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STRUCTURAL TRANSFORMATION IN AGRICULTURE AND AGRO-PROCESSING VALUE CHAINS¹

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Abstract

The linked growth between agriculture and agro-processing is central to industrialisation. However, the failure to industrialise in these sectors has contributed to services dominating the contribution to GDP in South Africa. Agricultural production remains concentrated on low value and less-labour intensive field crops, and although there has been growth in value-added processed food products, these markets remain dominated by a few large, lead firms. This paper assesses the nature and extent of structural transformation and the potential for growth across three value chain studies - fruit, sugar and dairy. The paper shows that there are key differences between sectors, for achieving structural transformation. At the upstream agricultural level, the substantial growth in exports of fresh fruit illustrates developed capabilities and scope for the application of more sophisticated technologies through investments in production, cold chain facilities and logistics. At the downstream food processing level, growth in value-added sugar confectionery products is constrained by the ongoing state support skewed in favour of upstream cane growers and millers. In the dairy sector, despite opportunities for entry in niche value-added markets, high levels of concentration and market power of MNCs limit growth and participation of smaller players. Central to agriculture and agro-processing value chains is the role of supermarkets as key routes to market and how their onerous requirements limit participation and growth of SMEs.

JEL Classifications: Q1, L11; L52; L66; O14

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1 Introduction

The South African agriculture industry has benefited from substantial state support over most of the apartheid period. Mainly white commercial farmers benefited from import protection, state subsidies, guaranteed prices and access to productive technology. Support was however largely concentrated around field crops (maize, wheat) and dairy, while other sub-sectors such as horticulture and poultry received limited support. Although the liberalisation of agricultural markets in the 1990s had a significant impact on the sector, the legacy of apartheid policies continues to shape the present-day land use patterns and structure of agricultural production in South Africa. Agricultural production remains concentrated on low value and less-labour intensive field crops despite substantial growth in exports of high value fruit. On the other hand, the downstream agro-processing industry has been a recipient of support as part of post-apartheid targeted industrial policy with associated growth in value-added processed food products. However, support has been oriented towards a few large, lead firms. Against this background, this paper assesses the nature and extent of structural transformation in agriculture and agro-processing value chains and the capabilities required to upgrade and shift into high value-added activities.

The slow process of structural transformation in these value chains has important implications for industrialisation in terms of value-addition, employment creation and increased participation of small and emerging players. Structural transformation refers to a shift of resources from less productive to more productive sectors, either through upgrading within a sector or across sectors (McMillan and Rodrik, 2011; McMillan, Rodrik and Sepúlveda, 2017). However, the process of industrial development is often simplified to refer to a shift of resources from low productivity agricultural activities into higher productivity manufacturing activities, with manufacturing viewed as distinct from agriculture. The boundaries between agriculture and manufacturing, and processed and unprocessed agricultural products, are becoming less distinct, partly as a result of agriculture employing more sophisticated technology (Page, 2014; Cramer and Sender, 2015).

Structural transformation in agriculture requires that agriculture systems become more capital intensive, more productive and better integrated with other sectors of the economy through markets (Food and Agriculture Organisation of the United Nations, 2017). The links between agriculture and other sectors of the economy need to create a mutually beneficial process in which farm output supports agro-processing, and in return, other sectors support farming by providing modern manufactured inputs and services (African Center for Economic Transformation, 2017). Therefore, while technological advances in the global economy may have eroded the sectoral boundaries between manufacturing and agriculture, the two are not mutually exclusive. The manufacturing sector remains a key source of technology-driven productivity growth, innovation and learning for the agricultural sector as manufacturing activities easily lend themselves to mechanisation and processing (relative to other economic activities) (Andreoni and Chang, 2016). Developments in manufacturing industries and their dynamic linkages are key in producing agricultural machinery and equipment, agrochemicals, and mechanised warehousing, which is necessary to develop the agricultural sector. It is important therefore to appreciate the close linkages between these sectors.

Several successful experiences internationally of sustained economic growth and structural transformation have been centred on agricultural value chains, yet South Africa has not been able to match the growth rates in agricultural exports achieved by countries such as India,

Mexico, Chile, Brazil and China. Part of the difficulty in achieving greater structural transformation relates to the political economy dynamics that have shaped, and continue to shape, the structure and development trajectory of these value chains. Policies are driven by contextual (institutional and structural) and political economy factors, as well as by the policy space and rationales for government action (Andreoni, 2015). Powerful lobby groups and dominant players influence the policy space and this has been important in gaining access to resources and extracting rents in agriculture and agro-processing value chains in South Africa (see also Kirsten, Van Zyl and Van Rooyen, 1994).

Against this background, this paper reviews trends over time to understand the nature, process and extent of structural transformation in selected agricultural and agro-processing value chains in South Africa. It evaluates the factors that have influenced the observed patterns in structural transformation and what set of capabilities and investments are required to upgrade and shift into high value activities.

The paper draws from three in-depth value chain studies in the fruit, sugar and dairy sub-sectors. These value chains were selected because they exhibit potential for structural transformation and industrialisation.

1. **Fruit** represents a high value agricultural activity with substantial growth in exports of fresh fruit. This illustrates developed capabilities and greater scope for changes in agriculture to apply more sophisticated technologies through investments in cold chain facilities and computerised logistics. Fruit also has significant potential to contribute to creation of jobs directly on the farm and through linkages to a range of ancillary activities such as packaging, logistics and cold chain facilities. However, the high value export markets are dominated by large-scale producer-exporting companies with minimal participation of small and medium-sized farmers.
2. **Sugarcane** has linkages to downstream processing in sugar, sugar confectionery and beverage industries, where there is evidence of medium-sized firms developing capabilities (especially in confectioneries). However, government support for the sector (in the form of pricing and import protection) has historically been focused on upstream sugarcane farmers and millers and has excluded downstream industries. This protection has also resulted in high levels of concentration at the milling level and has created an environment conducive to coordinated pricing of sugar. The resulting high prices of input sugar for downstream producers limits the growth and development of downstream value-added industries.
3. The **dairy** value chain represents important linkages to a range of value-added processed milk products with opportunities for entry of small-scale players in niche products. This level of the value chain requires lower capital costs and entrants are able to operate efficiently at small scale. However, high levels of concentration and market power of multinational corporations limit growth and participation of smaller processors in this sub-sector.

The study largely utilises secondary data. Quantitative data was sourced from national government departments, mainly the Department of Agriculture, Forestry and Fisheries (DAFF), Quantec and from the International Trade Centre (TradeMap), to identify sectors with export potential and opportunities for increased trade. Previous in-depth sector studies undertaken by CCRED and a desktop review were used to identify key players and activities

in the selected value chains. Past sector studies were also drawn upon for insights into labour productivity, competition concerns and constraints along the value chains. Relevant policy and regulatory issues were further evaluated from key policy documents.

The paper is structured as follows. Section 2 maps the linkages between agriculture, agro-processing and the rest of the economy. Section 3 provides an overview of trends in employment, investment, and agricultural production and land use patterns highlighting the role of government policies and support in shaping observed trends. Section 4 provides an overview of trade performance in agricultural products and processed food including the share of domestic and foreign value-added in exports as indicators of capabilities. Finally, section 4 provides a comparative analysis of South Africa's trade performance relative to peer countries. Sections 5 then provides an in-depth assessment of the selected value chains; fruit, sugarcane and dairy. Section 6 discusses the importance of retailers as a key route to market for agricultural and processed food products and section 7 concludes and provides policy recommendations.

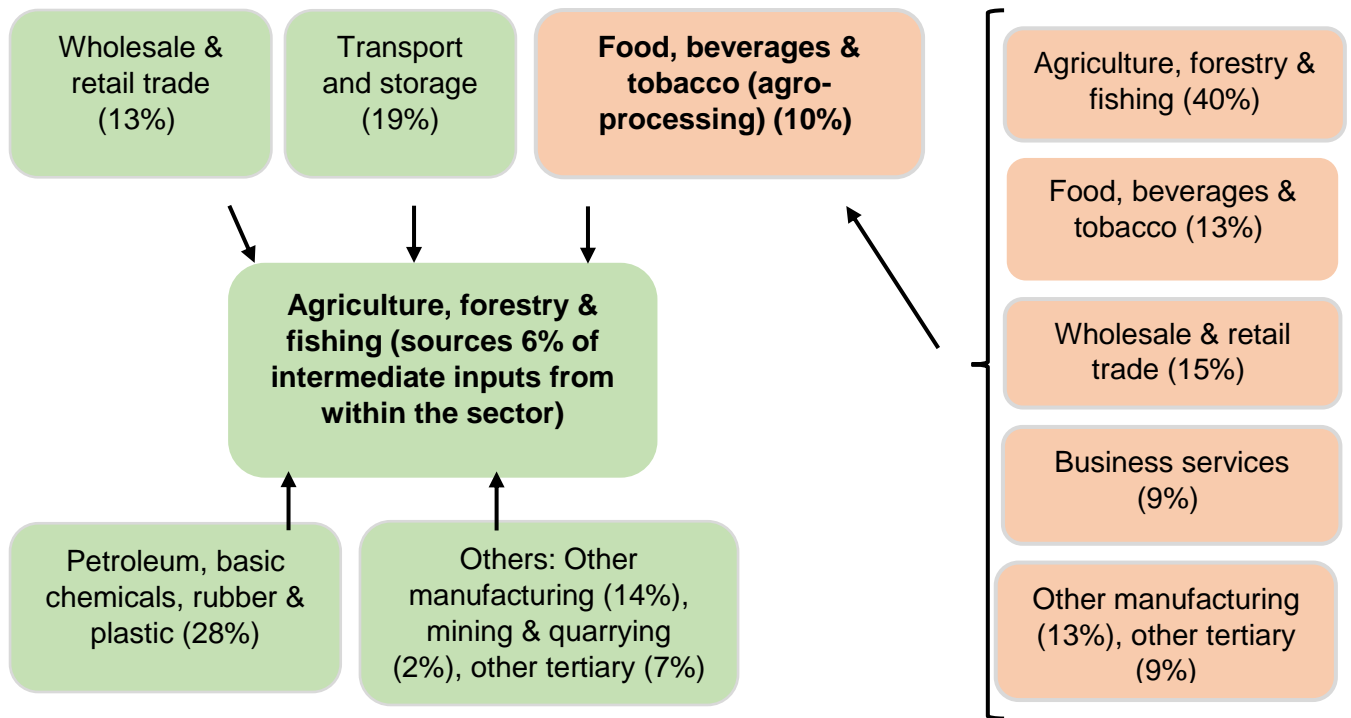
2 Linkages between agriculture, agro-processing and the rest of the economy

There exist strong linkages between agriculture and agro-processing as shown by the flow of inputs and outputs (by value) including to the manufacturing and tertiary sectors of the economy (Figure 1 and Figure 2). Growth of the agro-processing industry stimulates agricultural growth by creating new output markets and increasing farmers' incomes, which enables investment in land and inputs to improve productivity (African Center for Economic Transformation, 2017). Within the broader economy, the growth of agriculture and agro-processing value chains has significant positive spinoffs for other sectors in the economy through linkages to packaging, logistics and retail.

The agriculture, forestry and fishing sector has strong linkages to the manufacturing sector from where it sources 52% of its intermediate inputs (Figure 1). This include linkages to petroleum, basic chemicals, rubber and plastic (28%); and food, beverages and tobacco (10%), the latter category representing agro-processing. Agriculture also has internal linkages with 6% of its intermediate inputs sourced from within the sector. Further downstream, agriculture, forestry and fishing has strong linkages to the tertiary industry which accounts for 40% of its intermediate inputs and costs. These include wholesale and retail trade (13%), and transport and storage (19%).

The food, beverages and tobacco industry (agro-processing) exhibits strong backward linkages to agriculture, forestry and fishing, which supplies 40% of its intermediate inputs. At the manufacturing level, the food, beverages and tobacco sector exhibits internal linkages, sourcing 13% of its intermediate inputs from within the sector. Further downstream, food processing has strong forward linkages to wholesale and retail trade, and business services which account for 15% and 9% respectively of intermediate inputs and costs.

Figure 1: Input linkages (Rm at basic prices, 2016)

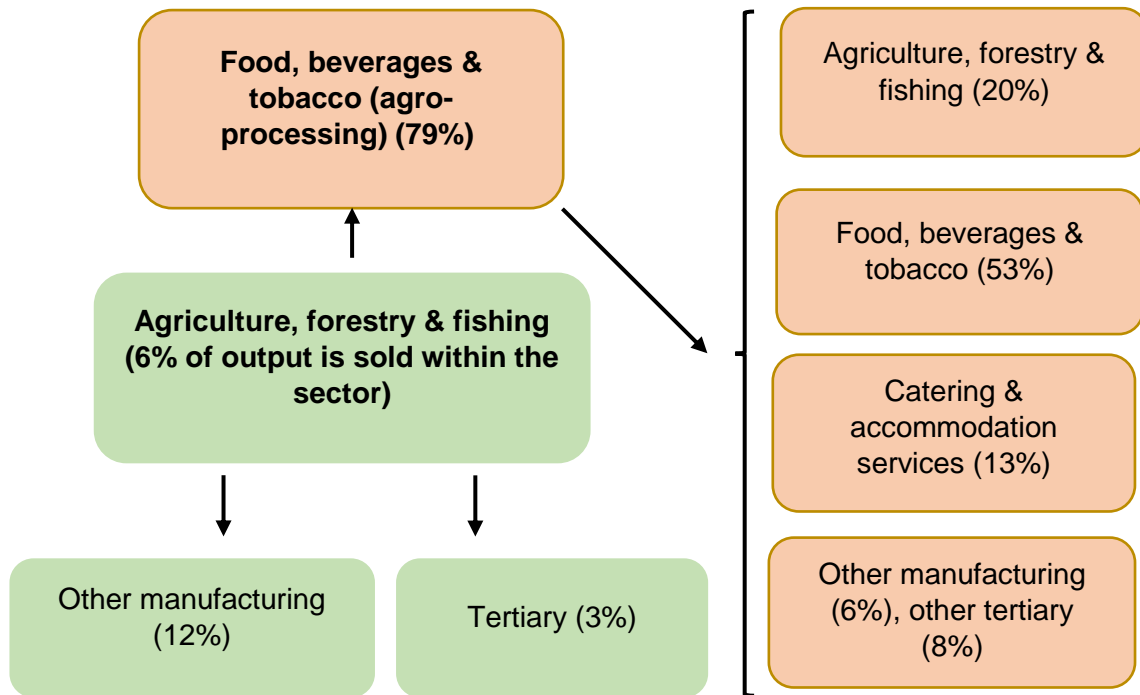


Source: Quantec

With regards to output linkages, 91% of the intermediate output from the agriculture, forestry and fishing sector is absorbed by the manufacturing sector (Figure 2). Of this, 79% is sold to the food, beverages and tobacco industry while 12% is sold to other manufacturing subsectors. Agriculture therefore plays a central role in developing and sustaining a vibrant agro-based industry (African Development Bank, 2015). However, agriculture, forestry and fishing exhibits weak linkages to the tertiary industry which accounts for only 3% of output sales. This is largely because a significant proportion of intermediate output from the agriculture sector is absorbed by the manufacturing sector for processing before it is sold through wholesale and retail.

The food, beverages and tobacco sector sells 20% of its intermediate output to the upstream agriculture, forestry and fishing sector. At the manufacturing level, food processing has strong internal linkages with 53% of its intermediate output sold within the sector. Further downstream, intermediate output from the food, beverages and tobacco industry is marketed through the catering and accommodation services, which account for 13% of intermediate output sales while wholesale and retail account for 1.2% of intermediate output sales.

Figure 2: Output Linkages (Rm at basic prices, 2016)



Source: Quantec

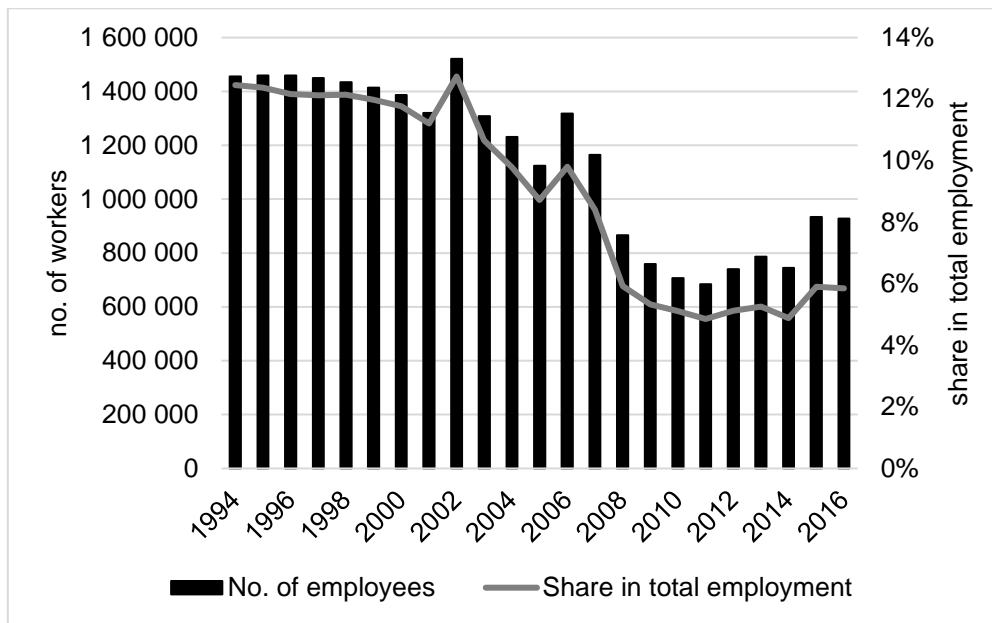
3 Analysis of industry performance

Section 2 has given a detailed description of the linkages of agriculture and agro processing industries to the rest of the economy. Section 3 will therefore provide an overview of the value chain performance with regard to employment contribution, production and investment patterns.

3.1 Contribution of agriculture and food processing to employment

In addition to the strong linkages to other sectors of the economy, agriculture to agro-processing value chains present opportunities for growing employment. High levels of unemployment largely concentrated among the poor people in rural areas remains a core challenge in the South African economy. The number of unemployed persons has grown by 238% from 1 703 863 in 1994 to 5 752 632 in 2016 (Quantec, 2018). As a labour-intensive and rural industry, agriculture presents opportunities to create jobs, particularly in rural areas. On average between 1994 and 2016, agriculture (represented by crop and animal farming) contributed 10% to total employment although the share declined overtime from 12% in 1994 to 6% in 2016 (Figure 3). Significant decline in employment in agriculture is observed particularly between 2002 and 2011 where employment declined at an annual compound rate of 8%.

Figure 3: Employment in agriculture (crop and animal farming)⁵



Source: Statistics South Africa, Quantec

The decline in employment is partly attributed to farm mechanisation and consolidation of farms into larger units to achieve economies of scale resulting in lower employment per hectare (Bureau of Food and Agricultural Policy (BFAP), 2011; World Wide Fund (WWF) - South Africa, (2010). Such trends in commercial agriculture are not unique to South Africa. To a lesser extent, there has been a global decline in employment shares in agriculture in the last 20 years (Food and Agriculture Organisation of the United Nations, 2017) as part of the process that takes place as countries transition from developing to developed countries (BFAP, 2011). However, in South Africa the decline in employment in agriculture coincides with stagnant employment in food processing, which may indicate that there is no shift of labour from agricultural activities into manufacturing activities. Other factors that could have contributed to the steep decline in employment between 2008 and 2014 include the effects of the global economic recession, which resulted in low levels of demand. Post 2014, the recovery in employment coincides with the recovery of the South African economy from the recession.

