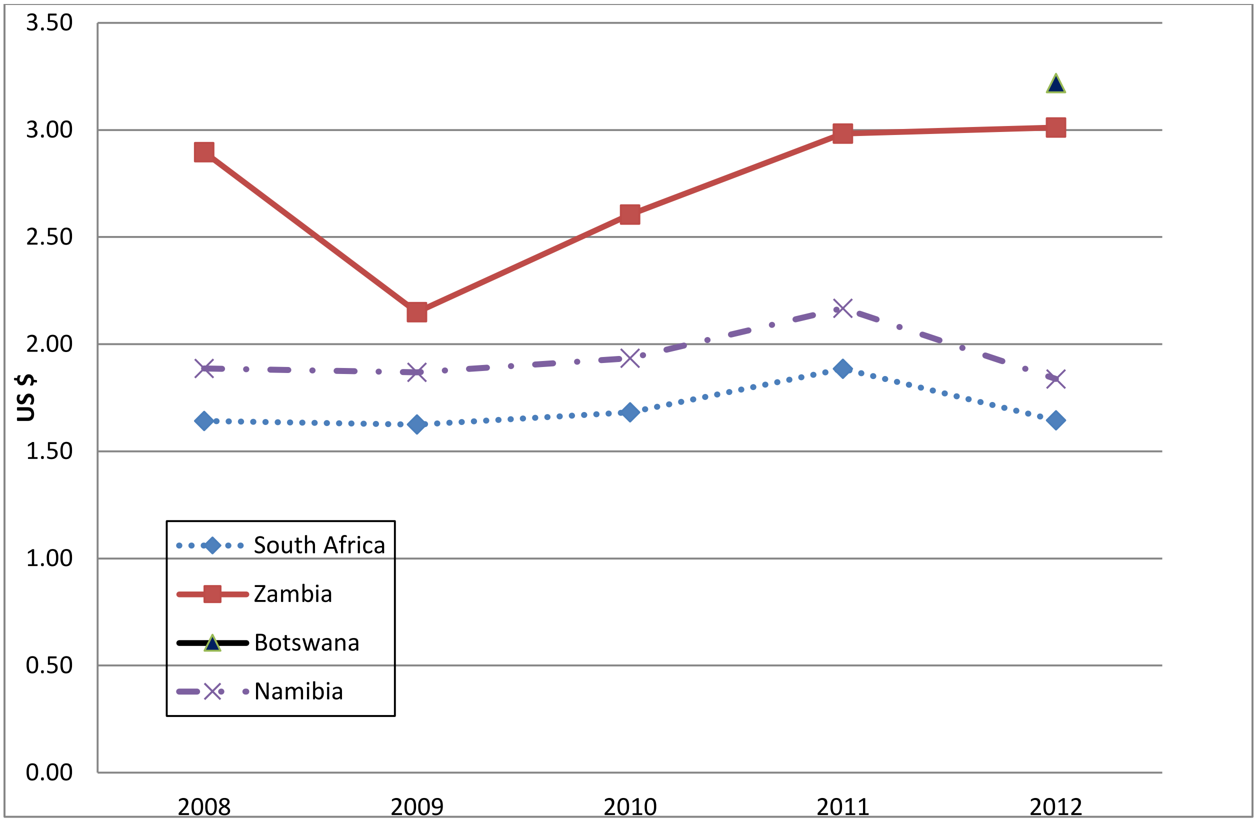
Zambia, on the other hand, has experienced a steady rise in producer prices until 2011. Producer prices have eased off slightly in 2012.The cause of slower growth in prices between 2011 and 2012 could be reflective in the ease in pressure from maize and soya prices as producers become more self-sufficient. Unlike South Africa, Zambian producers are unlikely to face the same level of competition from imports and the local market is quite concentrated. However, competition in the local market particularly at the breeder level has increased.

Producers argue that producer prices are likely to be higher in the region compared to South Africa as the production costs in these countries are higher, although this does not apply to animal feed. Producers have attributed higher costs to the lack of economies of scale at various levels of the value chain as well as the use of older and less efficient technology. Note should also be taken of the difference in brining levels which needs to be controlled for in any comparison of frozen meat prices (as we discuss below).

Up until 2012, Namibia imported almost all of its commercial poultry meat products from South Africa. In Figure 8, the 2012 figure for Namibia is the estimated producer price. However, the figures for 2008 to 2012 are the South African price plus an estimated 15% to account for transport and storage costs.

Figure 8: Broiler producer prices, per kg frozen poultry[23]

[23] These figures are not adjusted for brining. The prices would be slightly higher for South Africa, Namibia and Botswana if they are adjusted for brining.



Source: Poultry Associations of South Africa, Poultry Association of Zambia, Botswana-submissions by growers and abattoirs Namibia data derived from NPI

Between 2008 and 2009 feed prices increased sharply in Zambia while at the same time broiler producer prices decreased. Between 2009 and 2011 feed prices and producer prices again moved in opposite directions. This trend is unusual given that feed is a major contributor towards total production costs. During the period of consideration, Zambia's production of both feed and broilers increased. Assuming national demand did not outgrow the growth in supply, this could be indicative of the effect of considerable market power exercised by the largest producers on the market. There is need for the Zambian competition authority to investigate this further.

4.5. The issue of brining in frozen chicken

Brining is the process of injecting water and salt liquid into the poultry before it is frozen. The level of brining varies in each country from South Africa known to inject high quantities of brine to Zambia where brining is prohibited.

Critics of brining argue that it is a cheap way of adding weight to a product that is sold by weight. But poultry producers argue that brining enhances the flavour and texture and reduces costs. Customers, they argue, prefer brined products because the chicken is moister when cooked. They claim that brining reduces the production costs and the cost saving is then passed on to consumers. Without brining, the cost of frozen poultry will move in line with that of fresh poultry. Poultry producers fear that they will not be able to compete against imports if they do not brine their chicken meat as their costs per kilogram will increase. But at the same time, stricter brining legislation will level the playing field as like for like products will be sold.

In South Africa, the Department of Agriculture Fishing and Forestry (DAFF) is responsible for poultry meat regulations under the Agricultural Product Standard Act, 1990. DAFF therefore sets the legislation on brine contents. The current legislation allows for whole poultry to pick up 4% water during the production process when the poultry carcase is chilled. In addition, it allows for 4% brine to be injected into whole frozen chickens.[24]

This legislation does not cover Individually Quick Frozen (IQF), which makes up about 60%[25] of domestic consumption. South African poultry producers currently inject their IQF with an average of 30% brine.

The Namibian Bio-Safety Bill has not yet been enacted which has resulted in various levels of brine in poultry products. The Bill is expected to ensure that the Namibia Standard Institution regulates the implementation of an appropriate brine level. Namibia has, up until recently, relied largely on imported poultry from South Africa which is brined at South African levels of about 30%. The local producers currently inject about 14% to 20% of brine.

In Botswana, brining is only done on a small scale. Local producers argue that the higher poultry production costs in Botswana compared to South Africa are largely attributed to their lower quantities of brine. However the Botswana Institute Development Policy Analysis report on the poultry industry in 2011 disputed this claim. It suggested that prices were still higher even after taking brining into account. Botswana poultry producers also

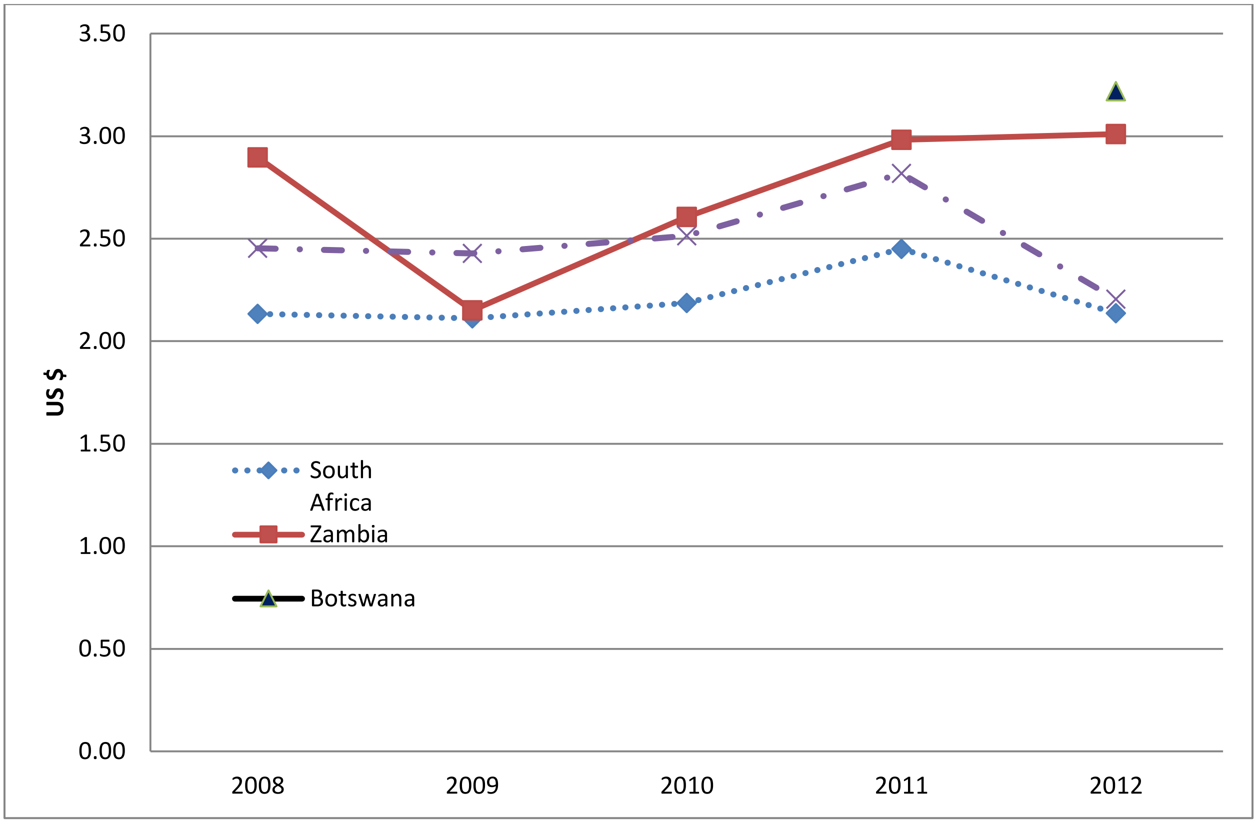
[24] Mkhabela, T. “An outlook on the effects of brine content reduction in chicken meat in South Africa”
[25] SAPA Annual report 2011 pg. 8