Efforts to grow employment in agriculture need to focus on products with higher potential for employment creation determined by the number of estimated workers required per hectare (Table 1). For example, increased production of fruit is likely to contribute to employment growth. Fruit production is labour-intensive, employing on average 1.6 workers per hectare, as most harvesting is done by hand (BFAP, 2011 and Cramer and Sender, 2015). In 2015, the fruit farming directly employed an estimated 179 948 people (Fruit South Africa, 2015). This is equivalent to approximately 19% of employment in agriculture as represented by crop and animal farming. Furthermore, the sector is linked to a range of ancillary activities such as

⁵ Disaggregated data on employment in agriculture, forestry and fisheries is only available from 2008 to 2016. However, aggregated data on employment in the agriculture, forestry and fisheries sector is available from 1994 to 2016. The data in previous years from 1994 to 2007 is then extrapolated using the average employment shares of i) agriculture, ii) forestry and iii) fisheries, in aggregate sector employment calculated between 2008 to 2016 and applying these percentage shares to the whole data set from 1994 to 2016.

handling, packaging, processing, logistics and cold chain facilities, which creates services jobs throughout the value chain. In contrast, field crops with the exception of sugarcane are increasingly becoming capital intensive employing on average only 0.01 workers per hectare. Sugarcane on the other hand directly employs an estimated 79 000 employees on the farms (South Africa Sugar Association, 2018), which is approximately equivalent to 8.5% of employment in agriculture as represented by crop and animal farming. Similar to field crops, animal products such as poultry, livestock and dairy also employ on average 0.02 workers per hectare in South Africa (BFAP, 2011).

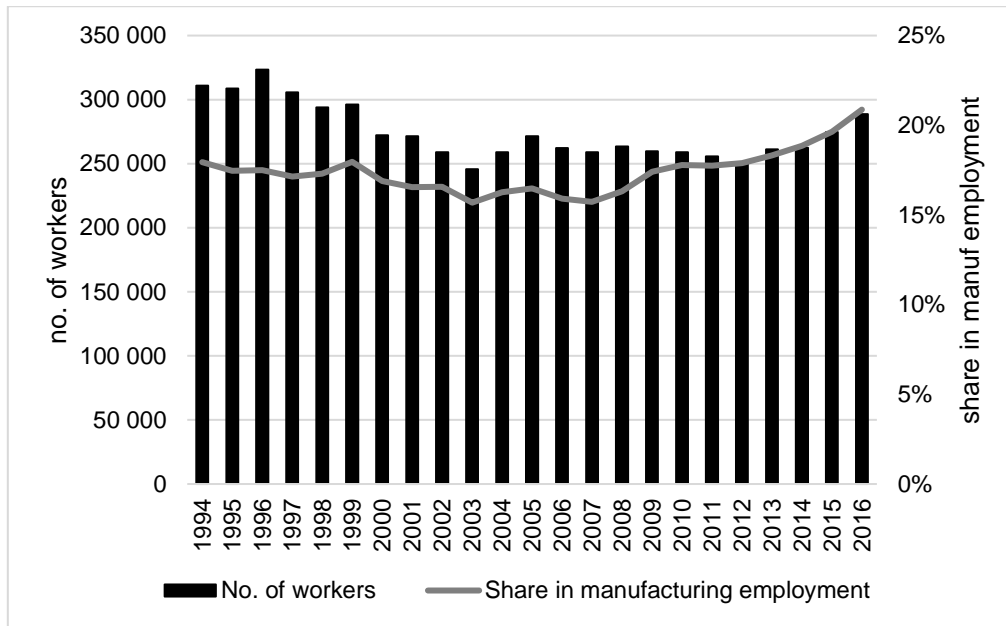
Table 1: Employment per hectare, 2011

Fruits		Vegetables		Nuts	
Citrus	1.00	Potatoes	0.80	Pecan nuts	1.30
Grapes	1.62	Tomatoes	3.50	Macadamias	0.80
Apples	1.25	Onions	0.98		
Pears	1.26	Carrots	3.00		
Plums	1.46	Pumpkins	2.10		
Prunes	1.46	Green mealies	1.00		
Peaches	1.20				
Nectarines	1.25	Field crops		Animal products	
Avocado	2.00	Maize	0.01	Poultry	0.0222
Mangos	1.40	Wheat	0.01	Eggs	0.0400
Litchis	1.40	Barley	0.01	Dairy	0.0286
Bananas	2.00	Soya beans	0.01	Beef	0.0143
Guavas	1.50	Sunflower	0.01	Pork	0.0185
Pawpaws	2.00	Canola	0.01	Sheep meat	0.0083
Strawberries	2.30				
Cherries	3.00				

Source: Bureau of Food and Agricultural Policy (BFAP), (2011)

At the downstream level of the value chain, food processing constitutes the largest employer in the manufacturing sector contributing on average 17% to manufacturing employment (Figure 4). However, the food processing sector also experienced a significant decline in employment of 9% (CAGR) between 1994 and 2003. Corporate concentration following domestic deregulation of markets in the 1990s appears to have been accompanied by a reduction in formal employment in food processing (Greenberg, 2017). Post 2003, employment grew briefly between 2004 and 2005 before stabilising and then showing signs of recovery from 2012 to 2016. The growth in employment between 2004 and 2005 could be due to increased investments in productive capacity during the commodity boom period to meet increased demand while growth in employment in later years coincides with the recovery of the domestic economy from the global recession.

Figure 4: Employment in food processing (formal and informal)



Source: Statistics South Africa, Quantec

Employment in the food processing sector is largely driven by the large food producers that are listed on the Johannesburg Stock Exchange (JSE). These include Tiger Brands, Pioneer Foods Group, AVI Ltd, Oceana Group, RCL Foods, Tongaat Hulett, Rhodes Food Group Holdings, Astral Foods and Clover Industries. On average, the listed firms account for 48% of total employment in the food and beverages sector between 2010 and 2015 (Nhundu, Paelo, Thosago and Vilakazi, 2017). However, during the same period, the following firms account for approximately 78% of employment contributed by listed food processing firms only. On average Tongaat Hulett, a large sugar miller, accounts for the largest share of employment with 33% followed by Tiger Brands, a fast-moving consumer goods producer (FMCG) with 13%. RCL Foods, a poultry, sugar, grains and animal feed producer accounts for 11% of employment by listed food processing firms while AH-Vest, a sauce producer accounts 11% and Pioneer Foods, another FMCG accounts for 10% (Nhundu et al. 2017). Although large firms account for significant contribution to employment in food processing, the overall growth in food processing employment has been minimal.

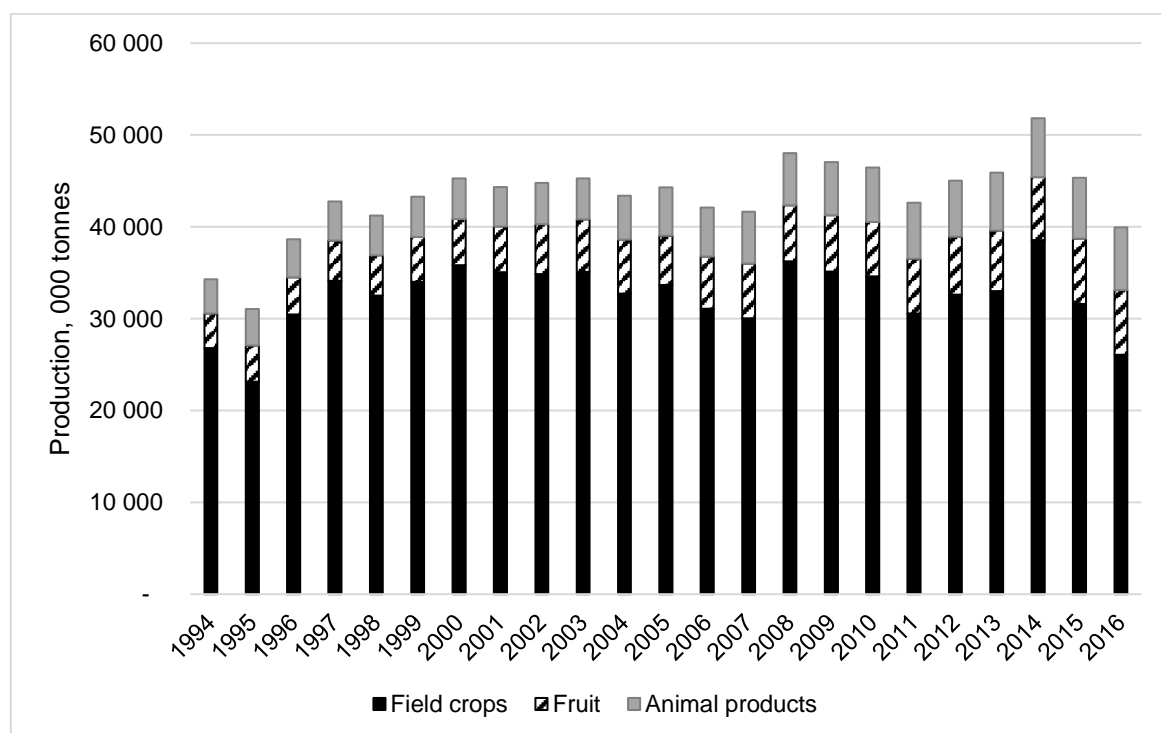
3.2 Agricultural production and land use patterns – the role of government in shaping markets

This section provides an overview of the trends in agricultural production to determine production capabilities and identify opportunities for upgrading into higher value-added activities. 98.7 million hectares of land in South Africa are used for agricultural purposes (Department of Agriculture, 2007, WWF – South Africa, 2010). Of this, 82 million hectares are used for grazing while 14.6 hectares is suitable for crop production of rain-fed crops given the climate soil combinations. About 1.3 million hectares are under irrigation. Water availability constitutes one key factor that limits agricultural production in South Africa (WWF – South Africa, 2010). South Africa is a water-scarce country, characterised by variable rainfall and increased frequencies of drought conditions affecting agricultural production. Due to non-availability and uneven distribution of water, approximately 83% of total agricultural land is suitable for extensive livestock farming rather than crop farming. Given the scarcity of water

and fertile land for growing crops, it is crucial that production focuses more on crops that generate the highest value to the economy.

South African agriculture is a dual production system comprised of large-scale commercial farmers and small-scale farmers. Agricultural production remains concentrated on field crops given their importance in ensuring national food security (Figure 5). However, agricultural policies from the apartheid era have played a significant role in shaping the structure of agricultural production in South Africa. The policy space has to a large degree been influenced by lobby groups through direct and indirect intervention in the sector (WWF – South Africa, 2010). With a formerly tightly regulated sector, South African agriculture was characterised by a history of direct government intervention for most agricultural products. State support was geared towards white commercial agriculture, with little or no opportunities for black farmers (Liebenberg, 2013). This system of support included the establishment of the Land Bank, the enactment of the Agricultural Marketing Act of 1937, Land Acts of 1913 and various other components of agricultural policy which included control boards (price setting of agricultural commodities), investments in research and development, and access to extension services and infrastructure (Kirsten, Van Zyl and Van Rooyen, 1994).

Figure 5: Production in agriculture, '000 tonnes



Source: DAFF

Over most of the 1960 to 1990 period, support was concentrated on field crops (especially maize and wheat) as well as dairy, while it was trivial for horticulture and poultry. White producers were protected from foreign competition, provided with subsidies and access to productive technology. In addition, producers of maize received guaranteed maize prices from the state, which also paid for export losses incurred by Maize Boards. Similarly, in dairy, the establishment of the Dairy Industry Control Board resulted in direct and extensive statutory intervention in the industry which guaranteed prices to farmers and provided tariff protection from imported dairy products (Groenewald, 2000). Concentration of state support for maize,

dairy and wheat made agricultural production of these products profitable. Maize farmers for example, extended production of maize into large areas of marginal land with low fertility, unsuitable gradient and soil structure (then Ministry of Agriculture and Land Affairs, 1998). Over time, producer cooperative activities in maize and wheat crops extended to financing and processing, creating a powerful collective bargaining tool for farmers in the grain crops sector (Tregurtha, Vink and Kirsten, 2010). A key activity of the cooperatives was the operation and ownership of grain silos, which were constructed with massive state support extending to infrastructure, capacity payments, handling, debt relief and tax concessions (Armin and Bernstein, 1995).

The deregulation of markets, dismantling of control boards and phasing out of certain import and export controls in the 1990s was associated with a drastic decline in total area planted for field crops particularly maize and wheat. Total area planted for field crops declined by 40% from 6.6 million hectares to 3.9 million hectares between 1994 and 2000 (Department of Agriculture, Forestry and Fisheries, 2016). However, the decline in area planted was not associated with subsequent decline in production. This is largely due to increased productivity given the use of genetically modified seed inputs although production fluctuated depending on availability of rainfall. Overall, the withdrawal of state support coupled with low import tariffs left many local farmers unable to compete with imports from developed countries, particularly in wheat and milk sectors (WWF – South Africa, 2010).

Sugarcane also constitutes a major field crop grown in South Africa (second to maize), which has a legacy of strong state support and has seen limited reform post-apartheid. The sector continues to receive extensive state protection to date (Barnes, Francis and Hartogh, 2015) mainly as a result of heavy lobbying by the large sugar millers and is the only subsector in agriculture that remains tightly regulated post-apartheid. The industry is regulated in terms of the Sugar Act of 1978 and Sugar Industry Agreement (SIA) of 2000, binding on all sugarcane growers and producers of sugar products (DAFF, 2016), in addition to other underlying domestic policies and regional agreements regulating the industry.⁶ This protection includes tariffs and mechanisms that set the sugarcane price which theoretically allows for an equitable division of proceeds between growers and millers. This feeds into the price setting of sugar to downstream industries.

The global sugar market is highly distorted with world prices for sugar often being referred to as 'a dumped' or highly subsidised price. Sugar is one of the most heavily subsidised products and the average price of sugar on the world market is consistently below the average cost of production of the sugar (Wood, 2013). This has resulted in imposing tariff and non-tariff barriers against the free importation of sugar to protect domestic industries in many sugar producing countries including South Africa (SADC Trade Protocol Annex VII). It has been noted that 'as long as the world sugar market remains highly distorted, sugar will be a product requiring special dispensation within the framework of the Protocol on Trade so that no sugar industry within the SADC region suffers injury' (SADC Trade Protocol Annex VII). In South Africa, the significant contribution of sugarcane to employment, especially in rural areas, makes it particularly sensitive (see Section 5.2).

However, despite the protection offered to the industry, there has been minimal growth in the sugarcane industry. Land used for growing sugarcane has barely changed, declining slightly

⁶ These include tariff protection, the SADC Protocol on trade (Sugar Cooperation Agreement), SACU Agreement and the SASA Constitution

from 384 000 hectares in 1994 to 362 000 hectares in 2016. The lower area under sugarcane production is also attributed to the land reform programme where 50% of the cane area is currently under land claims and only 10% of the claims have been settled to date. The effect has been to discourage investments and replanting of sugarcane. In addition, the industry's current involvement in the process of intense negotiations over new legislation to regulate the industry has led to increased uncertainty among farmers and producers (BFAP, 2011; Barnes, Francis and Hartogh, 2015).

Although protection afforded to the sugar industry may be justified on employment grounds, the policies and regulations do not support downstream sugar utilising industries and are heavily geared towards farmers and millers. For the purpose of facilitating and supporting industrialisation, these factors need to be considered within the process of reviewing existing regulatory frameworks and developing more inclusive strategic interventions. In other words, it is necessary to question whether the status quo is the most effective way of increasing value-addition along the sugar value chain.

Another main area of agricultural production that historically benefited from state support is the dairy industry. Following the liberalisation of the domestic economy, many small milk farmers and processors were unable to compete with imports (WWF – South Africa, 2010). This resulted in increased consolidation along the value chain. Large local and multinational processors were able to use their bargaining power to depress the prices of raw milk paid to farmers resulting in increased exit rates of small farmers (Du Toit, 1999). Although dairy is the largest sub-sector in terms of production volumes within the animal products category, it has the least compounded annual growth rates over the period 1994 to 2016. This may suggest a large mature industry with limited potential for future growth, although there are signals of growing opportunities for downstream industrialisation through value added, niche dairy products.

The deregulation and withdrawal of state support in the agriculture sector also resulted in sectoral deepening, whereby there was a shift in the composition of agricultural production from low-value, high-volume field crops to horticultural products. Government-led initiatives to increase irrigated farmland has led to the growth of other farmers to grow high value fruit crops (WWF– South Africa, 2010). Before 1994, the fruit industry was not a key sector targeted for substantial state support. It was regulated by the citrus board, which determined the volumes of fruit allocated to each processor including the quantities of fruit to be processed and sold in the fresh market. Imports and exports of fruit were also regulated, which limited the growth of the industry in terms of fruit production, processing and exports. However, the deregulation of the agricultural sector and dissolution of the marketing boards in 1997 created new export markets and spurred agricultural production of fruits for high value export markets. Although trade liberalisation contributed to growth of the horticulture industry, it also had the adverse effect on a number of fruit producers failing to adjust and compete in a globally competitive market resulting in exclusion and bankruptcies. This was particularly the case for smaller farmers who could not compete with subsidised produce from developed countries (WWF-South Africa, 2010).

South Africa is self-sufficient in the production of a range of fruit with production growing at a steady annual compound rate of 3% between 1994 and 2016 (Figure 14). Grapes, apples and citrus are the main fruits grown in South Africa and together account for 77% of total fruit production in 2016. Some of the fastest growing fruit in production include berries, bananas,

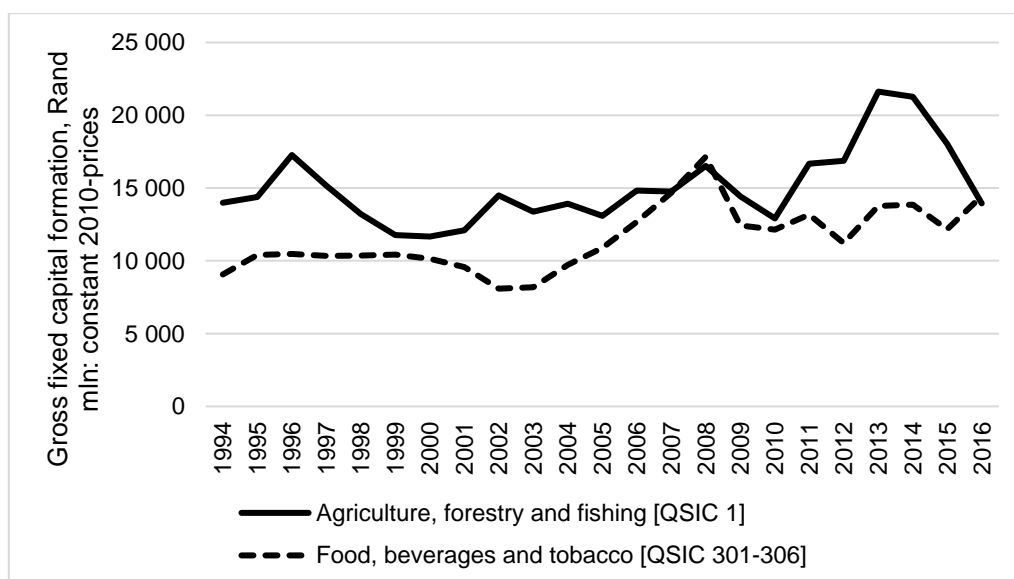
avocados and plums with an average CAGR of 5% between 1994 and 2016. However, the low levels of investment in irrigation threaten the production of fruit in South Africa (Cramer and Sender, 2015). But investments in irrigation also put a strain on water availability given that irrigation is already by far the largest water use in South Africa, using approximately 63% of surface water (WWF – South Africa, 2010).