claim that chicken restaurants like Nandos, KFC and Chicken Licken require a certain level of brine in their chicken.

Zambia is at the other end of the brining spectrum as producers do not brine their chicken at all. The Zambians call chicken without brine ‘wholesome chicken.’ Currently importing of brined chicken is not allowed in Zambia.

Figure 9 below illustrates the effect on poultry producer prices when brining is taken into account. The figures for South Africa and Namibia adjust upwards as the producer price, without brining would be slightly higher. Zambia does not brine so its figures remain the same as in Figure 8. While brining does take place in Botswana, its figure was not adjusted as it only occurs in small quantities.

Figure 9: Broiler producer prices, per kg frozen poultry adjusted for brine[26]



Source: Figures from Poultry Associations of South Africa, Poultry Association of Zambia, Botswana- submissions by growers and abattoirs Namibia data derived from NPI adjusted for brine

[26] The Broiler producer prices from Figure 8 are adjusted in Figure 9 to account for brining. Here South Africa's figures were adjusted for 30% Brine. Namibia's figures for 2008-2011 are adjusted for 30% brine (as the poultry was largely imported from South Africa). The 2012 figure is only adjusted by 20% as NPI started production in 2012 and brines at about 20%. While there is brining in Botswana, its figure was not adjusted. Zambia's figures remain the same as in Figure 8 given that no brining is allowed.

4.6. Cost structure

We attempt to construct a cost build up for each of the four countries that reflects the costs associated with the various levels of the value chain in table 1. Ideally this will illustrate at a very basic level the differences in costs across the countries. It is hoped to determine if there are any areas with significant competitive advantages[27].

The figures were obtained by aggregating the various producers' and industry body figures and then converting them to dollars.

[27] The figures in the cost build up are estimates based on discussions with domestic poultry producers and publically available data. It is worth noting that these are estimates and are likely to vary based on numerous factors such as seasonality where for example the price of feed could be affected. In addition, average conversion ratios were used. These ratios vary across companies and also for a single company over time as production methods alter.

Table 2: Cost build-up, US$, 2012[28]

	Zambia	SA	Botswana	Namibia
Feed cost, kg	0.58	0.54	0.57	0.57
Conversion ratio	1.67	1.67	1.80	1.67
Size of bird	1.80	1.80	1.80*	1.80
Feed cost per broiler	1.74	1.61	1.85	2.00
DoC	0.85	0.37	0.6	0.50
Other costs in broiler prod	0.25	0.24	0.53	0.3
*Live chicken (1.8 kg) cost	2.84	2.22	2.98	2.80
*Live chicken (1.8 kg) price	3.90	2.64	3.39	2.84
Live chicken cost per kg	1.58	1.23	1.66	1.53
Abattoir cost / processing per kg	0.30	0.29	0.34	0.36
Processed chicken, per kg, cost	1.88	1.52	2	1.89
Processed chicken, per kg, producer price	3.01	1.64	3.15	2.23
Brining levels	0%	30%	Less than 5%	30%
Producer price, per kg adjusted for brining	3.01	2.13	3.15[29]	2.89
Fresh poultry producer price (portions)		2.88		
Processed chicken, per kg, retail price (frozen portions)	3.20	2.93		3.66

*Botswana's poultry average weight is 1.65kg. These figures have been converted to 1.8kg for consistency.

It is readily apparent that feed is the main cost in poultry meat production (Table 3). It accounts for about 70% of the total production cost of live chicken in South Africa, and just over 50% of the cost of a processed chicken.

[28] Exchange rates: South African Rand and Namibian Dollar: R(N$)8.20:$1, Botswana Pula BWP7.61:$1 and Zambian Kwacha 5147.30:$1

[29] While Botswana producers do brine in small quantities, we did not adjust their figure for brining as we do not have clarity at to the exact level of brining. Even without brining, but comparing to those figures adjusted for brine their producer price is still the highest.

In Zambia, the feed cost is slightly higher (reflecting the higher price of soya), and accounts for around 60% of the live chicken cost. As expected, Namibia and Botswana's feed costs are higher than South Africa, given that the inputs to feed production are imported. Also feed costs in Botswana could be driven higher by government regulation to buy 70%of feed requirements locally (as discussed below). However, even though feed costs are significantly higher in Botswana, they, like in Zambia, contribute 60% to the total cost of live birds

The day old chick contributes just 17% of the cost of a live bird in South Africa, with other costs accounting for the remainder of the total cost (around 11%). By comparison, the day old chick cost in the other three countries is substantially higher with Zambia at more than double the South African price. The day old chick cost in Zambia accounts for about 30% of the live chicken cost. The higher cost for day old chicks in Zambia, Botswana and Namibia could be attributed to the lack of economies of scale at the breeding level. Higher costs could also be attributed to government protection that blocks imports of day old parent chicks in Zambia and broiler chicks in Botswana. However, Zambia is a net exporter of day old chicks, which would appear to reflect low production costs. The cost of day old chicks in Zambia could decline with time as the market is becoming more competitive. There are now five breeding operations located in Zambia. The cost could also decline if breeders are able to increase exports further into the region which will help them to achieve economies of scale. In Namibia's case, the cost could be attributed to the additional cost to transport the grandparent day old chicks from South Africa.

Abattoir and processing costs are similar for the four countries. In Zambia, the feed and day old chick prices are higher than in South Africa which results in higher final costs. Further, processed prices are quite different, with Zambian producer prices approximately around 84% higher than South Africa. Botswana's costs are higher than the other two countries (40% higher than South Africa), its producer prices are significantly higher at just over 90% higher than South Africa.

As mentioned above, it is argued by some commentators in the region that South African frozen chicken is artificially cheaper as it is injected with an average of 30% brine. Poultry meat produced in Namibia is also brined and the same argument could apply[30]. Currently Botswana has small quantities of brine in poultry, whereas Zambia does not allow brining at all.

We have attempted to adjust the figures for brine by first adjusting the price upwards by the average level of brining for IQF portions which, in South Africa's case, is about 30%. After making such an adjustment, the final cost in South Africa is still cheaper at $2.13 than that in Zambia ($3.01). Another approach to account for the brining in South Africa is to look at the producer price for fresh poultry (which is not brined). The average price in 2012 of $2.88 is still cheaper than Zambia's $3.01. The table illustrates that Botswana is a high cost producer and its poultry meat price is higher than the other three countries participating in the study even though brining was not taken into account for Botswana. These cost figures have not taken mortality rates into account. South Africa's estimated mortality rate is around 4.52%[31] and Namibia's estimated mortality rate is slightly lower at 4.17%[32]. Botswana's mortality rate is estimated to be much higher at between 5% and 7%.

4.7. Margin analysis of large producers in the region

Figure 9 looks at the large poultry producers' margins between 2001 and 2013 for those on which data are available from published financial accounts or annual reports. The first half of 2000s were characterised by rapidly increasing margins peaking above 13% in 2006/07. Margins dipped sharply in 2007 and have remained volatile since. There are various factors that could explain the decline. During this period there was an increase in domestic competitive dynamics.

[30] We adjusted the Namibian figures by 30% for brining as frozen poultry meat was historically injected to the same levels as South Africa. However, the Namibian Poultry Industry has indicated they inject between 14%-20% of brine. At 20% brine, the producer price per kg is $2.68

[31] SAPA presentation to the Portfolio Committee on Agriculture, Forestry and Fisheries 10 September 2013

[32] Namibia Poultry Industries (NPI)

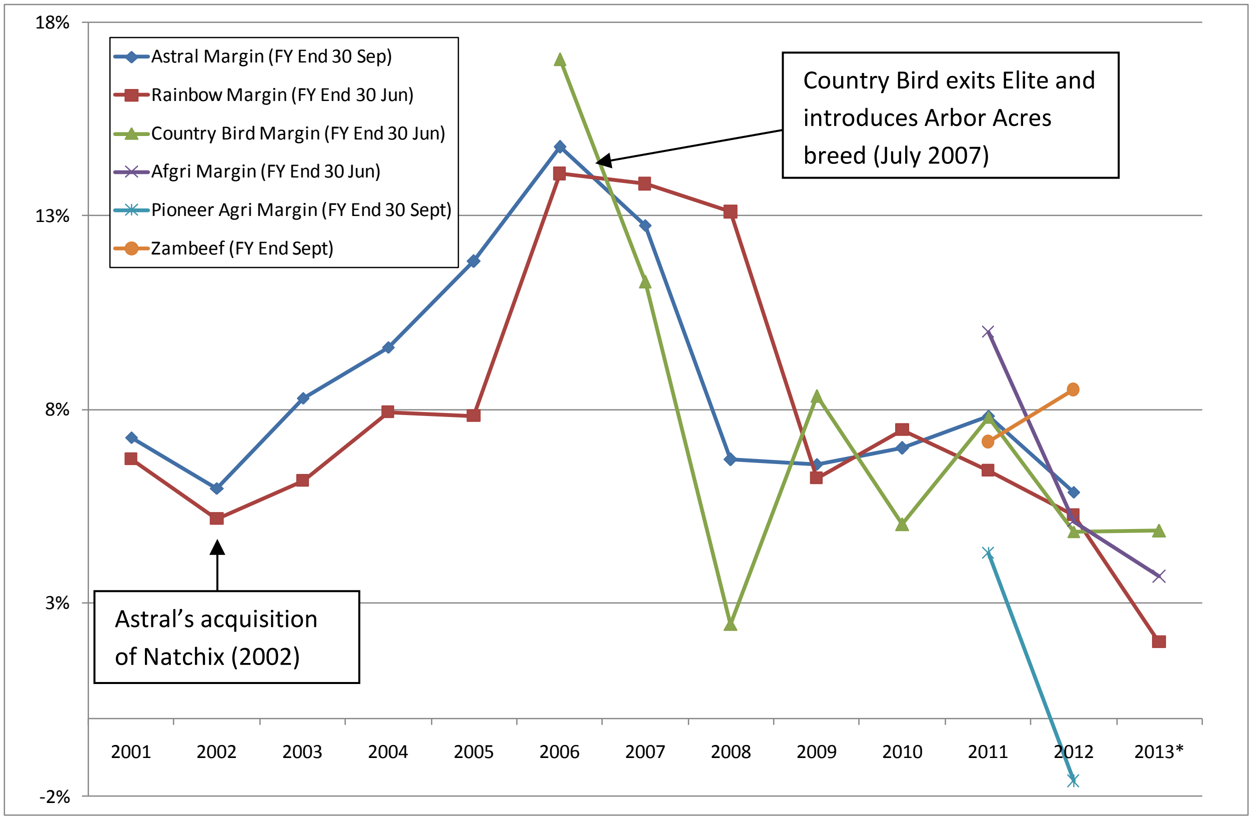
In 2007 Country Bird exited the Elite partnership and introduced a new breed, Arbor Acres, which increased competition throughout the value chain. This was followed by a steep increase in imports starting in 2010 (with the increase coming mainly from Europe).

The South African poultry meat producers attributed their poor domestic performance and decreased margins to a steady flow of cheap imports. CBH stated that the poultry industry in South Africa was also beset with surging input costs (maize feed prices) along with increases in electricity and transport prices.[33] Astral issued a press release in January 2013 stating that it recorded its worst trading performance in its history of being a listed entity. Its operating profit for the first quarter (ending Dec 2012) was 60% lower than the corresponding period[34]. While CBH poultry operations came under pressure in South Africa, their Botswana and Zambian operations performed strongly.

[33] CBH Integrated Annual Report 2012

[34] Astral Press Release "Astral Voluntary Trading Update 30 January 2013http://www.astralfoods.co.za/PDFs/Press%20release%20-%20Astral%20Trading%20Update%20-%2030%20Jan%202013.pdf (accessed on 27 August 2013)

Figure 10: Operating margins by company



Source: Annual Reports of listed companies.
Notes: [1] 'Margins calculated as operating profit as a percentage of total revenue
2 Zambeef is a diversified operation that includes beef and soya farming.

5. Government policies and trade restrictions

The desire for countries in the region to develop poultry industries and with that, food security and job opportunities, has led to all four countries adopting or are considering policies to protect and support their industries. While the policies may be required to incentivise the investments in large scale and competitive facilities, this implies the protection and support should be temporary. A wider question relates to how each country within the region can stimulate investment more broadly and strengthen the ability for neighbouring countries to trade in products where they have the cost advantage. For example, agricultural conditions in South Africa mean that it has a trade deficit in oil seeds, especially in soya which is an important input ingredient for animal feed.

South Africa could seek opportunities to import animal feed inputs such as soya from within the region such as Zambia rather than from further afield from Argentina and Brazil.

Realising the potential within the region requires a series of linked investments in agricultural production, storage and processing and transport. However, for this approach to be truly beneficial, the region needs a coordinated regional strategy that will seek to break down barriers and harmonise standards that will allow poultry products along the value chain to flow effectively.

We review the current policies adopted in each country (which is summarised in Table 3 below) before returning to the bigger policy questions at the regional level.

5.1. Government policies and trade restrictions: Botswana

A person entering Botswana is only allowed to bring in 5kg of poultry products. Importing live birds and day old broiler chicks is banned. The importation of fertilised eggs (to produce broiler day old chicks) into Botswana is restricted and is expected to be completely banned during 2013-2014. This ban will affect local producers Cotoesloe (T/A Irvines Botswana) and to a lesser extent Ross Breeders as they currently import about 70% and 50% of their fertilized eggs respectively.

Botswana also has a trade restriction on feed importation. Broiler producers have to source at least 70 per cent of their feed locally. If there is a shortage of domestic supply to fulfil the 70% and the producer needs to import, it will need to obtain an import permit.

5.2. Government policy and trade restrictions: Namibia

Until recently, there were no restrictions for poultry imports. However, given the emerging state of the industry, the poultry industry appealed to the Namibian government in 2012 for protection from poultry meat imports. At the time, it argued that its development will be constrained by dumping of low priced poultry imports.

The government has since implemented trade restrictions on specific poultry products to protect this infant industry.

It used the Import and Export Control Act No. 30 of 1994 to impose trade restrictions through a quota system to control the quantity of poultry meat products to be imported per month. It is also estimated that the local supplier is able to supply 75% of the total demand and the remaining 25% is allowed to be imported after obtaining an import permit from the Import, Export and Trade Measures Office of the Ministry of Trade and Industry.

The quantitative restriction on chicken meat imports came into effect from 1 May 2013. This restriction is a temporary measure. While the length of the protection is unknown, Article 8 of the SACU Agreement on Infant Industry Protection allows for an 8 year period of protection.

The possibility of granting infant industry protection ("IIP") to the poultry meat sector attracted a lot of criticism. Some argued at a public consultation workshop held by the Ministry of Trade and Industry in January 2013 that the protection ultimately protects a single firm and encourages monopoly behaviour. This could lead to abuse of market power if not effectively regulated. The IIP will lead to price increases of chicken meat products as competition and cheaper imports will be constrained.

Poultry meat products not produced domestically by NPI or any other local producer will be subject to import levies. The higher price and levies are unlikely to attract other domestic producers as integrated operations are costly. In addition, the size of the market is not large enough to justify another large producer.

Another concern relates to employment in the industry. The importers currently employ about 912 employees while NPI employs about 600 employees. The protection could result in a reduction of employment by the importers at the expense of fewer local production jobs.

Currently, only the import restrictions are in place and the IIP process is still being finalised within the Government. One major consideration in this process is to strengthen the local competition authority to monitor all IIP industries pricing and marketing margins as a resolve of deterring the abuse of protection by incumbents.

5.3. Government policy and trade restrictions: South Africa

The domestic poultry industry has, for some years, called for increases in tariffs to provide protection for the industry that they argue is in decline. In 2012 the International Trade

Administration Commission ("ITAC") investigated Brazilian imports after poultry producers complained that Brazilian poultry was being dumped in South Africa. It called for a provisional anti-dumping measure (additional to that already in place) of 62.93% ad valorem and 46.59% ad valorem on whole frozen poultry and boneless cuts respectively imported from Brazil.[35] However this was a temporary measure. In addition speculation that South Africa would take Brazil to the WTO for dumping has also not materialised.

Since then, the South African Poultry Association ("SAPA"), on behalf of its members, has successfully applied to ITAC to increase import tariffs on frozen poultry. The import tariff on whole birds has increased from the previous 27% to 82% (the maximum bound rate under the WTO rules); carcasses from 27% to 31%; boneless cuts from 5% to 12%; offal from 27% to 30%; and bone-in portions from a specific duty of 220c/kg (roughly 17%) to an ad valorem duty of 37%. However, these tariffs will not apply to poultry being imported from the EU as it can enter South Africa duty free.

The Association of Meat Importers and Exporters ("AMIE") has lodged a complaint at the Competition Commission stating that SAPA's proposed tariffs amounted to restricting domestic competition from imports. This investigation is on-going.