Overall, the combined effects of former extensive state support driven by strong interests, followed by deregulation and trade liberalisation, created losers and winners - winners were located disproportionately in the less labour-intensive field crops sector (Visser and Ferrer, 2015). A further policy challenge after deregulation lay in relatively higher support of non-agricultural tradeable sectors, which created a biased allocation of resources towards non-agricultural industries against agricultural production (Edwards, Kirsten, and Vink, 2007).

3.3 Investments in agriculture and agro-processing

The deregulation and withdrawal of state support for agriculture beginning in the 1990s coincided with a steep decline in investments in agriculture between 1996 and 1999 (Figure 6). Post 2000, the low steady increase in investments up until 2008 were largely spurred by the commodity boom period. Increased demand following the growth in incomes contributed to increased investments in agriculture as a key supplier of inputs into agro-processing. Investments then dropped sharply from 2008 to 2010, which could be due to loss in investor confidence during the global economic crisis and subsequent domestic recession. Post 2010, investment in agriculture increased and peaked in 2013 before experiencing another sharp decline from 2014 to 2016. This could be attributed to the slow pace of land reform and issues of land claims, which tend to dampen investments in agriculture. Furthermore, the proportion of government spending in agriculture has been declining since the 1990s and most of the infrastructure is funded by the private sector (Van Zyl, Van Rooyen, Kirsten and Van Schalkwyk, 1994; Liebenberg, 2013). As such, physical infrastructure for farmers (such as roads, dams, railways, and electricity and communication links) remains unevenly distributed and concentrated among a few large commercial farmers (Van Zyl, Van Rooyen, Kirsten and Van Schalkwyk, 1994; Wiebe, Schimmelpfennig and Soule, 2001; Liebenberg, 2013).

Figure 6: Gross fixed capital formation in agriculture and food, beverages & tobacco



Source: Quantec

At the downstream food processing level of the value chain, although domestic market deregulation in the 1990s created processing opportunities in baking, dairy, milling and meat production (Greenberg, 2017), this was not associated with a substantial increase in investments (Figure 6 above). Rather investments were stagnant from 1995 to 1999 before declining. It is not until the commodity boom period that an increase in investments from 2003 to 2008 is observed. Increased investments during this period were largely driven by the need to meet increased demand following the growth in incomes. Post 2008 there is a sharp decline in investments, which coincides with low demand during the global economic crisis. Post 2009, investments have been generally stable with some fluctuations.

Investments in the food processing sector are largely driven by the large listed food producers. The largest firms in the food processing sector by market capitalisation listed on the Johannesburg Stock Exchange (JSE) in 2015 include Tiger Brands, Pioneer Foods Group, AVI Ltd, Oceana Group, RCL Foods, Tongaat Hulett, Rhodes Food Group Holdings, Astral Foods and Clover Industries. These large food producers account for 74% of total fixed investments in the sector in 2015 (Nhundu et al. 2017).⁷

From 2010 to 2015, investments in food processing appear to have barely grown. For most of the listed firms, growth in the total asset base has largely been through acquisitions of existing firms rather than investments in expansion or productive capacity (Nhundu et al. 2017). Food processing firms have been more inclined to grow and diversify their businesses by acquisition in South Africa rather than organic expansion of existing operations and capacity in order to grow market share. Therefore, there has been an increase in once-off high capital outlays in investment in mergers and acquisitions over this period. On the other hand, South African food processing firms are expanding operations into other sub-Saharan African countries through green field projects. Locally, expansion capital expenditure decreased from R2.1 billion in 2010 to R1.2 billion in 2015 although firms have been investing in replacement capital, which increased from R1.6 billion in 2010 to R3.7 billion in 2015 (Nhundu et al. 2017).

The above assessment cannot give credit to investments by small and medium sized firms as the dataset is based only on listed firms as such details of their investments are difficult to collate. Nonetheless, recent research in the sugar industry reveals that small and medium sized firms at the confectionery level are making investments (das Nair, Nkhonjera and Ziba, 2017). Although on a small scale, such investments highlight a (limited) degree of structural transformation into higher value-added products.

4 Trade performance

This section evaluates the trade performance in agricultural products and processed food in order to identify products with greater export potential and opportunities for value addition. We note that the spike in exports of most products observed between 2009 and 2010 is at least partly due to an adjustment in reporting of exports to the Southern African Customs Union (SACU) countries. Prior to 2010 exports of food-stuffs by South Africa to other SACU countries were not recorded as exports. This implies a considerable under-reporting in earlier years.

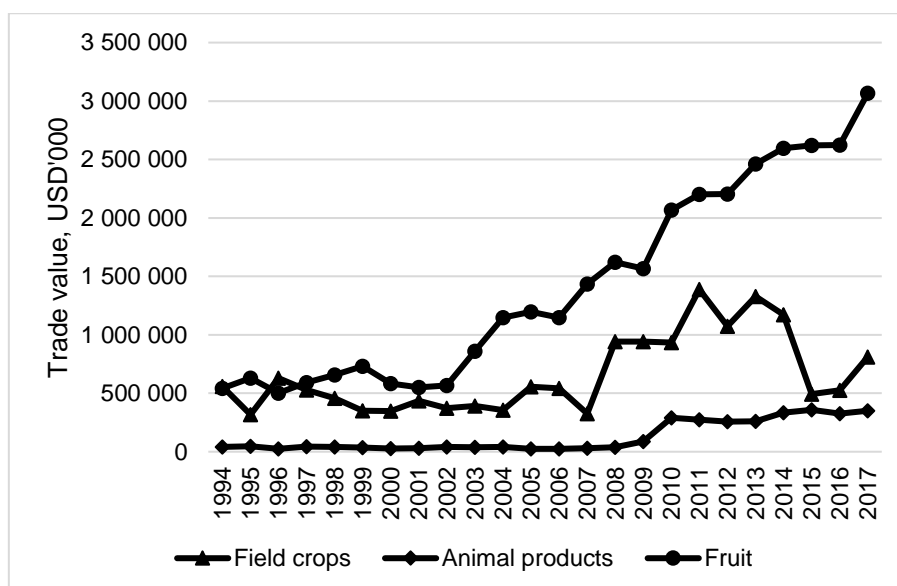
⁷ Ah-Vest Limited, Astral Foods Ltd, Avi Ltd, Clover Industries Ltd, Crookes Brothers Ltd, Oceana Group Ltd, Pioneer Foods Group Ltd, Quantum Foods Hldgs Ltd, Rcl Foods Limited, Rhodes Food Grp Hldg Ltd, Sovereign Food Inv Ltd, Tiger Brands Ltd, Tongaat Hulett Ltd.

4.1 Trade of agricultural products

The value of fruit exports grew with trade liberalisation after 1996 which facilitated access to new export markets and spurred greater production of fruit (Figure 7). Between 2002 and 2009, the value of fruit exports grew faster at 16% compared to the period between 2010 and 2017 where exports grew at 6%. This shows the benefits of integrating into international markets, tapping into global or external demand beyond the limitations of the domestic demand (Cramer and Sender, 2015). Citrus, apples and grapes account for 86% of total fruit export earnings in 2017. Some of the fast-growing fruits in export markets include niche fruits such as berries particularly cranberries and bilberries which grew at a CAGR of 32% between 2010 and 2017.

However, the slow growth in exports of fruit between 2010 and 2017, which is largely due to depressed demand during the economic recession stresses the importance of finding new markets beyond traditional markets in the European Union (which account for over 63% of local fruit exports). The domestic and regional markets, through the growing middle class, present alternative sources of demand for fruit.

Figure 7: Exports of selected agricultural products, nominal USD⁸



Source: Quantec

Although South Africa is generally a net exporter of field crops, the effects of the 2015 drought saw a dip in exports of field crops. Exports of field crops are largely driven by maize and sugar although exports of maize tend to fluctuate over the period depending on availability of rainfall. However, exports of maize may decline in future, following South Africa's main export destinations in the region increasingly becoming self-sufficient (BFAP, 2011). In contrast, sugar exports are more stable and South Africa has maintained a net export position between 1994 and 2014. However, imports of sugar grew rapidly from 2015 to become a net importing

⁸ Field crops include wheat & meslin HST1001, Maize (corn) HST1005, Soya beans HST1201, Sunflower seeds HST1206 and Cane or beet sugar HST1701 and Other sugars 1702. Fruit includes HST0803-HST10, HST13. Animal products include red and white meat HST0201-HST0204, HST0207; milk HST0401-HST0403, eggs HST0407-0408. All exports and imports figures in this document are nominal values expressed in US dollars as a stable currency with minimal inflationary effects.

industry, which could be due to the effects of the drought in 2015. The stability in exports of sugar can be attributed to the control of exports by the sugar export committee in the South African Sugar Association (SASEXCOR) and other regional arrangements under the SADC Sugar Cooperation Agreement as part of the regulatory framework of the industry.

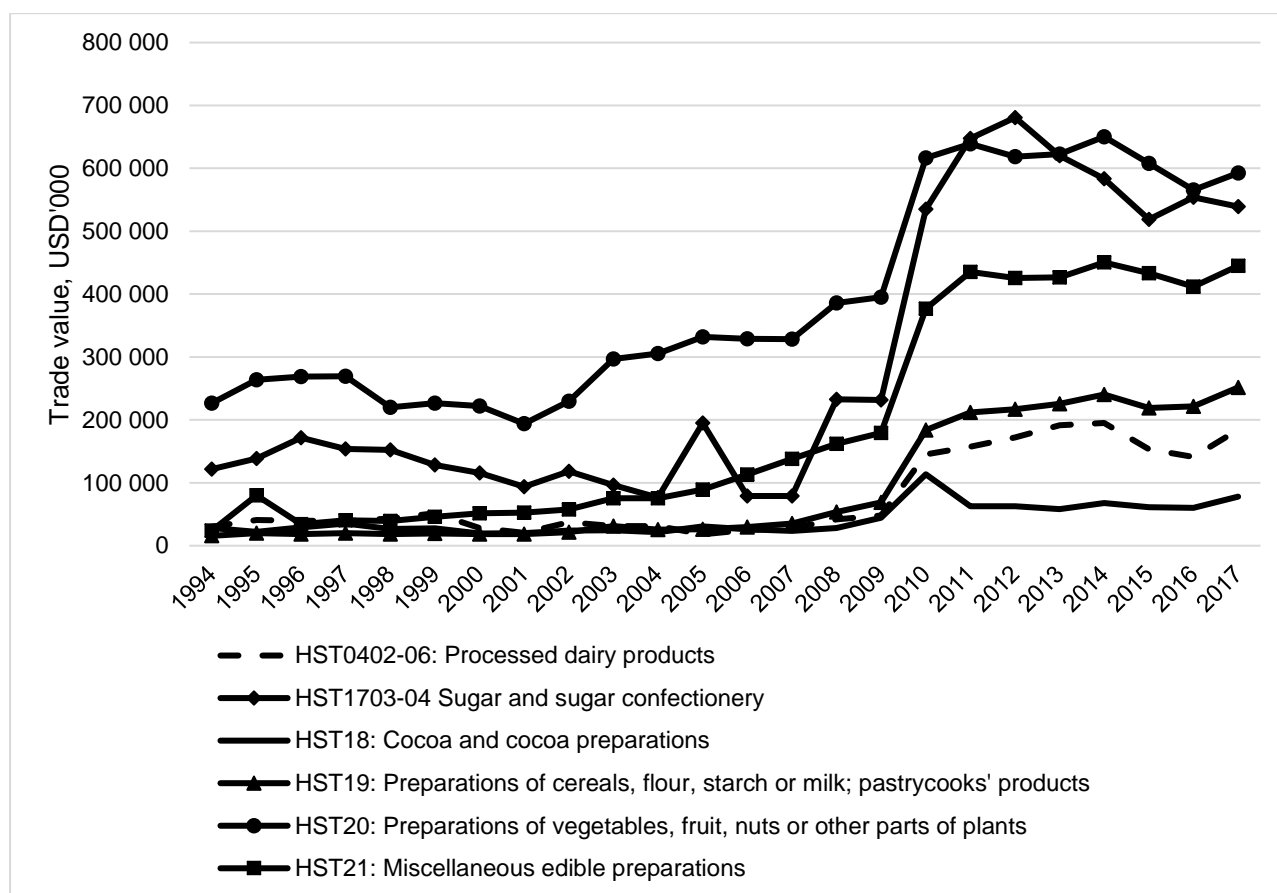
Although animal products represent a high value product in export markets, South Africa has not been able to take advantage of this opportunity which explains the country's long-standing trade deficit in animal products. Between 2000 and 2008, exports grew faster at a CAGR of 5% and decreased to 3% between 2010 and 2017. This is largely as a result of the loss in competitiveness of the local poultry industry due to high prices of animal feed in production (Ncube, Roberts and Zengeni, 2016). In contrast, exports of red meat grew the fastest at a CAGR of 18% between 2010 and 2017 to become a net exporting industry in 2014. This shows an increase in the competitiveness of the red meat industry. Lamb is also a high value product, which presents export opportunities but South Africa maintains a strong net import position. Within the dairy subsector, although milk is a large export revenue generating product, the growth in exports has been limited.

4.2 Trade of processed food

As highlighted earlier, the deregulation of domestic markets during the 1990s created processing opportunities in a number of subsectors including baking, dairy, milling and meat production (Greenberg, 2017). Despite these opportunities, exports of processed food did not take off although there were small signs of growth before 1995. Post 1995, exports of processed food stagnated before declining from USD 565 million in 1995 to USD 400 million in 2001 (Figure 8). With trade liberalisation, local processors may have not been able to compete with imports.

However, from 2002 to 2009 exports almost doubled from USD 488 million to USD 968 million. Growth in exports was driven largely by the growth in incomes during the commodity boom period although the strengthening of the exchange rate facilitated imports of processed foods resulting in a worsening trade balance. Post 2010, exports were largely stagnant before experiencing a sharp decline between 2014 and 2016 although exports have started to improve. The main processed food exports are sugar and sugar confectionery, processed vegetables, fruits and nuts; and edible preparations (such as yeasts, ice creams, soups, etc.).

Figure 8: Exports of processed food, nominal USD⁹



Source: Quantec

South Africa's exports of processed food are largely destined for the region due to rising incomes and urbanisation. Expansion of South African supermarkets into the region and continued use of centralised procurement strategies provide a key route to regional markets (das Nair and Chisoro, 2015; Greenberg, 2017). Lower quality requirements and fewer non-tariff barriers within the region have also facilitated entry of less efficient local producers into regional export markets (Cramer and Sender, 2015). However, deepening of regional value chains requires policy to go beyond national boundaries to take into account a regional perspective. Beyond the regional market, South Africa has not taken full advantage of the opportunities to shift towards exporting more processed food products to developed markets (Cramer and Sender, 2015). Thus there are opportunities to further grow regional and international exports.

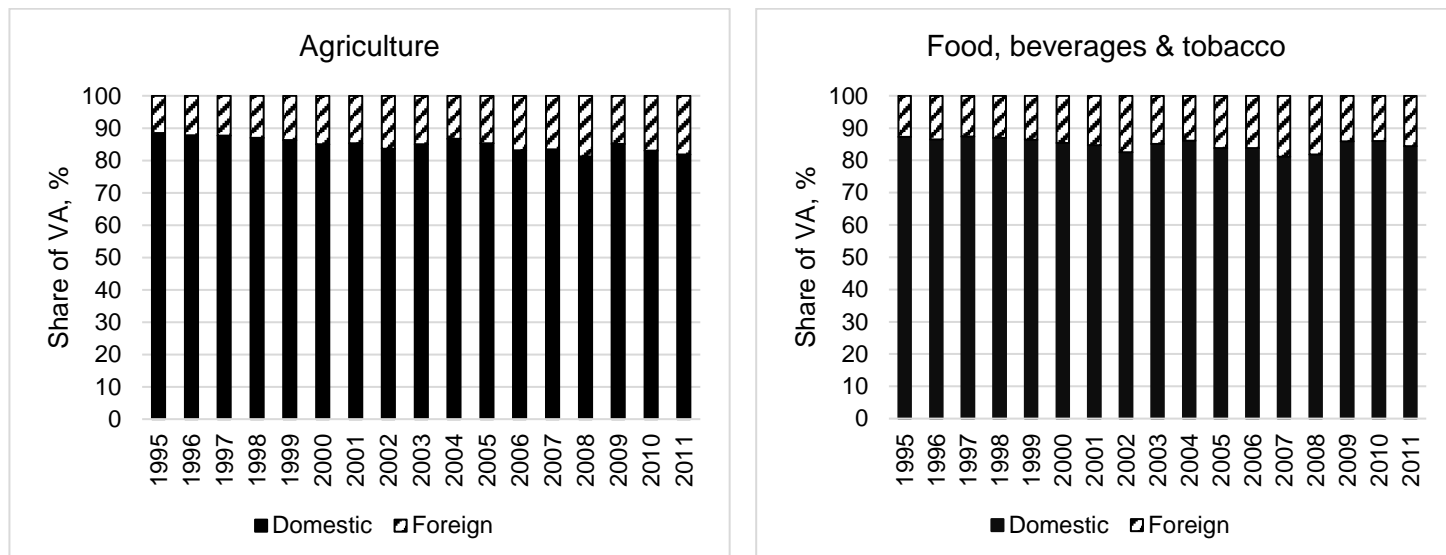
4.3 Trade in value added

To capture the extent of value addition in exports of agricultural products and food, beverages and tobacco, trade in value added shows the domestic and foreign share of value-added in gross exports (Figure 9). It highlights how much of the value added in our exports of agriculture and processed food is generated within the country and how much is imported from foreign

⁹ Exports of processed food include Milling products HST 11, Edible fats and oils HST15, Processed meat, fish HST16, Sugars and sugar confectionery HST1702, 1703,1704; preparations of cereals, flour, starch or milk HST19, processed vegetables, fruits and nuts HST20, Miscellaneous edible preparations HST21, Beverages, spirits and vinegar HST22

countries. The share of domestic value-added is mostly above 85% of total value added in both sectors (Figure 9). The relatively small share of foreign value added in gross exports implies that producers use a large proportion of local intermediate inputs in the production of exports, again highlighting the important local linkages to other sectors.