5.4. Government policy and trade restrictions: Zambia

Zambia's 10 year plan for its poultry meat industry started in 2005. The government and industry players did projections on demand for poultry and its input products both domestically and regionally. It has since sought ways to grow the domestic industry to meet the anticipated demand and has offered protection to local producers by restricting importation of poultry inputs and final products.

The importation of poultry products, including day old chicks, fertile eggs and feed is subject to stringent administrative procedures by the Agri-Business Department at the Ministry of Agriculture and Cooperatives as importers are required to apply for an import permit. Government maintains that it will continue controlling the importation of poultry

[35] ITAC press release Provisional Payments on Chicken Meat from Brazil 13 February 2012 accessed from www.itac.org.za on 12 November 2012

products due to sanitary/Phytosanitary (SPS) considerations. The Zambian poultry industry currently has adequate domestic supply of day old chicks, live birds and feed.

On the feed side, the maize farmers are protected to some extent as there is a maize floor price. This is likely to maintain the price above the level that would be obtained if there was no floor price. The 10 year plan has resulted in increasing capacity for the crushing industry for soya. The size of the soya crop has grown steadily over the years and is currently sufficient for domestic supply. There will soon be sufficient supply for exports.

There is no trade restriction applicable to the export of poultry or feed to other jurisdictions.

Table 3: Summary of policies by country

Country	Trade policy and trade restriction
Botswana	• No importation of broiler day old chicks • Quantitative restriction on import of fertilised eggs (to be completely banned in 2014) • Regulated or controlled imports of chicken meat.

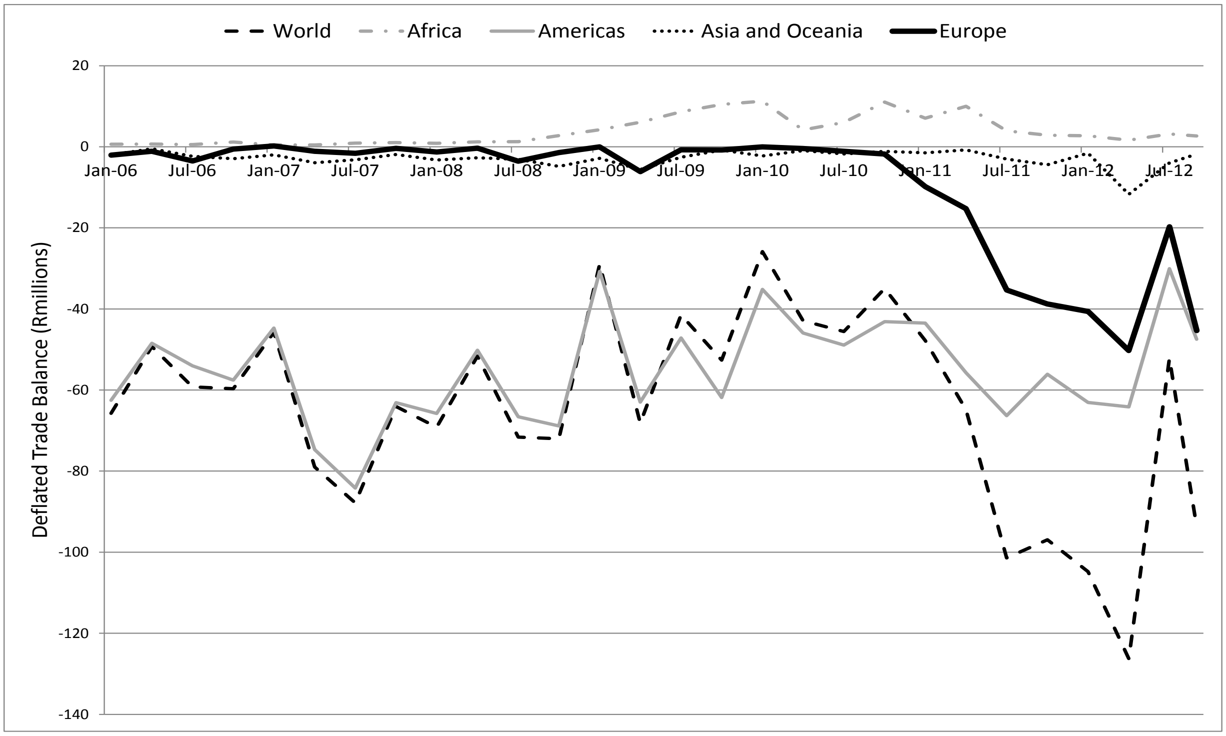
	• Ban on the importation of live birds. • Individuals are only allowed to bring in up to 5 Kg of chicken meat. • Restriction on the importation of poultry feed, only 30 per cent of feed should be imported after sourcing 70 per cent locally.
Namibia	• Quantitative restrictions on imports of chicken meat. • Only 600 tonnes of chicken is allowed to be imported per month. • A 1900 tonnes is thus to be sourced from local industry per month • Import permits system in place. • The Competition Authority will develop a price monitoring mechanism • Final IIP process and implementation design for the industry still to be finalised.
SA	• The import tariff on whole birds has increased from the previous 27% to 82% (the maximum bound rate under the WTO rules); • The import tariff on carcasses has increased from 27% to 31%; • The import tariff on boneless cuts increased from 5% to 12%; • The import tariff on offal increased from 27% to 30%; • The import tariff on bone-in portions increased from a specific duty of 220c/kg (roughly 17%) to an ad valorem duty of 37%. • Poultry meat being imported from the EU can enter duty free.
Zambia	• Restriction on the importation of day old chicks, live birds and feed • Importation of poultry products is controlled • There is adequate stock for local production • Agricultural policies impact on prices of grains which are inputs to feed, such as a maize floor price

6. South Africa trade flows

Trade of poultry products within the region is limited largely due to countries protectionist policies. South African producers are prevented from exporting poultry to Botswana and Zambia, and, now more recently, are restricted on quantities to Namibia. South Africa's main export markets in Africa are Mozambique and Zimbabwe.

Figure 10 looks at South Africa's poultry trade balance between 2006 and 2012. We focus specifically on South African trade given the small level of trade in poultry meat by the other countries in the study.

Figure 11: South Africa's poultry trade balance (quarterly data)



Source: Quantec Import and Export Data (H0207)
Note: Rand values deflated by PPI

The graph illustrates that South Africa has maintained a small trade surplus with other African countries. However, it also illustrates the steep increase in deficit on account of increased imports from Europe. The South African producers blame their lower margins on cheap imports from Brazil and the EU and sought anti-dumping measures against Brazil in 2012.They then sought more permanent protection from higher tariffs which was granted in 2013 (discussed above). However the trade deficit with South America has remained within a constant band during the timeframe of the graph (2006). The graph illustrates the greatest amount of imports from South America occurred mid-2007. The total trade deficit followed the imports from South America closely until 2011 when imports from Europe increased sharply.

6.1. Non-tariff barriers

In addition to government trade policies, the flow of agricultural products within the region could be constrained by non-tariff barriers. These barriers include transport and transaction costs, inadequate infrastructure, the lack of diversification in comparative advantages and underdeveloped production structures (Pratt and Diao, 2008: 113). .

On a practical level, poultry producers will consider importing agricultural products if transport costs and border controls are not prohibitive. Other government legislation such as sanitary and phytosanitary requirements and brining levels could also limit the flow of both feed and then the final product.

In order to understand the intra-regional flow of poultry within the four countries at the different levels of the value chain, it is important to understand the domestic and, where relevant, regional transport costs. The transport costs vary as each company has different cost structures whereby the cost of the vehicle, insurance and drivers salary are accounted differently. To illustrate the impact of transport costs on regional trade, it is estimated that the transport costs in Namibia account for about 20% of the total poultry production process costs.

Transport costs for day old chicks are relatively low. A day old chick can be transported for up to 24 hours or a distance of about 1500km in specialised ventilated trucks and in some instances by air. Zambian producers export day old parent chicks to other countries in the region such as Tanzania, DRC, and Mozambique. Zambia exports fertile eggs to Botswana, Kenya and Tanzania. South African producers indicated that they prefer to only transport day old broiler chicks domestically, as the chicks do not grow well after long journeys.

Companies did not find border crossings themselves prohibitive when transporting day old chicks. Rather a bigger challenge relates to the reliability of the transport. If flights are cancelled or the freight portion full, then the chicks are delayed at the airport. This results in higher mortality rates.

The cost of transporting feed can include transporting the inputs of raw material being maize and soya or the cost of the feed itself.

Zambia exports small amounts of feed to the DRC and Zimbabwe. It is estimated to cost about $90 a tonne to transport feed approximately 460km from Lusaka (Zambia) to Harare (Zimbabwe). A South African producer estimates the cost to transport soya from the Durban port for about 600km to cost between R450 ($54.88) to R600 ($73.17) a tonne (or 75c ($0.09) to R1 ($0.12) a km). A similar price of about R400 ($48.78) was given to transport maize about 600km[36].

Some South African producers indicated that they had, in the past imported feed from Zambia. However doing so had its challenges. For example, maize transported domestically in South Africa arrives in trains or on tipper trucks that allows for easy transfer into the factory. However maize from Zambia arrives in 50kg bags. This requires additional labour costs to get the feed from the bags into the processing facility. In addition supply is unreliable and there are cases where maize does not arrive.

Once broilers have reached the required weight they are transported in crates on open trucks. The maximum distance to transport broilers between the farm and the abattoir is between 2 to 2.5 hours. Longer distances result in weight loss and increased mortalities as the broilers become stressed. This makes transporting live broilers between countries problematic.

Once the broiler is processed, the fresh or frozen poultry product is transported in specialised refrigerated vehicles. The quality of the product relies on the cold chain remaining intact. The shelf life for fresh chicken is short, so producers try to get the product on the shelves as soon as possible and within 24 hours of being slaughtered. Producers therefore prefer not to transport fresh chicken to a distance of more than 5 hours. This also illustrates why trade in chicken meat is limited to frozen poultry.

7. Nature of competition concerns and contractual arrangements

Competitive outcomes in the region are vital to ensure consumers have competitively priced poultry products.

At the same time, countries must make tough decisions to balance competitive prices with security of supply and the development of domestic poultry industries. There is a danger that policies implemented to protect and develop local production could

[36] These are estimated transport costs. Transport figures will vary based on numerous factors such as how the company factors its drivers cost, truck depreciation, insurance etc. into the total cost

decrease competition within a country and the benefits from these policy interventions could be captured by the large firms and their shareholders.

Research as part of this study suggests that firms in each country have been able to exert a degree of market power. However, over the past five years we have observed greater degrees of competitive rivalry coupled with major investments in new capacity and entry.

This section I reviews competition concerns in each of the countries in the study. We also look how, in the case of South Africa, intervention led to a new entrant at the breeder level.

7.1. Competition regulation within the region

The poultry meat industry as described above is oligopolistic in nature with the large firms operating in a variety of countries in the region. There is a danger that if there is a lack of competition within a country or region the benefits installed to incentivise the required investment into the poultry meat industry are captured by the large firms and their shareholders. Competitive outcomes are also vital to ensure the success of regional integration initiatives and that the consumers benefit from competitively priced poultry meat products.

Successful regional integration from a competition perspective requires close cooperation between the competition bodies of the different countries (Fox, 2012: 19). To do so, each member country also needs to develop its own effective competition law and implementation of the law (Fox, 2012). The four countries in the study have developed competition authorities. The competition authorities' roles in their own domestic industries are discussed below.

7.1.1. Competition concerns and previous investigations in Botswana

The poultry meat industry in Botswana is unique with complex ownership structures. The largest producers have ties to South African producers. The price of poultry meat in Botswana, as illustrated from the cost structure above, is amongst the highest in the region.

Domestic producers face limited competition at the breeder and processing level. The tight trade restrictions protect these dominant players from competition from imports. In addition, the relationships between the abattoir and processing plant with the contract growers place the smaller farmers in a challenging position as they appear to be set up to fail.

There is also a concerning trend where abattoirs seek to integrate backwards by developing contract grower relationships with the smaller farmers. The abattoirs buy feed and stock on behalf of the small farmers. When the small farmers do not meet their targets they have to pay the abattoir back. There is a concern that the contract growing agreements with abattoirs will contribute to eliminating the smaller farmers resulting in a decrease in competition.

The most recent acquisition of shares was between the shareholders of the dominant poultry feed manufacturer Master Farmer Feeds trading as Nutri-Feeds Botswana. Before the-merger/acquisition shareholding of Nutri-Feeds Botswana was split between Ross Africa who had 60% and the Dada family who held the remaining 40%. Following on from the acquisition, Ross Africa now holds 100% shares in Master Farmer Feeds. The share buy-back acquisition has been approved with a condition that Ross Africa gets a local partner on board.

A potential competition concern for abattoirs and growers in Botswana is the halaal certification requirement which could act as a barrier to trade in processed poultry products.

7.1.2. Competition concerns and previous investigations in Namibia

The poultry meat industry in Namibia is still at its early stages of development. The Namibian Competition Commission has not yet dealt with any poultry cases.

Nor has it undertaken a study to uncover any anti-competitive arrangements. However, there have already, in the short life of NPI, been various consumer complaints about the quality and the price of its poultry meat products.

Further research will be necessary to uncover if there is any anti-competitive arrangements in dealing with the market players along the value chain. This close analysis may become more pertinent once the impact of the increased tariff and trade restrictions are felt. The research question would need to focus on whether the IIP in place does in fact protect the monopolist at the expense of the consumers. This dovetails with the evolving idea of empowering the Competition Authority to monitor both the production and retail prices of the protected industries to guard against any abuse of such protection which could adversely affect both consumer welfare and the overall country's competitiveness.

7.1.3. Competition concerns and previous intervention in South Africa

The structure of the South African poultry meat industry has evolved over the years, especially during the early part of the 2000's. As such, the Commission has investigated various mergers and acquisitions as poultry firms have expanded horizontally and vertically in the value chain. Examples include: Astral's acquisition of Country Fair, National Chicks (Natchix) and Earlybird Farms in the early 2000's. Rainbow also expanded its operations through strategic acquisitions of Vector Logistics in 2004. The Commission has, more recently, been tasked with evaluating several smaller mergers in the poultry meat industry. Some of these mergers are a result of the tough climate for poultry producers with the smaller producers failing to remain viable. These include the Daybreak/Rossgro [37] merger, Astral/Corpclo [38], Rainbow/Bushvalley Farms [39] and Pioneer/Darling.[40]

One of the most significant mergers in the South African poultry industry occurred in 2002 with Astral's acquisition of Natchix.

Figure 10 above illustrates that the merger had far reaching consequences in the South African poultry industry as it entrenched Astral's dominance in the market for the supply of day-old broiler chicks to independent broiler producers. This market power stemmed from the fact that Rainbow, the other large breeder at the time, largely produced day old chicks for its own requirements. Following the merger, chicken meat prices increased and Astral's margins grew. The local industry was less competitive against imports.

[37] Competition Tribunal case nr 57LMSep10
[38] Competition Commission case nr 2011Apr0016
[39] Competition Commission case nr 2011Nov0375
[40] Competition Commission case nr 2012Jul0370

However, CBH was able to introduce Arbor Acres in mid-2007. This increased rivalry at the breeding level (including parent stock) which filtered through to strengthen on competition at the broiler level.

The Commission also investigated both industry bodies: South African Poultry Association (SAPA) and the Animal Feed Manufacturers Association (AFMA) for the exchange of commercially sensitive industry information. SAPA made a decision post-initiation to aggregate the data and decrease the frequency with which it distributed information to its members. In addition, Astral has agreed to submit its pricing data in an aggregated form to SAPA via a third party statistician[41]. AFMA has also subsequently made several undertakings to the Commission with regards to the frequency of data dissemination and distribution to its members and the level of disaggregation of the data it makes available to its members.

The Commission initiated an investigation into possible price fixing against Rainbow, Astral, CBH and Afgri. The Commission subsequently received a leniency application from Pioneer with respect to cartel behaviour in the market for fresh chicken products in the Western and Eastern Cape. This matter formed part of the Commission's landmark R960m ($117.07m) settlement with Pioneer on all outstanding cases[42] in November 2010. Astral has subsequently also admitted to collusive conduct in that market and has settled with the Commission.

7.1.4. Previous merger investigation and competition concerns in Zambia

The Commission recently approved a merger whereby the South African producer, Rainbow, acquired 49.0% shares in Zamchick (a subsidiary of Zambeef). Zamchick operates at broiler processing and fast food outlet levels in the poultry sector.

The Zambian poultry meat industry is oligopolistic in nature and highly concentrated. The top two players in the industry, Hybrid and Ross Breeders collectively have a market share

[41] Competition Commission Press release 'Competition Commission settles poultry case with Astral Operations.

[42] The cases relate to Pioneer's activities in poultry, eggs, maize and wheat milling and baking.

of close to 75% in terms of actual production of day old chicks while the three smaller firms (Bokomo, Panda Hill and Progressive Poultry) account for the remainder.

There are therefore concerns this market structure may harbour anti-competitive trade practices that stifle competition. This is manifested especially in the price of DOC which is amongst the highest in the region. Further, as discussed above, broiler meat prices and feed prices have, over the period in consideration, moved in opposite direction. Such conduct could be illustrative of potential abuse of market power and calls for the Zambian Competition Authority to investigate further.

Imports of poultry products into Zambia are regulated and only allowed when there is a domestic shortage. This protection may also have the potential to facilitate coordination among the few incumbent players in the industry which will distort competition to the detriment of the consumer.

7.1.5. Competition concerns in the region

In Botswana and Zambia, there is a general observation that dominant companies could be engaging in unilateral conduct bordering on over-pricing of poultry products at both feed and broiler breeding levels. Furthermore, the industry is oligopolistic and fairly transparent and therefore tacit collusion could exist in the industry. The announced $95.0m joint venture at breeder and abattoir levels between Rainbow and ZAMBEEF is expected to exert downward pressure on poultry products in Zambia.

Namibia has a monopoly producer in the industry which also enjoys a sector-wide infant industry protection.