Figure 9: Foreign and domestic share of value added in gross exports, %



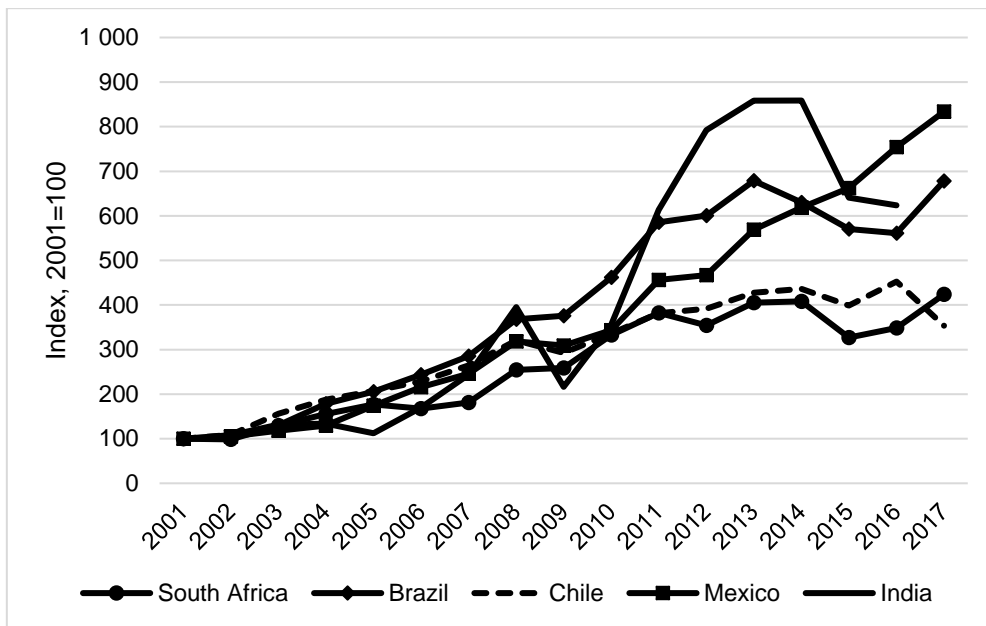
Source: OECD data

4.4 Cross-country trade comparisons

Agriculture has been central to sustained growth, structural change and poverty reduction in countries like Brazil and Chile. South Africa however is not growing as fast as other comparable countries in exports of selected agricultural products - field crops, animal products and fruits - despite the sector recording strong growth in the local economy (Figure 10).¹⁰

¹⁰ Agricultural exports include Field crops: HST1001, HST1005, HST1201, HST1206, HST1701, HST 1702. Animal products: HST0201, HST0202, HST0203, HST0204, HST0207, HST0401, HST0407, HST0408. Fruit: HST0803-0814.

Figure 10: Agricultural exports (index 2001=100)



Source: ITC TradeMap. The index was calculated by dividing annual exports from 2002 to 2016 by the export value in 2001 and multiplying by 100

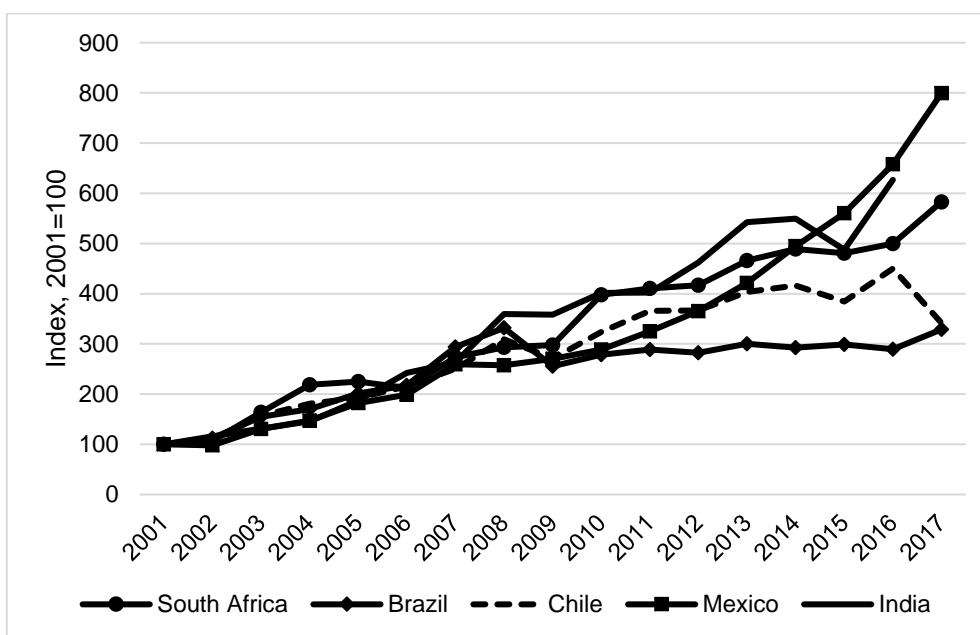
South Africa's exports of fruits have nonetheless grown at a similar pace to countries such as Chile although the recording of SACU exports between 2009 and 2010 tends to skew South Africa's growth rate upward (Figure 11). The growth in exports shows improvements in the competitiveness of South Africa's exports of fruit. Success of the fruit sector hinges on a strong industry association, Fruit South Africa. It is a private sector initiative representing five fruit-producer organisations.¹¹ Fruit South Africa is instrumental in addressing market and trade issues affecting the industry through liaising with government on policy and regulatory matters and ensuring that market access is granted on conditions that are favourable to the industry. In addition, the industry association provides producers with information on standards and requirements in different markets (Chisoro-Dube, Paremoer, Jahari and Kilama, 2018). Industry associations have played a key role in driving growth of the local fruit industry through sourcing markets for local producers and providing important market information.

The experience of countries such as Chile and Mexico (discussed below), as well as the fact that the South African success has been achieved with relatively little government support suggests the potential for further growth in the industry. The fruit industry in countries such as Chile and China have benefited from extensive government support and development of strong public institutions to facilitate and monitor compliance with global food safety standards. Local governments facilitated access to new markets, established accreditation institutions and invested in infrastructure to integrate farmers into the transport network (Fernandez-Stark, Bamber and Gereffi, 2011). The experience of Mexico further demonstrates that small-scale intensive farmers can be very important participants in fruit value chains. This depends on the appropriate linkages being built and support for the investment required to ensure the necessary levels of quality. Mexico has grown to become a key exporter of berries with much

¹¹ Citrus Growers Association; HORTGRO (pome and stone fruit), South African Table Grapes Industry, Subtrop (avocados fruit, litchi, mango), apples and pears, and Fresh Produce Exporters Forum.

of production carried out by small-scale farmers.¹² Investments in the berry sector are supported by private international berry producing and marketing companies, mainly from the United States. These companies supply financing for installation materials in greenhouses and farming inputs, training and technology transfer, management best-practices, and access to latest berry fruit varieties. Furthermore, they provide reliable buyers with access to complete supply chains and marketing infrastructure (Olson, 2013).

Figure 11: Fruit exports (index 2001=100)



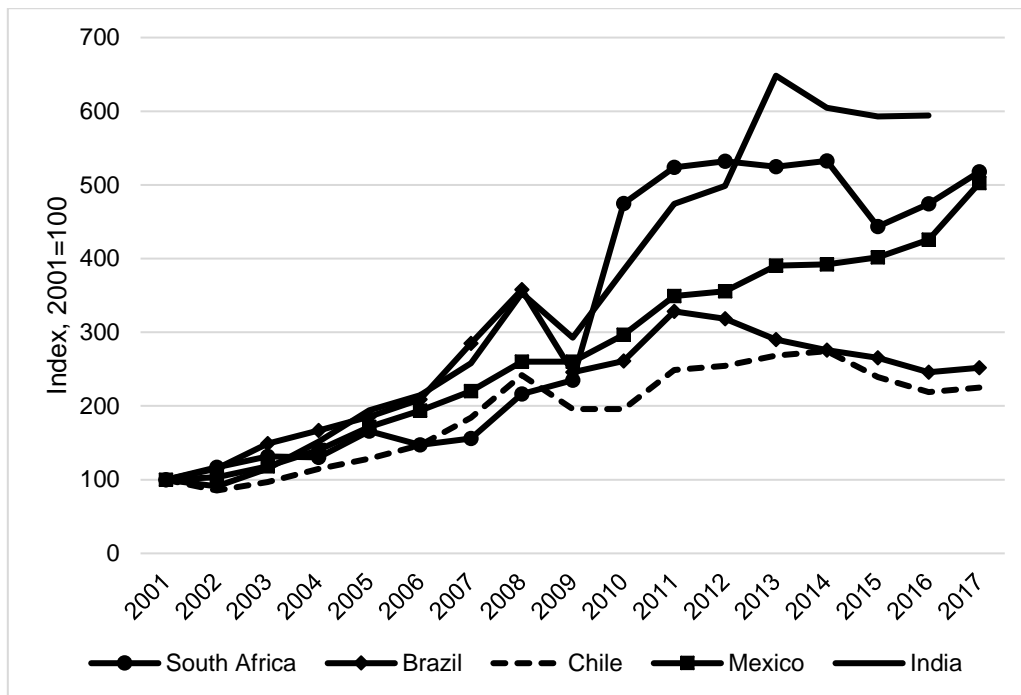
Source: Quantec

Until 2005, South Africa's exports of processed food were growing at a similar pace relative to the countries assessed (Figure 12).¹³ However, between 2006 and 2009 the growth in exports lagged behind other countries. This coincides with the strengthening of the exchange rate during the commodity boom period, which had the effect of reducing the competitiveness of local exports. Post 2009, the steep growth in food exports observed between 2009 and 2010 is skewed upward by the recording of SACU exports but has nonetheless improved South Africa's position relative to its peers. Much of this growth is spurred by regional demand.

¹²These include strawberries, raspberries, blackberries and blueberries.

¹³ Processed foods include tobacco and manufactured tobacco substitutes HST24, Animal and vegetable fats and oils HST15, Miscellaneous edible preparations HST21, Preparations of cereals, flour, starch, milk HST19, Preparations of vegetables, fruits, nuts HST20, Beverages, spirits and vinegar HST22, Preparations of meat and fish HST16, Products of the milling industry HST11, Cocoa and coca preparations HST18, Sugars and sugar confectionery HST1702, 1703, 1704.

Figure 12: Processed food exports (index 2001=100)



Source: TradeMap

5 Value chain analysis

Section 4 has identified the opportunities for growth in the upstream agricultural sector and downstream food processing industries. The following section will therefore assess each value chain in detail to understand the market structure, key challenges and potential areas for policy intervention.

5.1 The Fruit Value Chain

Fruit represents a high value activity with strong growth in export markets. This is evident of developed capabilities in the value chain to be competitive in international markets. Fruit also has significant potential to contribute to creation of jobs directly on the farm and through its links to a range of ancillary activities such as packaging, logistics and cold chain facilities.

Fruit is an excellent example of successful transformation in agriculture cutting across the traditional boundaries of manufacturing, agriculture and services. It illustrates the substantial scope for changes in agriculture to apply more sophisticated technologies to produce higher value crops. Such changes require building industrial capabilities and bringing together design and production, with logistics, branding and marketing. Fruit therefore represents an interesting case study because it shows that the process of industrialisation is not limited to manufacturing but extends to primary agricultural products.

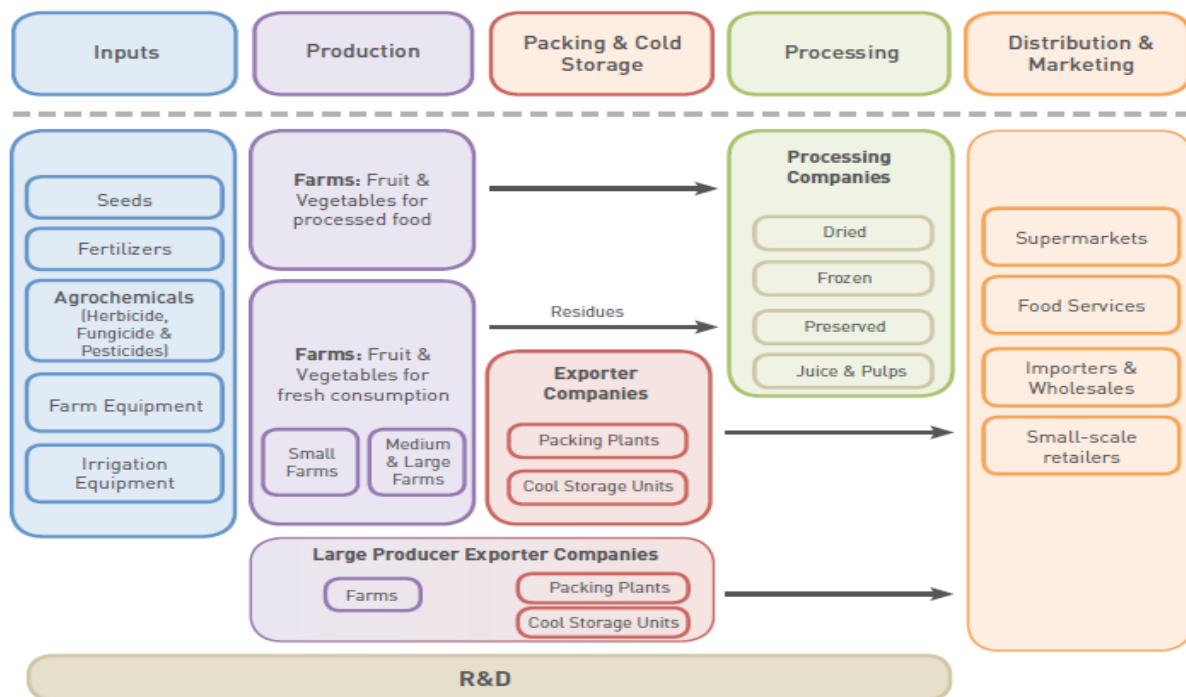
Structural transformation within the fruit value chain has different dynamics to traditional manufacturing activities. Higher value is not associated with more processing, but with functional and process upgrading to maintain quality and preserve the shelf life of fresh fruit, as the highest value product. This is referred to as 'industrialisation of freshness' (Cramer, 2017) and entails investments in pack houses, cold chain facilities and logistics, as well as

growing the most desirable fruit varieties. The process of exporting fresh fruit to international markets requires more technological sophistication, packaging, temperature and disease control, and computerised logistics than exporting lower value processed fruit juice (Cramer and Sender, 2015).

5.1.1 Mapping the fruit value chain

The main activities in the fruit value chain include (1) production, (2) packing and storage, (3) processing, and (4) distribution and marketing (Figure 13). These activities involve particular processes and technologies that add value to the product at the different stages in the value chain.

Figure 13: Fruit value chain



Source: Fernandez-Stark, Bamber and Gereffi, (2011)

At the fruit production level, fruit is primarily grown for the fresh market and this constitutes the most profitable segment in the value chain. 72% of total fruit production is sold in export and local fresh markets. At this stage, it is critical that farmers comply with global farming standards such as GlobalGAP with regards to the use of pesticides and quality of water. This is necessary to ensure traceability right down to the farming level. The ability of farmers to comply with global farming practices is critical for gaining access into high value markets in developed countries (Chisoro-Dube et al. 2018).

After harvesting, fruit is sent for packing and storage in cold units. Sophisticated packaging and cold storage units maintain freshness and quality of the fruit and preserves the shelf life of the fruit. The packing segment of the value chain entails investments in a wide variety of equipment to attain high standards of hygiene within the pack houses operations including on-site laboratories for product and staff health tests. Packing also requires economies of scale due to the high costs of cold storage and other capital investments and is largely carried out by large producer-exporters (Fernandez-Stark, Bamber and Gereffi, (2011).

Investments in logistics (storage and cold chain facilities, transportation networks, and information and communication technology) to effectively move and store products throughout the supply chain while maintaining the quality of the fruit is critical because of the highly perishable nature of fruit. The bulky nature of fruits also makes handling and transportation difficult and any inefficiencies in the system lead to large post-harvest losses (Roy 2015; Fonseca and Vergara, 2015).

The 'reject' fruit is sent to processing facilities to manufacture fruit juice concentrate, puree, pulps and preserves. Fruit that goes for processing accounts for the remaining (roughly) 29% of total fruit production. Therefore, fruit processing is regarded as a 'residual' industry that processes 'fall out or downgraded' fruits from the fresh fruit market. Processing adds value to the raw product by increasing the shelf life of the fruit and supporting development of manufacturing capabilities. However, fruit processing generates lower returns than fresh fruit despite the high capital investments and sophisticated infrastructure and skills required to perform manufacturing activities.

The processing level is divided into three parts:

- *Primary processors:* convert the downgraded fruit into fruit pulp, concentrate and puree that is supplied to blenders or other 'secondary' processors who make jams, jellies or preserves.
- *Blenders:* mix various juice combinations and supply the mixed juice to bottlers
- *Bottlers:* pack the final product into branded cartons and distribute to final consumers.

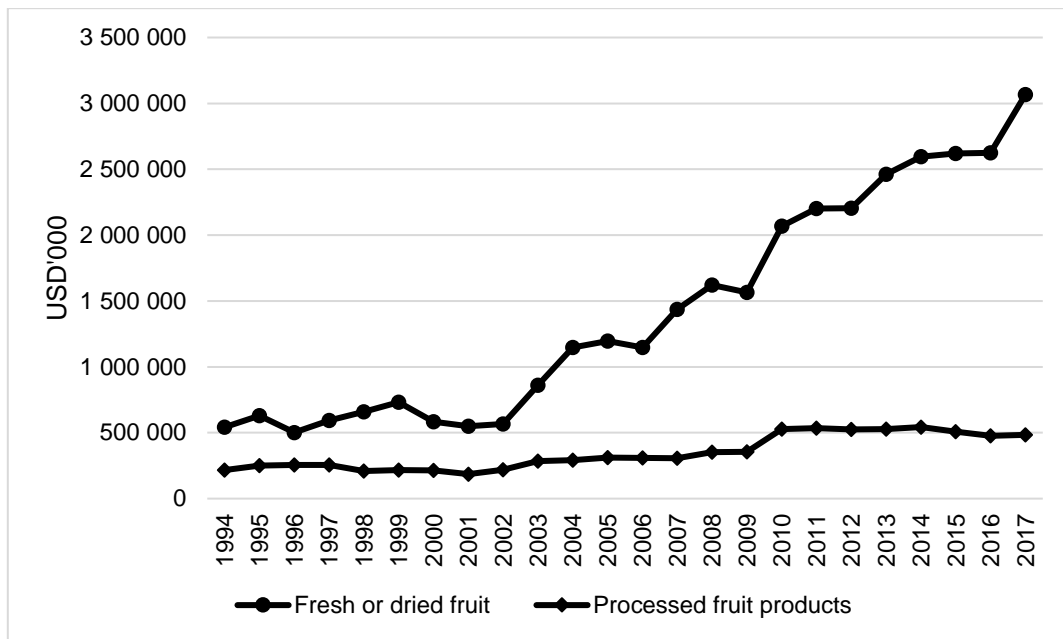
Table 2 shows the different stages of value-addition along the fruit value chain.

Table 2: Categorisation of the fruit value chain

Trade Class.	Raw		Processed	
	Code	Product description	Code	Product description
HST	0803-0814	Fresh or dried fruit	2007	Jams, fruit jellies, marmalades, fruit or nut puree' or nut pastes
HST			2008	Prepared or preserved fruit and nut
			2009	Fruit juices and vegetables juices

Exports of fresh fruit constitutes the largest component in the value chain in terms of value. This is because it constitutes the major business in this value chain and generates higher revenues than processed fruit products. However, not all fresh fruit can be sold on the fresh market and as such there is always a need for fruit processing. Security of fruit supply into fruit processing is a challenge to growing downstream processing as it competes for raw material with the fresh local and export markets. As such, fruit processing companies are often vertically integrated into farming to ensure security of fruit supply. Strong growth in exports of fresh fruit and processed fruit products, especially after 2002, is evident of South Africa's developed capabilities across the entire fruit value chain.

Figure 14: Exports of fresh fruit and processed fruit



Source: Quantec data

5.1.2 Market structure and key players

At the upstream fruit production level, an estimated 6,000 to 8,000 commercial, largely white, farmers are involved in the cultivation of fruit and vegetables across the country in 2016. However, the number of farmers has declined by 26% over the last decade. This follows a majority of farmers liquidating after trade liberalisation in the 1990s as they struggled to compete in international markets (Chisoro-Dube et al., 2018). Decline in farmers is also due to farming units becoming larger and fewer. Therefore, production for the fresh export market tends to be dominated by large producers and marketing companies because production of fresh fruit for international markets generally requires advanced technologies and large-scale operations to meet the requirements of international markets (Fernandez-Stark, Bamber and Gereffi, 2011). This has important implications with regard to participation of small and medium sized farmers who are excluded from these value chains because they lack the industrial capabilities, technologies and infrastructure to meet global requirements of the sector.

At the downstream fruit processing level, the major primary processors and juice manufacturers are shown in Table 3. Although the industry appears to have many players, approximately 55 000 processors, fruit processing is relatively concentrated with the largest five firms accounting for slightly under 50% of total revenue in the industry (Euromonitor, 2017). There has been no entry of new processors but rather a trend towards consolidation with large processors taking over small processors. This is characteristic of a mature and stable industry (Chisoro-Dube et al. 2018).

Table 3: Main players in the fruit value chain

Primary processors	Juice manufacturers/packaging companies
<ul style="list-style-type: none"> • Associated Fruit Processors • Ceres Fruit processors • Tiger brands • Langeberg & Ashton Foods (subsidiary of Tiger Brands) • Rhodes Food Group • Pioneer Foods • Ceres Fruit Processors (Pioneer) • Uni-Fruit • Pure Juice • Venco Fruit Processors • Elgin Fruit Processors • Granor Passi • Cape Fruit Processors • Uni-Fruit 	<ul style="list-style-type: none"> • Nestle • Coca-Cola (Appletiser) • Passina • Tiger Brands • Clover • Rhodes Food Group • Parmalat • Pioneer (Ceres) • Sir Juice • Take 5

Source: Chisoro-Dube et al.2018

5.1.3 Key issues and potential areas for intervention

There are opportunities to further grow the industry but a number of challenges limit this. The industry's growth, and especially the participation of smaller farmers, has been limited by inadequate infrastructure, particularly transport and logistics, pack-houses and cold storage facilities. This causes costly delays and breaks in the cold chain, and limits entry and expansion into export markets (Fruit South Africa, 2015). Participation of smaller farmers facilitates transforming patterns of production in the economy. As an export-oriented industry, stringent import regulations in developed markets in the form of import tariffs, import permits and sanitary and phytosanitary standards constitute key barriers to trade in fresh fruit. This is further worsened by lack of harmonisation or equivalence between multiple private standards, and between private standards and official standards resulting in suppliers having to acquire multiple audit certifications (Fruit South Africa, 2015). There is also limited capacity and skills in government to provide support and regulatory services throughout the value chain up to the point where fruit is ready for export markets. For example, DAFF which is mandated with conducting independent inspections lacks capacity to enforce standards and ensure compliance, and often uses assignees such as PPECB (Perishable Products Export Control Board) to undertake these functions (Chisoro-Dube et al. 2018).

Deepening and broadening structural transformation of the fruit sector as part of the wider development of agriculture in South Africa requires supporting investments along the value chain in productive capabilities (including in inputs, pack-houses, cold chain facilities, transport and logistics). It requires linking smaller farmers to international buyers, negotiating market access, and lowering the costs of meeting standards and certification. Currently, most of these investments are borne by the private sector. The experiences of Chile and China show that the local fruit industries grew on the back of extensive coordinated government support and development of strong public institutions to facilitate and monitor compliance with global requirements. The government facilitated access to new markets, established accreditation

institutions and invested in infrastructure to integrate farmers into the transport network (Fernandez-Stark et al. 2011).

The 2018 state of the nation address noted the importance of strengthening global market access for local agricultural products. In an effort to achieve this goal, the Department of Agriculture, Forestry and Fisheries received an allocation of R40 million to upgrade infrastructure and equipment for analytical services laboratories meant to assist local producers meet international standards and penetrate export markets.

Local success stories exist, and there are valuable lessons to be learnt from these. In February 2018, Stems Fruit and Unlimited Group, two Western Cape-based companies, were among a contingent of 25 local companies to display their fresh produce at the Fruit Logistica trade fair in Berlin, Germany. Their attendance at the fair, which recognises excellence and innovation in the global fresh produce business, was supported by the Department of Trade and Industry to promote South African exports and showcase the country's industrial development success stories (see Box 1 on the growth of Unlimited Group).

Box 1: Development of capabilities: Unlimited Group's success in the fruit value chain

Unlimited Group was established in 1991 through Yukon International. It is the investment holding company of seven businesses involved in fresh fruit, vegetables and nuts. Within the fruit business, Unlimited Group is vertically integrated from production, packing, storage, marketing and logistics. Unlimited Group's investments in infrastructure and logistics facilitate the movement of fresh fruit from production areas while maintaining the quality of the fruit up to the point of delivery to the retailer. An integrated approach across the entire value chain is a deliberate strategy by the group to gain control of every stage of the value chain.

At the upstream agricultural production of fruit, the group invested in securing the best genetics and varieties for growers to ensure the long term success of the business through its stone fruit genetics company, the Custom Plum Company. The group purchases, quarantines and run trials of new genetics, which are then commercialised in South Africa. The group also provides support to farmers in terms of investments on farms and providing financing for farming activities. These costs are recovered from the purchase price of the produce when delivered to Fruits Unlimited.

With regards to markets, the group supplies both local and export markets. In 2004, the Unlimited Group started supplying Woolworths through the Fruition Business, Woolworths' service provider. Unlimited Group procures grapes, cherries, stone fruit and citrus largely through imports for supply to Woolworths. Fruit is pre-packaged and ripened in ethylene chambers and delivered at the distribution centre in Johannesburg (Bapsfontein). Fruit such as avocado sold in Woolworths stores are 'ripened by design'. Unlimited Group's systems are linked to the Woolworths sales system so that they can label, prepack and respond to Woolworths' demand on a 'just in time' basis.

Internationally, the group successfully created platforms in Europe to do onward sales through supermarkets. Through its retail service provider, Global Harvest Growers the

group supplies a range of fruit to leading Russian retailers which further strengthened its supply chain integration.

There are government initiatives such as the Agri-Parks programme launched in 2015 and the Strategic Infrastructure Project II by the Departments of Rural Development and Land Reform, and Agriculture, Forestry and Fisheries. These aim to promote growth of smallholder farmers by providing key infrastructure and marketing support to emerging and marginalized farmers. However, these plans are yet to be implemented and small farmers continue to be excluded from these supply chains. Efforts to develop small scale farmers are futile given the limited support provided to them, which has contributed to missing opportunities to shift to high value crops. The fragmentation in government across different departments and institutions further undermines the implementation of practical initiatives.

An important part of building capabilities of smaller farmers is to meet the growing local and regional demand from urban consumers. The expansion of supermarkets in the southern African region provides a route to market for smaller fruit farmers and a stepping stone to upgrade capabilities (see Section 6 for a full discussion on the role of supermarkets in facilitating structural transformation). A focus on high value niche fruits such as berries and cherries with high demand in global markets also provides opportunities for growth and participation of smallholder farmers. The DTI's Agro-processing Supplier Development Programme (Industrial Policy Action Plan 2017/18-2019/20) aims to integrate smallholder farmers into supply chains by increasing procurement of smallholder farmers' produce by large retailers and processors.

Linking farmers with large producer-exporting companies that already have access to critical infrastructure and international markets is important for growing global exports. The government can incentivise large producer-exporting companies to partner with smallholder producers, as has happened in Mexico and China. Large companies can extend technical services and information on production and standards to small farmers. In return, the large companies may be provided with tax breaks, subsidies for investments in storage and cold chain facilities or assistance with raising capital (Gale, Huang and Gu, 2010). The strategy for the sector also needs to maintain an ongoing focus on developing niche, high value agricultural products in export markets, such as berries, lemons and limes, and mandarins and tangerines where smaller farmers can easily participate using small pieces of land.

The Departments of Trade and Industry, Rural Development and Land Reform, and Agriculture, Forestry and Fisheries are all working to improve access to markets for fruit producers. It is important that these departments work closely together with industry associations, such as Fruit South Africa, whose key activity is market access and has been successful in finding new markets. This requires an alignment of incentives across the various departments. Within the fruit value chain, the Agricultural Policy Action Plan's (APAP) core objective is to create employment at the upstream agricultural production level while IPAP focuses on the processing of agricultural products. As such, IPAP (2010–2015) was more focused on investment in fruit processing and particularly in fruit canning. However, in 2016 and 2017, the focus of IPAP shifted to adopt a value chain approach aligned to the APAP strategic commodities. Adoption of common value chains across different departments improves coordination and the process of implementation.

5.2 The Sugar Value Chain

The sugar value chain is a potential lever for achieving greater structural transformation in the agro-processing sub-sector. As highlighted in Section 3, while the upstream cane-growing and sugar milling levels have benefited from extensive state support and protection historically and currently, this has been to the detriment of developing downstream value-added products, such as sugar confectionery. The impact is that the potential that this downstream level of the value chain holds for greater structural transformation has been curtailed.

The current structure and outcomes in the sugar value chain have been heavily influenced by large sugar millers who have lobbied strongly since the 1970s for regulation to protect them from low-priced sugar imports. This has served to maintain their positions of power in a highly concentrated sugar milling market. Given the classification of sugar as a sensitive product, with implications on employment particularly in rural areas in South Africa, sugar growing and milling have been closely guarded and protected from low world prices for almost 40 years since the Sugar Act of 1978 came into effect. The employment benefits put the three main sugar millers in a very strong bargaining position for on-going protection of the industry.

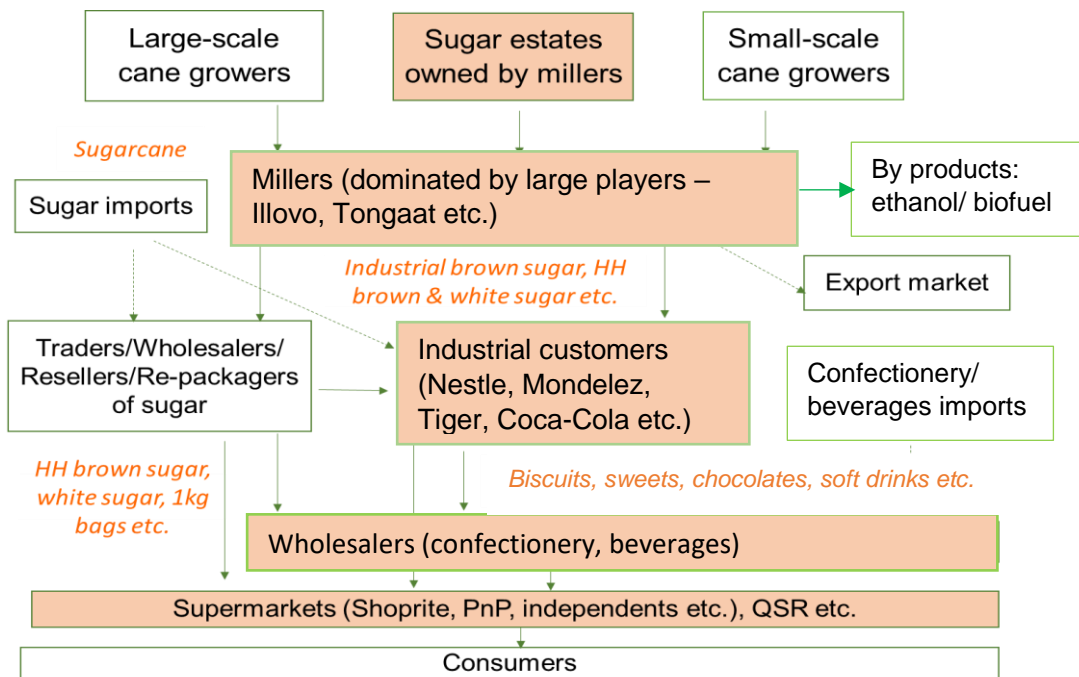
It is necessary to question whether the status quo is the most effective way of facilitating structural transformation in the sugar value chain. Given that South Africa is a relatively low-cost producer of sugar, it is well placed to exploit opportunities to develop low-to-medium technology value-added products in the sugar and baked confectionery industries (das Nair, Nkhonjera and Ziba, 2017).

Change in the regulatory framework that continues to disproportionately protect millers is critical to achieve structural transformation in the sugar value chain. The process to change the regulatory framework is currently underway and this study can contribute to informing the ongoing process. The sugar industry has indeed been identified in the 2016/17-2018/19 IPAP iteration as a key sector for targeted interventions.

5.2.1 Mapping the sugar value chain and main players

The sugar value chain in South Africa includes the functions of sugarcane growers, millers, refiners, wholesalers, traders and retailers (Figure 15).

Figure 15: Sugar to confectionery value chain in South Africa



Source: Adapted from das Nair, Nkhonjera and Ziba (2017)

The upstream level is the agricultural component, where sugarcane is grown, mainly by large-scale growers in the cane-growing regions of Mpumalanga and KwaZulu-Natal (accounting for around 83% of all sugarcane crop) (SASA, 2016).

The next level involves the milling of sugarcane into sugar and comprises three large milling companies which are also, to a small degree, vertically integrated into cane growing activities (about 8% of total sugarcane crop) and three relatively smaller sugar millers. The three large players are Illovo Sugar, Tongaat Hulett Sugar and TSB Sugar. The smaller millers are Gledhow Sugar Company (in which Illovo Sugar has a 30% stake), UCL Company and Umfolozi Sugar Mill. The entire sugar producing industry is represented by the South African Sugar Association (SASA) which is made up of the Cane Growers' Association and the Millers' Association.

Raw and refined sugar produced from milling and refining processes are distributed to wholesale, retail and industrial channels for final consumption or use in the production of higher value-added products such as confectionery and beverage products which use sugar as a key input.¹⁴ There are also a number of sugar traders/ distributors (such as Sugar on Tap, Royal Rice and Lluvia Sugar) who act as intermediaries between millers and confectionery producers - an important intermediary that allows smaller customers to purchase required sugar in smaller quantities.

Table 4 below shows the categorisation of the sugar products into raw, semi-processed and processed sugar products. This categorisation is important for analysing trade patterns over time to evaluate if South Africa has shown signs of moving towards higher value-added products through increased exports.

¹⁴ For purposes of this study, the beverages market is not considered.

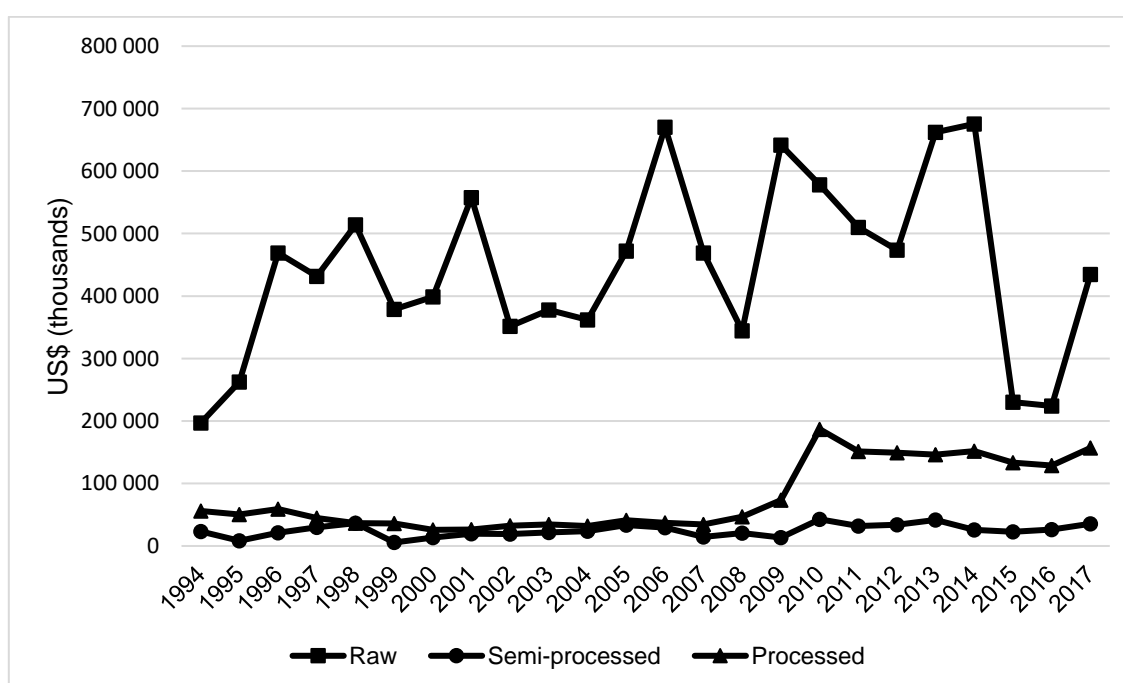
Table 4: Categorisation of sugar products in South Africa (excluding beverages)

Trade Class	Raw		Semi processed		Processed	
	Code	Product description	Code	Product description	Code	Product description
HST	1701	Cane or beet sugar	1702	Other sugars (incl. glucose, fructose)	1704	Sugar confectionery (Sweets)
			1703	Molasses		
			170191	Refined cane or beet sugar	1806	Chocolate
					1905	Baked goods

Source: Quantec data

Figure 16 below illustrates the proportion of South Africa's sugar output that is exported as raw, semi-processed and final processed goods (in confectionery). As is evident, the ratio of exports of raw sugar to final sugar confectionery products has been consistently high over the 1994-2017 period (despite sharp fluctuations in raw sugar exports, particularly during periods of drought such as in 2015). There appears to be some growth in confectionery exports from 2009, but the jump seen in the chart is at least partly because of the inclusion of reporting of SACU exports in the trade data. Nonetheless, a previous study showed that new investments by medium-sized confectionery producers in South Africa (such as Trade Kings, Aldor and Broadway Sweets) have resulted in increased exports to the region (see das Nair, Nkhonjera and Ziba, 2017).

Figure 16: South Africa's sugar products exports by degree of processing



Source: Quantec data

Note: Processed sugar products includes sweets, chocolate and baked goods (incl. biscuits) and excludes beverages and other sugar utilising industries

While there has been some structural transformation in the value chain to higher value-added activities, it has been limited. The recent investments at this level and the growth of regional markets with growing middle-class consumers spurred by urbanisation presents opportunities to develop this level of the value chain. With appropriate policy support, these opportunities can be better exploited.