The Namibian Competition Authority is therefore intending to monitor the sector with regard to quality and pricing behaviour

In South Africa, two firms have settled with the Competition Authorities after evidence of collusion with regards to fresh chicken prices in the Western Cape Province was discovered. The South African Commission has conducted further extensive investigations into alleged anti-competitive behaviour in the industry, but no evidence of further contraventions was found. The entry of Country Bird in 2007 has reduced the market share and marker power of the other big firms and it is therefore unlikely that an abuse of dominance contravention (unilateral conduct) will be found in future. However, the oligopolistic nature of the industry still makes it susceptible to potential tacit collusion.

8. The Role of Industry Associations

8.1. Industry Associations in Botswana

In Botswana, the Poultry Liaison Committee was established in 2000 as part of the poultry sector strategy. This committee comprises of producers and retailers (that is, day old chick suppliers, growers, poultry feed manufacturers, and retailers). The forum's secretariat is the Ministry of Agriculture. Producers report their state of supply of chicken meat, i.e. current production, and retailers present on the quantities of chicken meat demanded. If there if anticipated supply discrepancy, i.e. shortfall, the committee will then make decision on the quantity of imports to be licensed. This will inform the ministry when to issue import permits and when the boarders will be closed again for imports.

The other association is the Botswana Poultry Association (BPA) which comprises of the whole supply chain as in the Poultry Liaison Committee but with the exception of chicken meat retailers. This forum's secretariat rotates amongst members but the Ministry of Agriculture attends their meetings. The objective of the committee is for the members to share and discuss production problems with an intention to lobby for implementation of recommendations with the government and this done through a single voice.

8.2. Industry Association in Namibia

Namibia has one association for importers which lobbies government against infant industry protection. There is no formal association on the production side but the monopoly player sits on the committee which determines import restrictions. This raises competition concerns as the company has vested interest in limiting imports.

8.3. Industry Associations in South Africa

In South Africa, the South African Poultry Association (SAPA) is one of the oldest agricultural organisations in South Africa and was formed in 1904.[43] It represents small

[43] SAPA Industry Profile 2012

scale, emerging and the large poultry producers and provides a collective voice to lobby government. It collects and compiles a wide range of statistics on the poultry industry. As discussed above, it has altered how it disseminates the statistics to satisfy the Commission Concerns over the exchange of information. The Animal Feed Manufacturers Association (AFMA) represents the majority of feed manufacturers in South Africa. It also collects a wide range of data and statistics on the feed industry. As discussed above, it has also adjusted how it disseminates its information to prevent the exchange of commercially sensitive industry information.

8.4. Industry Association in Zambia

In Zambia, the main role of the Poultry Association of Zambia (PAZ) is policy advocacy and lobbying. However, the members also share production and price information which is aggregated by the secretariat before it is sent to the members. There are no competition concerns in this regard.

9. Contribution to Poverty Reduction in the Region

9.1. Contribution to poverty reduction and Botswana Government policy[44]

The development and commercialization of the Botswana poultry industry commenced in earnest 1975 through a 'Thuo ya Dikoko' government programme.

Under this project the Ministry of Agriculture (MOA) was to buy day-old pullets and sell them at eight weeks of age to the farmers. This project was an attempt by the MOA to introduce poultry at relatively low risk to the small scale farmer. It was believed that the development of small scale poultry enterprises could greatly reduce imports and increase the incomes of poorer families who did not own cattle. In the early 80's a new more commercial approach to the development of poultry production was introduced by the government. Three instruments of government policy were largely responsible for the successful development of an import substituting poultry industry. The first was the development of a government controlled marketing channel allowing Batswana access

[44] Paper on the early developments of the industry by Mr. Peter Kirby, the former Chairperson of the Botswana Poultry Association

to the poultry market. The second policy was the Financial Assistance Policy, and the third, was the use of trade policy through quantitative import restrictions on the import of eggs and poultry meat into the country. As often was the case, these policies of government marketing channels and support for small scale local producers collapsed and marketing became dominated by large private sector firms with little small scale indigenous production.

According to the poultry report, the Government through the Ministry of Agriculture encourages farmers in Botswana to invest in poultry farming, to tap on the opportunity of establishing local production and help in the import-substitution programme. The Government's assistance to local poultry producers manifested in the form of banning imports of poultry products.

Another Government effort in terms of leveraging production of poultry farming was to encourage the formation of clusters in the poultry industry. The initiative emanated from the concern that all poultry meat was imported from neighbouring countries.

Government provides financial assistance to these enterprises in the form of low-interest loans through the initiative of Citizen Entrepreneurial Development Agency (CEDA). The clusters are encouraged to network and form partnerships, all in the interest of developing the poultry industry.

9.2. Poultry's contribution to poverty reduction in Namibia

As a new industry in the country, the links between the sector and poverty reduction is not yet fully manifested.

Currently, the major immediate impact it brought is the 650 employees (of which 70% are Namibians). Namibia has a high unemployment rate of more than 25%. NPI is at the moment exploring further opportunities to optimise its developmental impact. As alluded to in Section 3.2 above, it is aiming to expand its operations through the introduction of franchising opportunities for SMMES. The company is also looking at opportunities for contract growers as well as engaging the hawkers markets for hens however it has not yet concretised these plans.

9.3. Poultry's contribution to poverty reduction in South Africa

Poultry is the largest source of protein for South Africans. "More poultry products are consumed annually in South Africa than all other animal-protein sources combined.[45]" The poultry industry is South Africa's largest agricultural industry and is a major contributor towards agricultural gross domestic product ("GDP"). In 2011, the poultry industry contributed an estimated 24% of agricultural income.[46]" It generates around "R30bn in local farm gate revenue and about R1bn in corporate taxes in a normal year (excluding the VAT generated in the value chain[47]". It also is vital to the country's food security and job creation (as discussed above).

The poultry industry plays a considerable role in the downstream industry. The poultry industry as a whole consumes approximately 30% of the total maize consumption in South Africa as the maize is used in poultry feed[48].

While the large producers dominate the commercial poultry industry, small scale farmers play an instrumental role in development particularly in previously disadvantaged communities. As discussed above, SAPA established the DPFO to assist SMME poultry farmers particularly from previously disadvantaged communities to enter the main-stream agricultural economy. However, tough conditions for poultry farmers in South Africa have had an impact on SMMEs. DPFO surveys 200 to 300 small farmers.

In the 3rd quarter of 2012, a total 69 developing broiler farmers participating in the survey stopped operations. None of these farmers started operations again in the 4th quarter 2012.

A major challenge for SMMEs in the poultry industry is access to finance and then access to markets. The government recognises the important role of small scale farmers in rural development and has set up initiatives to assist developing farmers. However it seems that the rural farmers are not successful in accessing these programmes. In addition, the Sector for Education and Training sponsors a training programme under the National Skills

[45] The South African Industry Profile 2012 p.g.17 South African Poultry Association
[46] SAPA industry profile 2012 p.g.8
[47] SAPA presentation to the Portfolio Committee on Agriculture, Forestry and Fisheries on 10 September 2013
[48] SAPA industry profile pg 9

Broiler Project Fund. In addition there are BEE deals in the poultry industry such as the Rocklands broiler meat's joint venture of R20 million ($2.4m) with Kammandi Trading to produce 265 000 live birds every eight weeks over a 20 year period. And Country Bird has a BEE deal with Vukananthi Broiler project in the North West. Also Darling Farm started production of its vertically integrated operation in 2008. However, it was unsuccessful as it was making a loss and eventually Pioneer bought the breeder and broiler operations.

In another initiative, the Industrial Development Corporation (IDC) has partnered with VKB to strengthen efforts to develop the poultry industry in the Free State. The IDC owns 23.9% stake and VKB the 76.1% shares in Grainfields Chickens. The first phase of the project sees Grain Fields Chickens buying day old chicks from Eagles Pride hatcheries and then sells them on to a group of 16 farmers. These farmers buy formulated feed produced at the VKB mill in Vrede. VKB has a 40% share in Free State Oils which is a soya oil crusher plant in Villiers. After about 33-35 days, VKB Logistics transports the farms to the Grain Fields Chickens abattoir. The current throughput is about 40 000 chickens a day, but this will increase to about 200 000 at the completion of the final phase in mid-2015. Grain Field Chickens has created nearly 400 permanent jobs[49].

9.4. Poultry's contribution to poverty reduction in Zambia

The poultry industry is critical to Zambia's efforts to reduce poverty among the population which currently stands at 60%. Apart from the poultry industry's contribution to the country's GDP and the government's revenue through various taxes, the poultry industry in Zambia in an important source of employment in the agricultural sector. As mentioned above it employs an estimated 80 000 people 50 000 of which are permanent and 30 000 are seasonal jobs[50].

[49] Value-adding in the eastern Free state 2 February 2013
[50] Poultry Association of Zambia, 2012

In addition to direct job creation, the Zambian poultry industry through its backward and forward linkages supports other industries such as maize and soya farming, feed milling, transportation, etc. These industries are all labour absorbing and contribute favourably to solving of the problem of youth unemployment as they do not require specialised skills.

Further, the poultry industry in Zambia presents enormous business opportunities for the poor especially at broiler growing level. Culturally, animal keeping in Zambia is widely viewed as a store of wealth and chicken keeping has traditionally been practiced since time in memorial. The introduction of commercial poultry operations particularly at the breeder level has resulted in Zambian people engaging in broiler growing which they sell on the open market to sustain their livelihoods. Nonetheless, with its favourable climatic conditions for maize and soya growing and poultry breeding, the potential for the development of the poultry industry and its contribution to poverty reduction is huge and remains largely untapped.