5.2.2 Regulatory and policy frameworks that have shaped market outcomes

As highlighted in Section 3, sugar is the only agricultural commodity that was not subjected to the post-apartheid de-regulation process and has therefore remained a highly protected sector through various pieces of legislation. Protection for the sugar industry is not unique to South Africa however, as other countries have also put in place legislation mainly to support sugarcane farmers.

The sugar industry is regulated in terms of the Sugar Act of 1978 and Sugar Industry Agreement (SIA) of 2000. This legislation is binding on all sugarcane growers and producers of sugar products (DAFF, 2016). The Sugar Act and SIA are further supplemented by other underlying domestic policies and regional agreements regulating the industry (Table 5).

Table 5: Sugar industry legislative framework

Agricultural Act, No 70. of 1970
Tariff protection
Sugar Act No 9 of 1978
Sugar Industry Agreement of 2000
SADC Protocol on Trade (Sugar Cooperation Agreement)
SACU Agreement
SASA Constitution

Source: Conningarth Economists (2013); DAFF (2014b)

The Sugar Act and Sugar Industry Agreement (SIA)

SASA, under the Sugar Act and SIA determines the equitable exposure of growers and millers to the world market. The Sugar Act and SIA provide regulatory support for this process. The Sugar Act provides for setting of the sugarcane price, and indirectly the sugar price. While the Act provides for the general structure and principles, and the general framework, it is the SIA that provides details on pricing mechanisms that affect the final sugar price.

The price of cane is determined through the Division of Proceeds (DoP) formula, justified to protect growers from low global sugar prices and from the buying power of millers. The DoP is a pool of proceeds made up of the weighted average of revenues from local sales of white, brown and exported sugar. The weighted average is based on a ratio split between millers (36%) and growers (64%). This system then provides for the setting of a notional price, which is not the final price of sugar (see das Nair et al. 2017). Individual millers then set prices to industrial customers such as confectionery producers based on an average of industry costs including the cane price determined by the DoP (which makes up the biggest portion). This is at their *own discretion*, allowing for rebates, discounts and different packaging formats for different customers (retail and big industrial customers).

The final sugar price to industrial users is therefore not directly regulated and, in theory, is open to competition. However, given a regulated cane price and a well understood framework, the regulatory mechanism appears to inadvertently enable the millers to collectively set the

final selling price for sugar around a range (see also Barnes, et al., 2015). This is exacerbated by the provision in the SIA which allows for a more direct mechanism for millers to coordinate around a focal point called the 'notional price' which feeds into the DoP calculations. Coordination is likely to be further facilitated by the considerable exchange of information through SASA (see das Nair et al., 2017).

Also, as part of the regulatory framework, local and export quotas for sugar are set. These essentially have the effect of controlling local volumes available (and hence local prices), as well as controlling what is available for export.

The SADC Sugar Co-operation Agreement

In addition to the quotas, the SADC Sugar Co-operation Agreement aims to promote, within the region, production and consumption of sugar and sugar-containing products according to fair trading conditions and an orderly regional market given global market conditions. Other objectives include stimulating investments and competitiveness of SADC sugar producing member states, improving the efficiency of growers, millers and refiners of sugar in member states and facilitating the development of small and medium sugar enterprises. The agreement allows for partial access of the SACU market for SADC surplus sugar producers. This partial access is in the form of import quotas governed by a formula that allocates access based on the size of each country's surplus sugar production, and the level of market growth in SACU. The rationale is to offer non-SACU surplus producers (Malawi, Mauritius, Mozambique, Tanzania, Zambia and Zimbabwe) the chance to export some level of duty-free sugar to the region at higher prices than what they can get in global markets. In effect, the agreement limits the volume of sugar that other SADC countries can send to South Africa duty free. Exports over this volume would attract duties. This protects local growers and millers by limiting the volume of imports from the region. The consequence is that downstream users could have otherwise accessed cheaper imported sugar from the region (especially from low cost producing countries like Zambia). The question arises as to whether such agreements are conducive to structural transformation in the value chain.

There are also other bilateral agreements on sugar trade within countries in the region.

Tariff protection and the dollar-based reference price

The sugar industry is further protected through tariffs on sugar imports which are triggered when the world sugar price drops below a pre-determined dollar-based reference price. The cane growers association notes that the revision of the sugar tariff by the International Trade and Administration Commission (ITAC) in 2014 played a key role in reducing the volume of sugar imports in the 2014/15 season (Canegrowers, 2014). The dollar-based reference price for sugar was also reviewed by ITAC in the same year and increased by 58% as a result of heavy lobbying of ITAC by both SASA (on behalf of millers and growers) and the Swaziland Sugar Association (das Nair et al., 2017).

The revision of the sugar tariff and dollar-based reference price provides the upstream sugar industry (growers and millers) with interim protection against imported sugar. But it also impacts on the availability and pricing of sugar for downstream confectionery and beverage industries, who would again otherwise have had access to cheaper imported sugar. Benefits of this protection appear not to trickle down to lower levels of the value chain in the form of

lower prices, and the rents that the system creates appear to be extracted disproportionately at the concentrated milling level.

Amendments to the sugar legislation and the prospects for structural change

As previously noted, presently the Sugar Act and SIA are both under review by the dti and according to the Canegrowers Association, this review process is premised on the ideas of:

- fostering a more competitive environment;'
- establishing a positive legal framework for government intervention within existing SACU and SADC strategies;
- developing appropriate interventions to address the domestic impact of a distorted world sugar market.

The review process is an avenue through which sugar production and processing can be more sustainable (Bureau of Food and Agricultural Policy (BFAP), 2016). It is also a means through which the development and growth of downstream industries can be factored in as a lever for structural transformation in the value chain.

5.2.3 Market structure, competition concerns and implications for policy

The ongoing protection has been instrumental in shaping the market structure and outcomes observed in the sugar value chain today. It appears to have allowed for prolonged rent extraction mainly at the sugar milling level. The high level of concentration at the sugar milling level (Table 6) further raises concerns of potential market power abuses and the viability of downstream industries reliant on sugar.

This section assesses the market structure, concentration levels and concerns that have arisen at key levels of the sugar value chain that limit the ability for sugar confectionery producers, especially medium-sized producers, to grow and build capabilities. Input markets further upstream of sugarcane growing like agrochemical and fertiliser markets are also concentrated, however, the focus here is mainly on the processing and value-added levels of the value chain.

Table 6 below provides a summary of concentration levels and concerns around the potential exertion of market power in the sugar value chain. This provides insights on how value is potentially extracted at the different levels. Possible policy implications are then assessed at the end of the section.

Table 6: Concentration and market power in the sugar value chain

Function and players		Characteristics, possible mechanisms and effects of the exertion of market power	Policy implications
Growers	Miller estates (7%); 1 500 commercial growers (85%); 25 000 small-scale growers (8%) (based on production shares of cane)	<ul style="list-style-type: none"> - Integrated sugarcane estates - Vertical agreements - Contract farming 	<ul style="list-style-type: none"> - Monitoring/regulating contractual agreements between growers and millers - Assessing procurement strategies of millers

			<ul style="list-style-type: none"> - Systems to support cane growers (which already exists through the Sugar Act and SIA)
Millers	<p>Illovo Sugar (30.3%); TSB Sugar (28.5%); Tongaat Hulett (24.8%); Gledhow Sugar Company (6.1%); Umfolozi Sugar Mill (5.6%); UCL Company (4.8%)</p> <p>(based on market shares)</p>	<ul style="list-style-type: none"> - Highly concentrated - Extensive lobbying through SASA - Implicit “price control” as a function of regulatory mechanism - Setting of the local price of sugar at uncompetitive levels 	<ul style="list-style-type: none"> - Review of full regulatory structure of the sugar industry (currently underway)
Confectionery producers	<p><i>Sweets:</i> Tiger Brands (49%); Premier Foods (8.2%); Candy tops (7.5%); Mister sweet (4%); Mondelez (3.5%); Woolworths (3.3%); Sally Williams (2.9%); Nutella Importers (2.5%) Other (19.1%)</p> <p><i>Biscuits:</i> National Brands (38%); Pioneer Foods (12%); RCL Foods (6.4%); Woolworths (5%); Tiger Brands (3.7%); Pick ‘n’ Pay (2.7%); Spar (2.3%); Shoprite (2%); Other (27.9%)</p> <p>(based on % retail value shares)</p>	<ul style="list-style-type: none"> - Few large multinational firms dominate markets - Evidence of squeezing of margins of small/medium sized confectionery producers both in terms of input sugar prices and access to final retail markets 	<ul style="list-style-type: none"> - Address the issue of high input sugar costs through review of pricing mechanisms in SIA - Improve access to supermarket shelves (see Section 6)
Retailers	<p>Pick n Pay (30%); Shoprite Checkers (30%); Spar Group (21%); Woolworths Holdings (9%); Game & Cambridge (Walmart) (6%); Food Lover’s Market (2%); Choppies (2%)</p> <p>(based on store numbers of formal chain stores only)</p>	<ul style="list-style-type: none"> - Exertion of buyer power in procurement practices - Onerous requirements and trading terms 	<ul style="list-style-type: none"> - Retail code of conduct - Supplier development programmes - Inclusion of SMEs through house brands; apportion shelf space to SMEs

Source: Chisanga, Gathiaka, Nguruse, Onyancha and Vilakazi (2014); Euromonitor International (2016), SASA (2016) and Barnes et al. (2015)

First, majority of sugarcane is sold through arms-length vertical relationships between millers and cane growers/farmers. According to Saitone and Serton (2017) interactions between growers and millers potentially exclude small farmers from securing contracts because it is in a miller's interest to deal with the most efficient (often larger) farmers. Contract farming schemes, typically governed by cane supply agreements,¹⁵ allow small farmers to supply cane directly to large millers. The way in which millers can control small farmers through these agreements has however been a subject of debate. These agreements typically lock in cane growers into exclusive contracts with large millers (Chisanga et al., 2014). Millers control the relationship and are able to impose contracting and trading terms (including production practices, volumes to be delivered, quality and contract price). While there may be some efficiencies from the exclusivity such as improving factor productivity of cane growers through the transfer of knowledge from millers to growers (Saitone and Serton, 2017), the potential exclusionary effects of these agreements needs to be evaluated.

Second, as already noted, there is significant market power at the milling level, with the three big millers controlling over 80% of the market. The lack of new entry and limited effective competition to the three main millers highlights the benefits of protection that the three large millers have enjoyed for many years. The Competition Commission of South Africa (CCSA) has indeed noted that concentration levels at the milling level, coupled with the regulatory environment, protects millers from direct competition, creating a lack of dynamic rivalry between millers. There are concerns that the regulatory framework has a negative effect on the productivity of millers, reducing their incentive to compete on the basis of innovation and efficiency (Chisanga et al., 2014).

Millers who have a significant level of market power can exert this position to distort competitive outcomes along the value chain. Past research has found that prices of sugar sold to downstream value-adding industries are high and that this has reduced the competitiveness of small and medium-sized confectionery producers against imported confectionery products (das Nair et al., 2017). Retail prices of sugar in the region also show that South Africa has a comparatively high sugar price. This is despite South Africa being a surplus producer (Chisanga et al. 2014).

Third, the confectionery production level is dominated by large firms such as Tiger Brands, Premier Foods and multinationals like Mondelez International, who jointly accounted for a big share (61%) of the sweets market in terms of sales revenue in 2016. Nestlé is another well-known multinational brand in this market. The sweet biscuit market is also concentrated, with National Brands (Bakers) holding 38% of retail value share in 2016. This is the highest value-added level of the value chain where lead firms are likely to capture the bulk of manufacturing production and export shares (Andreoni, 2015), but also invest in product and process upgrading. It is difficult for small and medium-sized producers to compete against these large firms. Effective competition is important for broadening participation in the sector. Combined with the high input sugar prices and pricing pressure from the large local and multinational firms, the margins of smaller confectionery producers are squeezed. There is however evidence that medium-sized firms are making investments and starting to grow through sales in informal markets.

¹⁵ This is regulated by the DoP compensation mechanism which is supposed to protect growers by ensuring they get a fair value from millers (discussed in previous sections).

Lastly, small and medium-sized confectionery producers also face pressure from supermarket chains at the retail level. Supermarkets are an important route to market for these producers, but the exertion of buyer power further squeezes the margins of these players. This, including potential policy interventions in this regard, are discussed in detail in Section 6.

5.2.4 Investment decisions and implications for structural transformation

As noted, the lengthy protection afforded by the regulatory framework appears to have disproportionately benefited the large millers and allowed for rents to be extracted at this level as the benefits are not passed on to sugar users. However, these rents can be productive if they are re-invested in the sector. There is a relationship between corporate capital and corporate-led agricultural investments, which is also strongly linked to long-term state support and political backing (Dubb, Scoones and Woodhouse 2016). Although support to large firms may serve to reinforce their existing positions of market power (Mondliwa et al., 2017), they may also invest in long-term productive capacity, new products and innovation. Investments and the orientation of large, lead firms can be key in shaping the industry trajectory and in contributing to structural transformation.

Investments in the downstream confectionery industry are similarly an indication of structural transformation towards greater output of higher value products.

Investments by the lead sugar millers

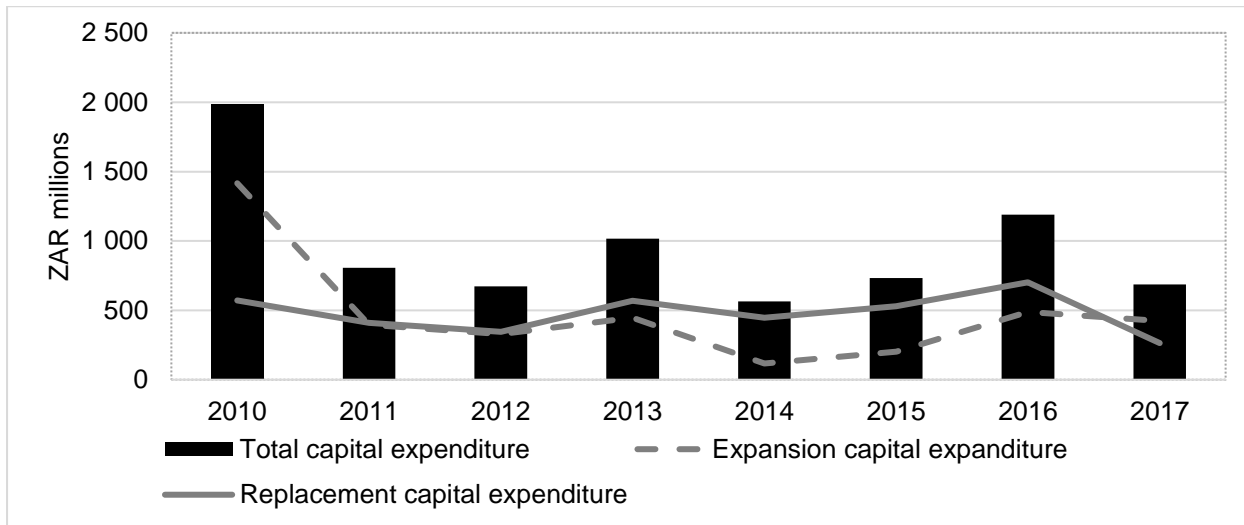
This section looks at the patterns and levels of investment of the three main millers, Tongaat Hulett, Illovo and TSB Sugar, since 2010 to provide an indication of whether these were in new productive capacity and/or in new and innovative products.

Tongaat Hulett

Operations in sugar milling requires significant investments in land, machinery and working capital. Figure 17 below provides a breakdown of Tongaat's¹⁶ replacement and expansion capital expenditure. There was notable expenditure in expansion capital in 2010 which was a result of the R1.63 billion acquisition of Xinavane and Mafambise sugar processing plants in Mozambique. This capex was significantly higher than Tongaat's normal annual capital expenditure, making 2010 an outlier year in terms of investments. The investment in the acquisition of the two plants however serves to further consolidate the industry, reinforcing Tongaat's already strong position. In this sense, this investment is not in new productive capacity for purposes of promoting structural transformation (although there may be efficiencies realised).

¹⁶ Tongaat Hulett has operations in South Africa, Swaziland, Mozambique, Namibia, Botswana and Zimbabwe

Figure 17: Tongaat capital expenditure



Source: Tongaat annual reports and INET BFA

Table 7: Tongaat Hulett’s key investments

2010	Expansion of the Xinavane sugar mill (Mozambique) was completed increasing its sugar production capacity to over 208 000 tons in a 32 week crushing season.
2011	Acquired a further 33.3% interest in Sugarmark Namibia
2015	Investment of R120 million in downstream capacity in an effort to grow starch and glucose operations
2016	Investments in production of sweeteners using feedstocks

Source: Tongaat annual reports

Similarly, as seen in Table 7 above, in 2011, there was another acquisition of shares in Sugarmark Namibia (a holding company with interests in sugar marketing in Namibia), leading to further consolidation. These acquisitions suggest a focus on regional expansion.

These acquisitions were however followed by investments in downstream capacity in 2015, which positioned Tongaat to benefit from growth in the coffee creamer sector. However, Tongaat is the only supplier of glucose (another key input for confectionary manufactures) in South Africa, and investments in increasing production capacity in glucose strengthens this position. In 2016, Tongaat further made investments in the expansion of the production of sweeteners, and this may be seen as branching into new markets.

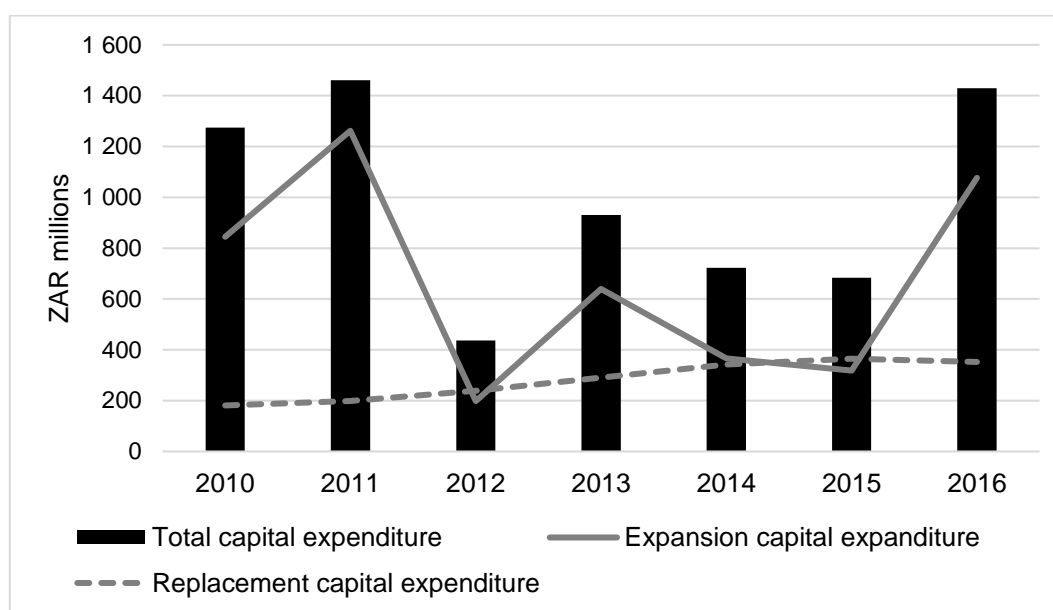
On average, Tongaat’s investments in capital expenditure amounted to R957 million between 2010 and 2017, which was more or less equally divided between expansion and replacement capital.

Illovo Group

Illovo's¹⁷ total capital expenditure in plant, property and equipment increased from R1 billion in 2010 to R1.4 billion in 2011 as a result of a substantial expansionary capital investment (Figure 18). Part of this was an expansion capital project of the Nakambala refinery in Zambia which significantly increased its sugar production capacity.¹⁸ In addition to the investments in Nakambala, expansion capital projects were made in a packed sugar warehouse in Malawi, as well as an energy refining project at the Sezela mill in South Africa (das Nair et al. 2017). About 20% of Illovo's total capital expenditure in 2010 was as a result of Illovo's increased shareholding in Maragra Acucar SA in Mozambique, after which there were no notable expansions through acquisition. In 2009 (not shown in the chart) however, Illovo also funded an acquisition of a large cane growing company, Nanga Farms, in Zambia, in order to expand its own capacity. Such investments signify the millers' expansion into the region.

Illovo South Africa, which is self-sufficient in terms of electricity and water supply, also made a significant investment of R300 million into a central warehouse and distribution facility in 2013. The new warehouse allows Illovo to extract additional supply-chain benefits and increase volumes and quality of specialty sugar.¹⁹

Figure 18: Illovo group capital expenditure



Source: Illovo annual reports and INET BFA

Note: Following the buyout of Illovo Sugar by Associated British Foods (ABF), Illovo's results are now consolidated for the 2017 financial year

¹⁷ Illovo Sugar has operations in South Africa, Malawi, Mozambique, Swaziland, Tanzania and Zambia

¹⁸ Illovo annual report, 2011

¹⁹ Illovo annual report, 2015

Table 8: Illovo's key investments

2010	- Increase shareholding in Maragra Sugar SA in Mozambique
2011	- Expansion of Nakambala refinery in Zambia - Packed sugar warehouse in Malawi - Energy refining project at the Sezela mill in South Africa
2013	R300 million investment in Pietermaritzburg warehouse
2016²⁰	Offtake capital injection made by ABF following its acquisition of Illovo in order to expand Illovo's operation in the region

Source: Annual reports

The record of Illovo's investments is more mixed than Tongaat's. On one hand, it has made greenfield investments in new production capacity and linked investments at different levels in the value chain such as in energy, packaging and warehousing in South Africa and in the region. This potentially benefits structural transformation at other levels of the value chain. On the other hand, acquisitions were undertaken to expand its regional footprint in Zambia, Tanzania, Malawi and other countries in the region. This only expands its already powerful position in these countries.

Like Tongaat, Illovo has also increasingly undertaken investments in replacement capital over recent years.

A growing orientation towards the regional expansion of South Africa's sugar capital is evident in both Illovo's and Tongaat's investment trajectories. These millers have continued to pursue strategies to take advantage of investment incentives in other markets (Chisanga et al., 2014), by shifting their milling capacity. It would be interesting to track these investments over a longer period of time to see if there are any geographic overlaps in terms of new investments outside SACU by Tongaat and Illovo. These new investments have largely occurred through acquisitions of existing sugar operations and capital investments in the region.

TSB Sugar

TSB Sugar (now RCL Foods Sugar and Milling) was acquired by RCL Foods in January 2014 and therefore a disaggregated and detailed account of RCL's investments in its sugar division is unavailable. This large-scale acquisition however most likely positioned TSB sugar as a stronger rival to Tongaat and Illovo in sugar production (Nhundu et al., 2017).

RCL annual reports indicate that the company has undertaken some product innovations, introducing sweeteners and new confectionery and speciality sugars (through its Selati sugar brand). This suggests some structural transformation to higher value products.

Investments by confectionery producers

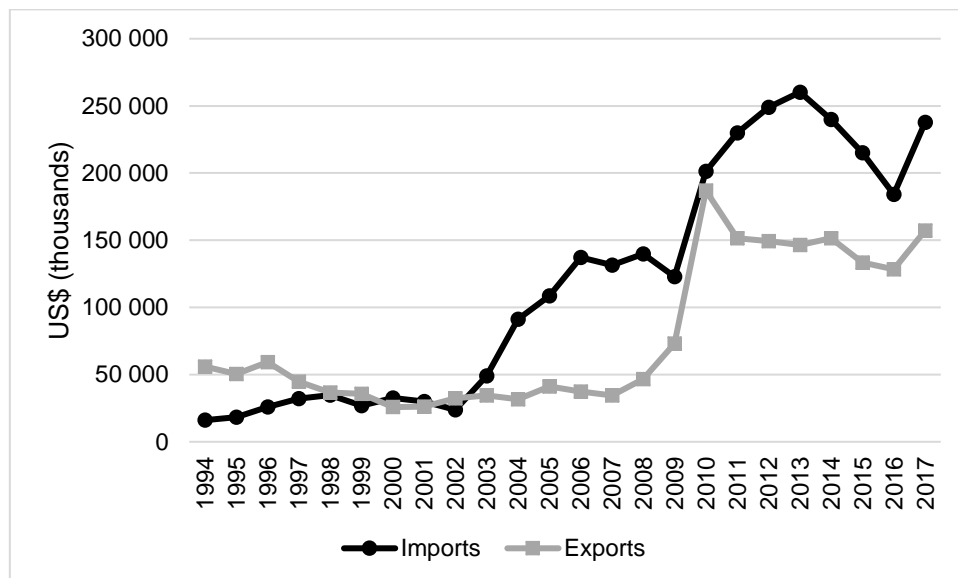
Changes in the production and trade of value-added products provides an indication of the extent of growth and structural transformation in sugar confectionery. In the sugar sector, there

²⁰ Associated British Foods acquired full ownership of Illovo Sugar in June of 2016. The nature of investments in this year are however unclear.

has been an increase in downstream activity (Barnes et al., 2015, das Nair et al. 2017) in confectionery, beverages and food processing - where the most value is added. The sweets subsector in particular has been experiencing growth in both production and sales. The industry in South Africa generated R5.9 billion (USD400 million) in 2016, up 6% from the previous year (das Nair et al., 2017). The South African sugar confectionery industry produces international brands, including high end, niche product items destined for deep sea markets. South Africa is also seen as a gateway for exports into the region which has subsequently encouraged investment in the country.

Trade data shows (Figure 19) that South Africa has a negative trade balance in key sugar value-added products (chocolates, baked goods and sweets) when considered collectively. The SACU region makes up the top export destinations for these products, highlighting again the importance of the region for the sugar value chain. Imports are predominantly from Swaziland and Switzerland.

Figure 19: Trade of sugar confectionery products²¹



Source: Quantec

Note: Sugar confectionery products include sweets, chocolates and baked goods (incl. biscuits)

There are indications from previous research (see das Nair et al., 2017) that medium-sized firms have the capabilities to tap into regional markets and have made significant investments to do so. Investments in the sugar confectionery industry have been made by both large and medium-sized firms and include some of the investments shown in Table 9. These include innovative approaches to bring in new products and extensions of product lines, as well as to increase productivity and efficiency of existing product lines. Investments also include obtaining local and international accreditations. Innovative packaging methods, for example, are also being developed to ensure product quality and convenience. Niche players in the confectionery market have further invested in proprietary innovations to increase productivity.

²¹ Sugar confectionery products include sweets HST1704; chocolates HST1806; and baked goods (incl. biscuits) HST1905

Supporting these types of investments has the potential to drive exports and manufacturing growth and spur further structural transformation.

Table 9: Investment activity in the sugar confectionery industry (2011-2016)

Type of investment	Estimated cost
New product launch	R1.4 – R1.6m
Innovative packaging	Unknown
Production lines	R10m
Boilers	R200 000
FSSC 22000 accreditation	R200 000
HACCP (food safety)	R80 000
New machinery and replacement capital	R45m
Training initiatives	R1m
Advertising and brand awareness	R1.5m
Supermarket listing fees	R100 000 – R200 000

Source: das Nair et al. (2017)

Despite evidence of growth and significant investment activity in the confectionery sector, the industry faces key challenges as already highlighted in Section 5.2.3. Building capabilities at the confectionery level further requires adequate capital, skill and facilities.²² These represent critical constraints. Previous research indicates, for example, that there is a shortage of technical skills (especially maintenance fitters, instrumentation electricians and production managers in confectionery plants), and that it takes 4-5 years to train artisans.

5.2.5 Summary of potential areas of intervention

Regulatory framework and domestic pricing mechanism

Although the sugar industry will continue to face import pressure from low global market prices, the current regulatory framework and the domestic pricing mechanism, heavily skewed in favour of the millers, does not ensure a competitively priced supply of sugar for consumers and downstream manufacturers of sugar confectionery. The on-going review of the regulatory framework needs to consider how it can also work for the downstream, value-added industry.

Building capabilities

To assist confectionery manufacturers (particularly small/medium-sized producers) increase capacity and grow into international markets, support is required to build capabilities. This needs to be in conjunction with any financial support provided. Financial support can include export finance and funding for investments in processing technologies to create innovative products that are responsive to emerging consumer preferences in regional and global markets. Funding can also be made available to small/medium-sized producers with less stringent requirements and more flexible terms. In terms of building capabilities, supermarkets can play a key role through supplier development programmes. This is discussed in Section 6.

As packaging is essential for processed food products, including in sugar confectionery, innovative packaging and new product development activities would require a strong emphasis on R&D, which includes research facilities and testing centres.

²² Born, H. and Bachmann, J. (2006). Adding value to farm products: An overview. ATTRA Sustainable Agriculture Program. National Centre for appropriate Technology (NCAT).

The development of skills and building the capacity of smaller players in the sugar value chain can be done in conjunction with large, lead firms. IPAP 2017 makes reference to limited access to skills of small processors and identifies the need for collaborative platforms and improving relations with large-scale processors in order to develop skills and industry capabilities.

Access to markets

Onerous requirements by supermarkets (a key distribution channel for sugar confectionery products) make accessing shelf space challenging, particularly for small to medium sized producers. Given that there is no legislation governing retailers, and supermarkets are a key route to market, recommendations on how the unequal balance of power and potential for abuse of buyer power can be curbed are provided in Section 6.

A caveat

Achieving structural transformation in the sugar value chain has been argued in this paper to be through growing downstream value-added industries such as sugar confectionery. This should however be considered within the context of excessive sugar consumption and the associated health concerns. While there is a sugar tax, it is currently targeted at the sugar sweetened beverages industry only. One needs to be mindful of growing health concerns and the adverse impact promoting the downstream sugar confectionery industry may have on this.

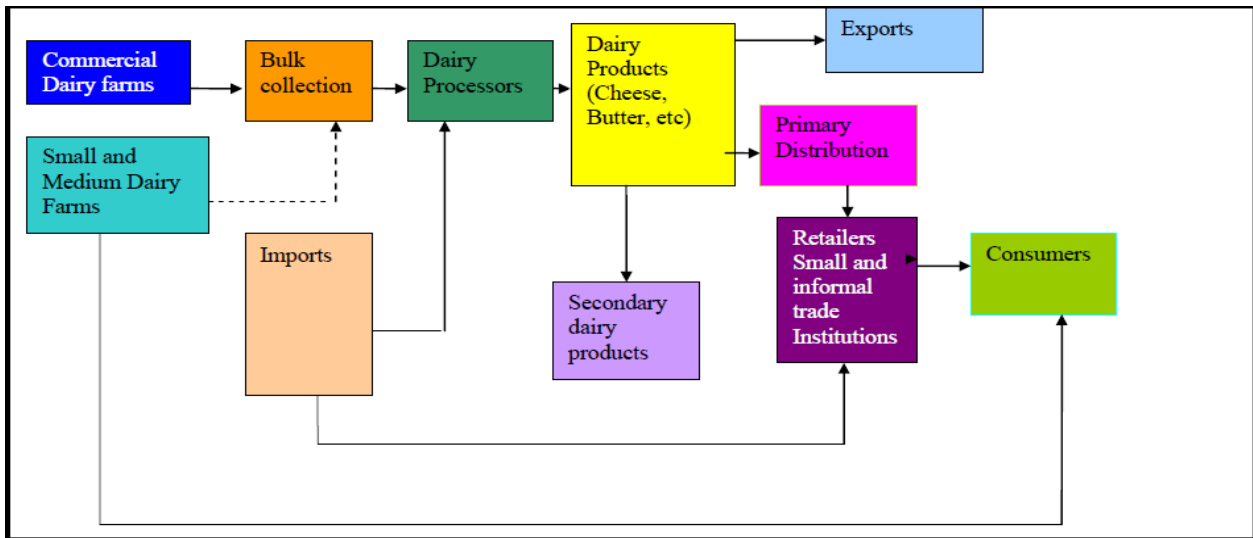
5.3 The dairy value chain

This section addresses the question of what structural transformation means in the dairy value chain and what the nature of structural transformation in the sector has been. The dairy value chain has important linkages to a range of value-added processed milk products where there are indications of innovation in terms of niche products coupled with investments in new forms of packaging. There is also evidence of growth in the value of exports especially to the SADC region. Structural transformation in the dairy value chain entails developing the downstream industry by moving down the value chain from milk production towards value-added (concentrated) products such as cheese, butter, sour cream, buttermilk etc.

5.3.1 Mapping the dairy value chain

The dairy value chain is presented in Figure 20. At the upstream level, there are two broad types of milk producers: large commercial dairy farmers that sell raw milk to dairy processors; and small and medium-sized dairy farmers, known as producers-distributors (PDs). At the downstream level, there are processors who buy raw milk and transform it into processed fresh milk and concentrated or value added dairy products. The main buyers of raw milk are dairy processing companies and retail supermarkets who use processors to contract produce their housebrand/private label milk products. The final stage of the value chain involves the distribution of dairy products (both liquid and concentrated) to the end users through the supermarkets.

Figure 20: Dairy value chain and marketing channels



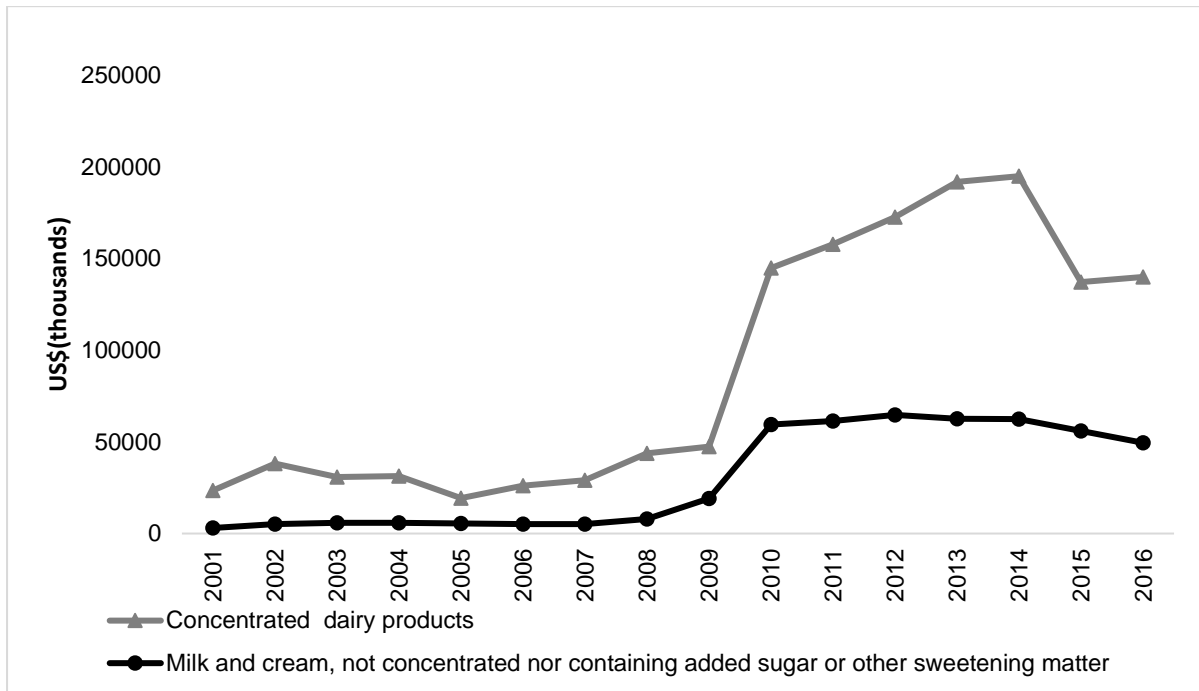
Source: DAFF (2012)

The South African dairy market is roughly divided into 60% liquid products (pasteurized milk, UHT milk, yoghurt and buttermilk) and 40% concentrated dairy products (cheese, butter, milk powder, whey and condensed milk) (DAFF, 2014a). For the purpose of this study, dairy products will be categorised based on the level of processing (Table 10).

Table 10: Categorisation of dairy products in the dairy value chain

Trade Classification	Liquid dairy products		Concentrated dairy products	
	Code	Product description	Code	Product description
HST	0401	Milk and cream, not concentrated nor containing added sugar or other sweetening matter	0402	Milk and cream, concentrated or containing added sugar or other sweetening matter
	HST		0403	Buttermilk, curdled milk and cream, yogurt, kephir and other fermented or acidified milk
0404			Whey, whether or not concentrated or containing added sugar or other sweetening matter	
0405			Butter, incl. dehydrated butter and ghee, and other fats and oils derived from milk	
0406			Cheese and curd	

Figure 21: South Africa's dairy exports by degree of processing



Source: Quantec data

Note: concentrated products include milk and cream (concentrated), buttermilk, whey butter, cheese and curd

The South African dairy industry is an important earner of foreign exchange through its exports to the region as well as to the rest of the world. The exports of concentrated dairy products to the rest of the world grew significantly between 2009 and 2014. During this period, the export value of concentrated products increased faster than the export value of liquid products (milk and cream). A large proportion of these exports goes to the SADC region. As previously explained in the sugar value chain, the inclusion of South African exports to SACU states has led to the large spike in exports of the main categories of dairy products in 2009. There is growth of exports into the SADC region nonetheless, and this is likely due to the growing trend of the expansion of South African retail chains into southern Africa (das Nair and Chisoro, 2016) through which more dairy products can be sold.

5.3.2 Market structure and key players

The South African dairy value chain has characteristics similar to other emerging markets such as Latin America, Asia and Eastern Europe. It is characterised by high levels of concentration in ownership with several large listed companies (Department of Trade and Industry, 1998), acting as both milk buyers and milk processors. To date, the sector still remains highly concentrated (see Ncube, Nkhonjera, Paramoer and Zengeni, 2016). Table 11 below provides a summary of the main players in the value chain and how different players exert market power at the different levels of the dairy value chain.