10. Conclusions and Recommendations

Regional integration clearly has a role to play in development. However, Pratt and Diao (2008: 114) warn that regional integration requires careful consideration or it could exacerbate the tendency towards economic polarization. While it is tempting for developing countries to adopt developed countries' laws and regulations, each country should rather adopt policies that are relevant to its own stage of development. The poultry meat industry is a good case of point.

It would be short-sighted to argue that the countries in the study (Botswana, Namibia, South Africa and Zambia) as well as other SADC countries should simply eliminate all trade restrictions. Doing so would be detrimental to the smaller countries domestic industries. The South African poultry industry is large and well developed. If the borders were opened, South African poultry meat along with imported Brazilian and EU poultry could flood the smaller domestic markets. Ultimately this would lead to a loss of domestic production, and with that, an element of food security.

However, that does not mean that there is no role for regional integration within the poultry meat industry. Indeed, in the medium-term the greatest potential for growth lies in countries with agricultural production to under-pin competitive animal feed supply, such as Zambia. Temporary protectionism could be justifiable to attract the necessary investment to develop the local industry. But long term protectionism could dampen any potential competition as a dominant incumbent has an incentive to keep small players out. For regional integration to be beneficial, the region needs a coordinated regional strategy that will seek to break down barriers and harmonise standards (such as sanitary and phytosanitary and brining). Competition law and policy at a country level and then ultimately in the region has a major part to play in regional integration.

The assessment here suggests a number of implications for steps to improve regional integration and links to competition, including:

i. National Governments through SADC and COMESA should work towards standardising and harmonising poultry sector standards such as SPS and brining and promote trade in the region subject to full compliance to the set standards.
ii. National Governments should develop robust monitoring and testing systems at border entry points to effectively enforce compliance to the set standards.
iii. National Governments should consider relaxing in stages the protectionist policies that are currently being implemented. Some of the benefits that could be realised from relaxing protectionist policies include cheaper feed costs in countries like Botswana as well as greater price competition for end products which would benefit end consumers.
iv. However, there is need to assist local producers to become more efficient in order to allow them to compete more effectively with increased imports.
v. Given the nature of the industry in terms of access to international franchises, entry is very difficult and therefore regional competition authorities should devise a mechanism to coordinate their oversight in this market in order to address any competition concerns arising from concentrations of economic power in this sector.
vi. National competition authorities should continue monitoring developments in this sector and cooperate in their effort to address various competition concerns.

11. Study limitations and recommendations for future work

Across the four participating countries, there was a common challenge of data collection in terms of the market participants' unwillingness to submit information voluntarily. In Botswana and Namibia, this problem was compounded by the lack of market inquiry powers in their respective legislation. While respondents in South Africa cooperated they understandably exhibited inertia at providing information given that they have been investigated before and have in the past had to supply significant quantities of data.

Going forward, it is recommended that the ACF comes up with a model law to guide market inquiries which can then be adapted and adopted by member competition authorities. It is further recommended that a gender dimension be considered in future work.

Annexure 1: Timeline

1960	Rainbow started its operation in Hammarsdale (outside Durban)
1961	Hybrid started poultry operations in Zambia
1960's	Tydstroom Poultry Farm established outside of Durbanville in Western Cape (Originally a turkey farm and later transformed to a broiler farm
1960's	Hybrid Poultry (Zambia) started production (Cobb)
1985	Afgri acquired 40% interest in Earlybird Farms and Earlybird Chicks (Pty) Ltd
1989	Rainbow Chickens listed on the JSE
1995	Tydstroom was incorporated into Bokomo
1996	Tiger Animal Feeds started production in Zambia
1997	Bokomo and Sasko merge to form Pioneer Foods
1997	Ross Breeders Ltd (Zambia) started production of day old chicks (Ross)
1997	Bokomo Zambia started production of day old chicks (Ross)

	Tydstroom acquired Golden Grove Farm and processing facilities (Atlantis)
1999	
	National Milling Corporation started operations in Zambia (poultry feed)
1999	
2001	Astral Foods was established and listed in April 2001 on the JSE after Tiger Brands unbundled its agricultural operation
2003	Supreme Poultry bought Country Bird Holdings from Senwes
2004	Rainbow acquired Vector Logistics (distribution company)
2004	Ross Breeders took over National Chicks Hatchery operations (Botswana)
2005	Cotoesloe (Pty) Ltd T/A Irvines Botswana started its hatchery operations (Botswana)
2006	
	Afgri Acquired 100% of Daybreak farms (For R120million)
2006	
Feb 2007	Novatek, a subsidiary of Zambeef and the largest feed producer in Zambia started its operations
	Country Bird Holdings was listed on the JSE
2007	
2008	Country Bird and Supreme lodged the Elite Complaint (Astral and Elite were alleged to have contravened the act by entering into a joint venture which restricted competition)
2008	
2008	Panda Hill started production in Zambia. It acquires its day old parent stock from Zimbabwe (Hubbard)
	Nutrifeed took over Master Farmer Feeds (Botswana)
2009	
2009	Novatek (subsidiary of Zambeef and largest feed producer in Zambia) started its Zambian operations
2009	South African Competition Commission conducts a review of the poultry industry
2009	
2010	Progressive Poultry started operations with day old chicks in Zambia (Lohmann breed)
	Opti-Feeds started operations (Botswana)
	Afgri buys Rossgro Chickens to increase abattoir facilities and now processes 1.1m birds weekly
Apr 2010	

Apr 2010 2011 2011/12 2011/12 2012 2012 2012 2013 2013 2013	Afgri buys out minority shareholders in Midway Chixs and acquires the Hubbard breed Commission received a leniency application related to Broiler Products Complaint from Pioneer on behalf of Tydstroom in respect of fresh poultry products. The alleged conduct is said to have taken place in the Western Cape. The investigation revealed that representatives of County Fair and Tydstroom agreed to cooperate with each other in attempting to raise price levels for fresh poultry in the Western Cape through notifying each other of price increases and timing of these increases. Commission initiated a complaint in the dairy feed market. (It had received information that Astral (Meadow Feeds) and cometitors were involved in a study group known as the Malmesbury dairy study group. This was group aimed to facilitate information flow including price increases and decreases. The Commisssion found that this study group was of farmers and not processors and therefore found no evidence of price fixing or market allocation Tydstroom acquired Tonko Chickens in Gauteng (consists of an abattoir in Hartebeesport and a processing facility in Edenvalle. (Investment in hatchery in Gauteng is to supply day old chicks Bokomo Feed started in Zambia (supplies small quantities of feed to their clients on request) Panda Hills started to produce small quantities of feed for its own use in Zambia Bokomo switched from the Ross to Cobb Avian 48 breed in Zambia Namib Poultry Industry started poultry operations in Namibia (Cobb) Tydstroom acquired DFC Breeder Farm (Pty) Ltd and DFC Broiler Farm (Pty) Ltd (both in the Western Cape Commission reaches a settlement with Astral in which Astral admits to colluding with its competitor to fix the price of fresh poultry in the Western Cape. Astral also admitted that the Elite joint venture was an abuse of dominance and had an exclusionary effect undermining Country Birds ability to compete. Astral has agreed to pay an administrative penalty of R16 732 894 (3% of County Far (division of Astral's) fresh poultry revenue in the Western Cape for 2008 Financial year Afgri switches from Hubbard breed to Ross

	The Commission is investigating a complaint initiated following an application for leniency by Astral of price fixing in the market for the sale of depleted breeders and culls (these are live chickens that have passed the end of their useful productive lives. Rainbow (South Africa) acquired a 49% share in Zamchick in Zambia Bokomo acquired Mega Eggs which specialises in table egg production (Zambia)

Annexure 2: Main companies and their operations by country

	Botswana	Namibia	South Africa	Zambia
Country Bird/ Nutrifeed/Ross Africa	Breeding: Ross Breeders Botswana (owned by AIDC Ross Africa. It produces Arbor Acres and Ross breeds and supply directly to growers (Used to be National Chicks) FeedNutri Feeds (Country Bird Holdings and Dada family)	Nutrifeeds distributes feed to Namibia Import small quantities of Chicken to Namibia	Breeding – Arbor Acres Breeding farms and hatcheries Feed- Nutri Feeds (exports to Botswana, Lesotho, Namibia) Broiler farms and contract growers Abattoirs and processing facilities Product name Supreme	Poultry Africa- grandparent and parent breeding operation Day old chicks – Ross breed • Currently increasing capacity in both poultry and feed production Sells day-olds to 3rd parties Nutrifeed Feed for internal operations and sold to 3rd parties Exports feed to Zimbabwe Does not have out grower operations or broiler farms No abattoir
Astral/Tiger chicks/Ross South Africa/Tiger Animal Feeds		Earlybird and County Fair export poultry to Namibia through National Cold Storage Distributors	Breed Ross- Elite Breeding Farms, National Chicks (South African Swaziland Botswana and Mozambique) Earlybird Farms Feed- Meadow Feeds Nu-Tec (in SA?) Animal feed pre-mix (joint venture with Provimi Holdings (Holland) Broiler Farms- County Fair and Early Bird Farms Abattoirs and processing facilities Product brands: Earlybird, Festive, GoldiSupa Spar, County Fair and Mountain Valley	Recent entrant for breeding (Progressive Poultry) Subsidiary of Tiger Animal Feeds Tiger Animal Feed used internally and sold to 3rd parties Breed is the Lohmann (Indian River) Do not export DoC No outgrower schemes or broiler operations No abattoir facilities

Rainbow, Zambeef/ Zamchick/ Novatek		Imports into Namibia through Vector Logistics	Breed Cobb Breeding Farm Rainbow Farms Feed: Epol Broilers- Rainbow Farms (own farms and contract growers) Abattoirs and processing facilities Distribution- Vector Logistics Product names- Farmer Brown, Rainbow and Rainbow Food Solutions	Rainbow acquired a stake in Zamchick which is a subsidiary of Zambeef. Procures DoC from independent breeder companies (mainly from Verino/ Hybrid) Major producer of soya (since purchase of Mpongwe Dev Corp) Novatek initial investment in 2008, big expansions. 30% feed for internal, 70% for external use. Zamchick has an abattoir and processing facility Some exports to Zimbabwe

Pioneer/Bokomo	Cotesloe trading as Irvines Botswana (partly owned by Bokomo Botswana and Firetree) This produces and supplies Cobb breed DOC's Irvine supplies day olds to Bokomo (Richmark Poultry (owned by Brink Group and Pioneer foods) Irvines appointed Feed Centre Botswana (owned by Mont-Trade) as a distributor of day olds to other growers. Irvines owned by Bokomo but no shareholding link between Bokomo and Mont-Trade. Richmark Poultry (owned by Brink Group and Pioneer) Farms and abattoir Distribute through Senn Foods (100% owned through Brink Family) to hotels and caterers. Also distributes directly to retail outlets Product Brand is Richmark	Imports into Namibia	Pioneer operations called Tydstroom in South Africa) Breed- Cobb Breeding farm is Bellevue Chix (imports day old grandparents) Feed- Nova Feeds Own broiler farms and contract growers Abattoirs and processing facilities Product names are Tydstroom, Groovy Range, Happy Hen (live birds) and Kekkel en Kraai	Day-old chicks • Moved from Ross to Cobb Avian 48 in 2012 Feed is typically not sold to 3rd parties, although will sell with DOCs on request No broiler or out grower operations No abattoir facilities Does not export
Hybrid				Largest Zambian producer Breeding, Cobb 500 No feed (procures most from Zambeef/Novatek) Own out grower operations Abattoir – two main broiler brands – Country Choice and Eureka Do not export

Panda Hill				Indigenous poultry business Produces DoC Breeding, Hubbard (imported fertile eggs from Zimbabwe for parent stock) Feed produced only for own parent stock No boiler operations or abattoir facilities No exports
National Milling Corp				Privatised to US company in 1999 (Seaboard corporation) One of the main producers of animal feed in addition to other business lines such as milling of maize, wheat and trading in cooking oil, rice and salt Feed mill capacity 120 960MT
Crest				
Afgri			Breed is Ross Breeding farm Midway Chicks Feed: Afgri Animal Feeds Broiler farms: Daybreak (contract growers??) Abattoir and processing plants	

AIDC (Mr Dada)	Tswana Pride (subsidiary of AIDC) broiler grower and abattoir Dikoko tsa Botswana (owned by AIDC and Basha holdings) is an abattoir. It buys live chickens from Tswana Pride and individual producers. (Its brand name is Dikoko tsa Botswana Cold line is a sister company to Tswana Pride and its distributes for Tswana Pride chickens			
Mont-Trade	Feed Centre Botswana distributes day old chicks to other independent and small growers. It also distributes feed manufactured by Opti Feeds			
Sanders Family	TS Chickens (Moleps Poultry) broiler farm and slaughtering facility. Goodwill Chickens and Bobbsie Broiler farm and slaughtering facility			
NPI		Feed Namib Mills Investments Hatcheries Broiler farms Abattoir and processing facilities		

Annexure 3: List of interviews and data sources

Interviews with representatives from each of the countries

Botswana

Bobbsie Chickens

Dikoko tsa Botswana

Feed Centre Botswana

Goodwill Chickens

Irvines Botswana

Ministry of Agriculture

Moleps Poultry

Nutri Feeds

Opti Feeds

Richmark Poultry

Ross Breeders Botswana

Tswana Pride

Namibia

Ministry of Trade and Industry

Namib Mills Investments

Namib Poultry Industry

Shoprite Namibia

South Africa

Afgri Ltd

Animal Feed Manufacturers Association

Animal Meat Importers and Exporters

Country Bird Holdings

Pioneer foods

Rainbow Chicken

South African Poultry Association

Supreme Foods

Zambia

Bokomo (Zambia) limited

Company Annual Reports and Financial Statements

Hybrid Poultry farm limited

Ministry of Agriculture and Cooperatives

Panda Hill Hatchery limited

Poultry Association of Zambia

Progressive Poultry (tiger animal feeds) limited

Ross Breeders (Zambia) Limited

http://data.worldbank.org/country/zambia

Other references

Competition Commission Press release 'Competition Commission settles poultry case with Astral Operations. (www.compcom.co.za)

Competition Tribunal case nr 57LMSep10

Competition Commission case nr 2011Apr0016

Competition Commission case nr 2011Nov0375

Competition Commission case nr 2012Jul0370

Country Bird Holdings Integrated Annual Report 2012

Acemoglu, D. and J. Robinson (2012), *Why Nations Fail.* Random House.

Animal Feed Manufacturers Association "Chairman's report 2012, 2013"

Amsden, A. (2003) *The Rise of 'The Rest': Challenges to the West from Late-Industrializing Economies.* OUP.

Brusick, P and S Evenett (2008) 'Should Developing Countries Worry About Abuse of Dominant Power?', *Wisconsin Law Review,* 2, 269-294

Dabbah, M (2010) 'Competition Policy, Abusive Dominance and Economic Development: Some Reflections', presented at 37th Annual Conference on International

Antitrust Law and Policy, Fordham Competition Law Institute, New York, 24 September 2010.

Fox, E. (2012) Competition, development and regional integration: In search of a competition law fit for developing countries.

Fox, E. (2011) 'In Search of a Competition Law Fit for Developing Countries', 5-10 *NYU Law & Econ. Research Paper Series*, Working Paper No. 11-04

Gal M (2003) *Competition policy for small market economies*. Boston: Harvard University Press.

Gal M (2009) 'Antitrust in a Globalised Economy: The Unique Enforcement Challenges Faced by Small and Developing Jurisdictions', *Fordham International Law Journal*. 33(1), 1-56.

Government Gazette Notice No.5167 of 5 April 2013 on Restrictions of importation of Poultry products into Namibia: Import and Export Control Act, No.30 of 1994

ITAC press release Provisional Payments on Chicken Meat from Brazil 13 February 2012 accessed from www.itac.org.za on 12 November 2012

Khan, M. (2006), 'Governance and Development', Paper presented at the 'Workshop on Governance and Development' organised by the World Bank and DFID in Dhaka, 11-12 November 2006.

North, DC, JJ Wallis, B Weingast (2009) *Violence and Social Orders*. Cambridge: CUP.

Pratt, A.N. and Diao, X. (2008) "Exploring growth linkages and market opportunities for agriculture in Southern Africa. *Journal of Economic Integration*

Singh, A. (2004) 'Multi-lateral Competition Policy and Economic Development', UNCTAD Series on Issues in Competition Law and Policy, (Geneva: United Nations, 2004).

"South African Poultry Industry Profile 2012" South African poultry association

Internet resources used:

"Astral Foods opens Mozpintos hatchery in Mozambique" http://www.astralfoods.co.za/MediaArticles_ArticlesView.aspx?FileNumber=454 Accessed on 6 June 2013

"Astral scrambles for bigger African nest egg" http://finweek.com/2012/03/09/astral-scrambles-for-bigger-african-nest-egg/ both accessed on 6 June 2013

"Astral breaks ground in Standerton" http://www.astralfoods.co.za/pdfs/Press%20Release%20-

%20Ground%20Breaking%20of%20Standerton%20Mill%20Press%20Release%20-%2026%20October%202012.pdf accessed on 06 June 2013

"Astral Voluntary Trading Update 30 January 2013 http://www.astralfoods.co.za/PDFs/Press%20release%20-%20Astral%20Trading%20Update%20-%2030%20Jan%202013.pdf (accessed on 27 August 2013)

"Start-ups take on big players and create rural jobs" Mail and Guardian http://mg.co.za/article/2012-10-30-start-ups-take-on-big-players-and-create-rural-jobs accessed on 28 August 2013

South African Poultry Association website statistics www.sapoultry.co.za accessed on various occasions

http://www.namibian.com.na/news-articles/national/full-story/archive/2013/april/article/swakops-chickens-ready-for-the-market/ accessed on 10 April 2013

http://www.frontiermarketnetwork.com/article/1195-namibian-poultry-project-needs-funding-for-expansion accessed on 10 April 2013

http://sun.com.na/business/import-control-preferred-infant-protection.51672 accessed on 12 April 2013

http://www.observer.com.na/business/1272-local-chicken-won-t-be-cheap accessed on 12 April 2013