Table 11: Main players and market power in the dairy value chain

Function and players		Characteristics, mechanisms and effects of the exertion of market power
Dairy farmers	<ul style="list-style-type: none"> - 1683 milk producers (both commercial and small-medium size producers) 	<ul style="list-style-type: none"> - No market power due to the large numbers; highly fragmented
Dairy Processors	<ul style="list-style-type: none"> - 150 processors acting as both milk buyers and dairy processors - But a handful of MNCs dairy processing companies dominate the segment: Clover, Lactalis (Parmalat) brand, Groupe Danone SA and Dairybelle. (market shares are provided below) 	<ul style="list-style-type: none"> - Highly concentrated and vertically integrated to the dairy farmers - Dominant dairy processors have the bargaining power to depress the price they pay for raw milk compared to smaller processors.
Retailers	<ul style="list-style-type: none"> Pick n Pay (30%); Shoprite Checkers (30%); Spar Group (21%); Woolworths Holdings (9%); Game & Cambridge (Walmart) (6%); Food Lover's Market (2%); Choppies (2%) (based on store numbers of formal chain stores only) 	<ul style="list-style-type: none"> - Uncontested buyer power - Onerous trading terms through increased of market contracts with major processors. - See Section 6

Source: Euromonitor, 2017; Milk Producers' Organisation, 2016)

At the upstream level, as of January 2016, there were 1683 milk producers, a decline of 54% from 3665 in January 2008 (Milk Producers' Organisation (MPO), 2016). The reduction in the number of milk producers, however did not result in a decline in milk production as it coincided with increased productivity by large scale farmers. Based on MPO's statistics, larger farms (those producing more than 5 000 litres per day) supply 80% of South Africa's total milk production (Lactodata, 2016).

At the secondary or processing level there are about 150 milk buyers and processors in the country. However, the four largest milk buyers, who are also the main processors purchase more than 50% of the total raw milk production (Ncube et al., 2016). The four major processors in turn sell their dairy products to a concentrated retail sector which, similar to sugar confectionery, is an important distribution channel for milk and dairy products. In terms of market value, Clover SA, Groupe Lactalis, Danone and Dairybelle control 36.6% of the total market value in 2016, with Clover holding the largest share of 18.4% (Euromonitor,2017; Marketline, 2017).

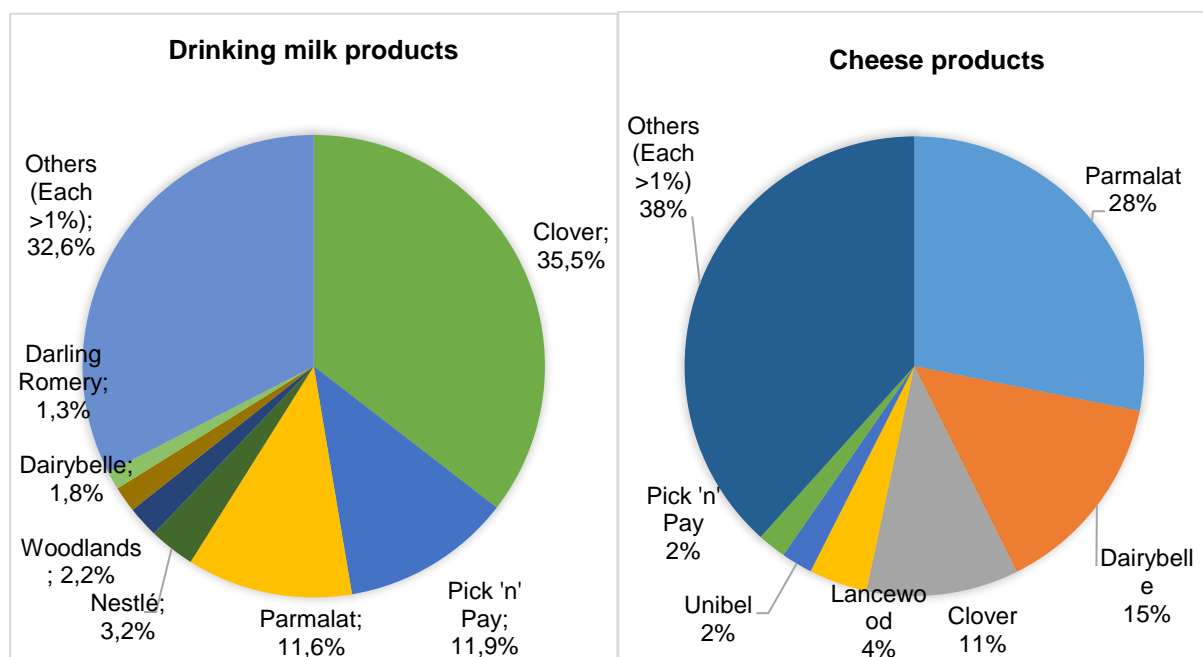
An analysis by type of dairy product shows even greater concentration with only one or two companies having significant market shares in different dairy products, as evident in Figure 22 (Euromonitor, 2017). For example, Clover has the highest market share in terms of retail value with 35.5% in drinking milk products, more than three times the market share of its next 'competitors' Pick 'n Pay and Parmalat each with 11.9% and 11.6% respectively. Together

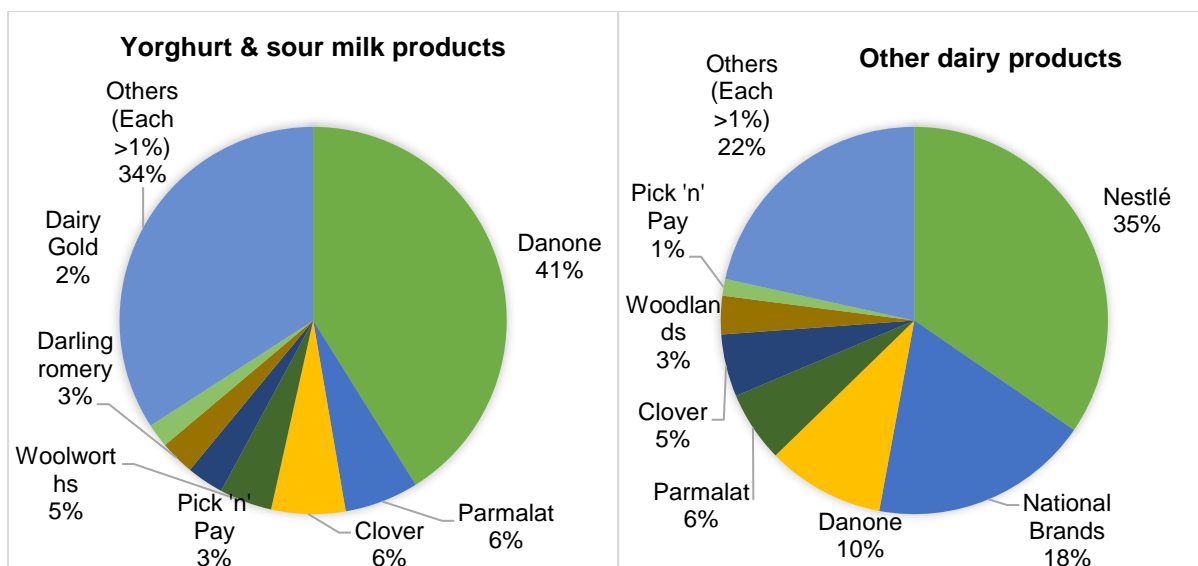
these three companies hold 59% of the market share in drinking milk products sold through retail. We note that Pick n Pay is not a traditional competitor to the milk processors, but competes in terms of selling price for its house brands. At this stage it is not clear who produces for Pick n Pay, although it is likely to be one of the larger processors. This suggests that these market shares are understated for the main processors.

In terms of cheese products, Parmalat is the main player, accounting for 28% of the market, followed by Dairybelle and Clover with the market shares of 15% and 11% respectively. Together these three companies hold a combined share of 54% of the market. Dairybelle was however liquidated in 2016 and bought by Clover with conditions imposed on the merger (see Table 12).

For yoghurt and sour milk products, Danone is the dominant player and accounts for 41% of the market, almost seven times the market share of its closest competitors, Parmalat and Clover, each with 6% market share. For other milk products including chilled desserts and coffee whiteners, Nestlé leads with a 35% market share followed by National Brands with 18% and Danone with 10%. Clover continues to lead drinking milk products and accounted for 36% value share in 2016, a share three times that of its closest competitor. Clover, Parmalat, Danone and Dairybelle have consistently maintained high market shares in milk, cheese, yoghurt and other dairy products respectively, showing their continued dominance.

Figure 22: Market shares of various dairy products, 2016





Source: Euromonitor (2017)

Note: Drinking milk products include flavoured milk drinks, milk, powder milk and milk alternative while other dairy products include Chilled and shelf desserts, chilled snacks, coffee whiteners, condensed milk, cream and fromage frais and quark.

As already mentioned above, retailers play a major role at the final level of the value chain – an important distribution channel for dairy products.

The concentration of market power in the hands of a few dominant players has implications on structural transformation in the sector. This dynamic often limits the participation of small producers and processors in the dairy value chain. Although, the dairy value chain has structurally transformed to a degree as shown by the growth in the exports of high value added dairy products it is important to note that the majority of these exports are driven by MNC's, with little participation of small and medium-scale processors.

Post 1994, the ANC government emphasised the importance of foreign direct investment (FDI) to revive the circulation of capital in South Africa. Combined with trade liberalisation, this emphasis facilitated MNCs expansion in South Africa's agri-food system and growing investment in companies across the board by equity and hedge funds. The result of investment in agri-food companies by international companies led to the gradual dilution of local ownership. In such conditions, estimates of profitability engulf political support for small-scale production and transformation and profits flow out of the country over time (Greenberg, 2013). While these MNCs may be fully aware of the political agenda for inclusive growth, this is locked into the corporate strategic orientation of the company and may have little to do with the transformation of the economic structure of the country. This trend is demonstrated by the decreasing investment levels and increase in capital expenditure through mergers and acquisitions which involve buying existing business for strategic reasons such as diversification or internationalisation. These acquisitions and mergers are driven by global competition and concentration with limited concern for domestic production and government policy towards inclusive growth where small-scale enterprises become part of the value chain.

In the dairy sector, at least six mergers took place in the sector between 2011 and 2016, the majority of which involved Clover, the largest dairy processor in South Africa (Table 12). The mergers involved Clover's attempt to expand into new or niche markets. In the three cases

reported, Clover sought to expand into juice in June 2012, yoghurt distribution in November 2014, and Ayrshire milk production in December 2014 through the acquisition of Nkunzi Milkway. Nhundu et al., (2017) indicated that capital expansion for most of the companies in the food sector has decreased between 2010 and 2015 while expenditures on mergers and acquisitions has been increasing. It appears that acquisition of businesses in adjacent or niche segments is becoming the main means to expand the operations instead of expanding the existing capacity or investing in new productive capacity (Ncube et al., 2016). Acquiring smaller milk processors removes effective rivalry and reinforces the concentrated nature of the market.

Table 12: Mergers and acquisitions in the dairy sector, 2011-2016

Year	Primary Acquiring Firm	Primary Target Firm	Size	Status	Conditions
2012	Clover SA (Pty) Ltd	Real Juice Co. Holdings (Pty) Ltd	I	Approved conditionally	Extension of agreements with independent distributors
2014	Clover S.A. (Pty) Ltd	Dairybelle's Yoghurt/UHT Milk Businesses	L	Approved conditionally	Continue to provide Danone with secondary distribution services until June 2015 No retrenchments should result from this merger. Clover to create an employee grant of R30 000 to fund business opportunities in the event of retrenchments.
2014	Clover S.A. (Pty) Ltd	Nkunzi Milkyway (Pty) Ltd	I	Approved conditionally	Clover will invest in production capacity and facility upgrades
2016	Bongicel Proprietary Ltd	Lusitania Food Products Proprietary Ltd	L	Approved	
2016	Nestle S.A. (Nestle)	P&R Ice Cream Public Ltd Co.	L	Approved	

Source: Competition Commission [website](#).

5.3.3 Regulatory and policy framework

The current market structure in the dairy value chain can be explained within the context of the changes that took place in the regulatory framework based on the Dairy Industry Act of 1961; The Marketing Act of 1968, Dairy Boards and Milk Boards. The Dairy industry was deregulated over a short period of time and to such an extent that currently there is only minimal government intervention in the industry. In the process the industry has developed into one of the 'freest' dairy markets in the world (NAMC, 2001), but yet we see high levels of concentration and limited sustainable entry.

The Dairy Industry Act of 1961 aimed to establish a stable and economically viable dairy industry through the regulation of quantities produced and through allowing guaranteed fixed prices. Deregulation and amendments of the Dairy Act started in 1971 allowing for margarine to be coloured yellow. This led to the drop in the annual butter milk prices. Consequently, a large number of butter factories had to close, and thousands of small milk farmers disappeared. The next important change in the control regime was the amalgamation of the Milk and Dairy Boards in 1979. This generated the next wave of deregulation in 1983 which consisted, amongst others, the abolition of the fixing of retail selling prices for fresh milk. The Dairy Industry Control Act was replaced in 1987. The final deregulation steps were taken in 1994, after the Uruguay Round of the World Trade Agreement discussions when quantitative import control was abolished and replaced with import levies. The abolition of the 1968 Marketing Act in 1997 and the consequential disappearance of the Milk Boards were the last steps in the process of deregulating the dairy industry (Greenberg, 2016; Vink and Kirsten, 2002; Louw, Hester Vermeulen, Kirsten, J., and Madevu, 2007).

Deregulation in the dairy industry led to the entrance of numerous milk distributors but these have not managed to remain in business given some of the concerns expressed in Section 5.3.2 (Vink and Kirsten, 2003). Below are some of the policy implications of deregulation in the dairy industry (Du Toit, 2009).

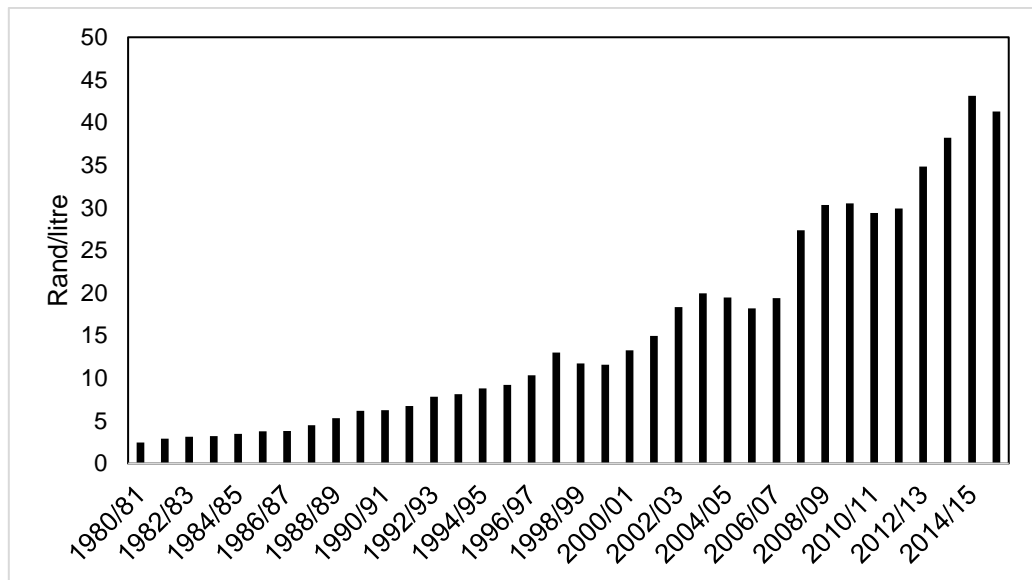
Reduced real producer milk prices

Prior to the Marketing Act of 1996, SA farmers enjoyed protection from what was considered 'harmful competition' and from price fixing supported by the state as mentioned above. In other words, the state created a legal cartel. With the abolition of marketing boards, farmers faced competition from multinational companies such as Danone and Parmalat entering the SA dairy market (D'Haese and Bostyn, 2001). Instead of guaranteed fixed prices, raw milk producers (commercial farmers) were paid on the basis of the compositional and hygienic quality of milk, volume of milk produced and proximity to the milk buyer's depot in a comparative base-pricing purchasing system administered by milk buyers (processors). Currently, smaller and medium sized milk producers have no mechanism to physically balance fluctuating milk production (supply) and demand. During periods of over-supply they dump their product in retail markets at very low prices. Smaller players compensate for their losses by dropping quality standards. The primary producer has to bear the brunt of this in the form of reduced raw milk prices they receive. Thus, the absence of market support mechanisms for the industry has resulted in large variations in producer prices during periods of oversupply or when there are general shortages of milk (NAMC, 2001).

The reduced profitability of raw milk production, through declining real producer prices over time, has also been suggested as a possible cause of the increased producer exit rates from the industry (NAMC, 2001). The declining trend in the number of commercial milk producers was noticeable from 1983 to 2004 and has been accompanied by an increase in the total annual production per producer over the period 1983 to 2004. South Africa's milk producer numbers continued to decline from 28,885 in 1983 to 3,655 in 2008 (Coetzee and Maree, 2007), while the average number of milk production per producer has increased from 70,175 litres per annum in 1983 to 583,315 litres per annum in 2004 (NDA, 2008). The declining trend in the number of producers is continuing, suggesting considerable consolidation of dairy farms at the production level (discussed below).

By contrast, dairy processors have enjoyed steady increases in milk prices at the retail level. Figure 23 shows that milk prices received by processors at the retail level have continued to increase throughout the reported period, with a notable increase post-deregulation era.

Figure 23: Milk prices received by processors at the retail level



Source: DAFF (2017)

The prices received by processors from sales of their milk at the retail level grew at 10% per annum (CAGR) between 1980/81 and 1994/95 compared to 14% per annum (CAGR) between 1995/1996 and 2015. This suggests that large rents are extracted at the processor level.

More recently, the dti has been spearheading industrial policy changes that aim to include small-scale dairy producers and processors into the economy through the IPAP. IPAP has been introduced to transform the circumstances of black industrialists with hopes that they can enter into the dynamic mainstream agro-food supply chain. Specific to the dairy sector, IPAP 2015 focused on developing and facilitating small-scale dairy processors in order to strengthen the domestic industry, create more entrepreneurs, increase South Africa's exports of processed milk products and help new entrants to become more competitive in the global dairy market. IPAP 2017/18-2019/20 aims to achieve a more sustainable and growing dairy sector through the development of models for small dairy producers to become bottlers and distributors, including improving access to appropriate cold chain technologies and retail outlets. Given the increasing levels of consumption in dairy products and large presence of South African retail markets in the African region through exports into SADC countries and globally, supporting new entrants in this subsector can contribute to increased industrialisation.

5.3.4 Key issues and potential areas of intervention

The analysis of the dairy value chain raises questions about the impact of the changes in the regulatory framework on the sector. It may be argued that outcomes such as the continued producer exit rate, increased imports of dairy products, declining raw milk prices received by dairy farmers and high concentration levels at the processing levels were failures of the transition. This raises the question about the extent to which newer policies, such as IPAP,

have achieved its goal of ensuring inclusivity and participation by previously marginalised black farmers/industrialists. It appears that it hasn't.

Particular challenges in the dairy sector that may serve as entry deterrents for small dairy processors include high capital requirements, significant scale economies, and the high level of concentration in some segments of the chain. Entry barriers for small-scale dairy processors to start up processing plants are high, as the dairy industry is capital-intensive, and small-scale farmers lack the necessary skills to enter the secondary dairy industry (Ncube et al., 2016). In addition small-scale farmers must be able to transport highly perishable raw milk to processing plants. This is costly especially because raw milk is low in value relative to the volume. Furthermore, daily output of milk is uncertain and fluctuates daily, as a result, tanker routes must be planned daily in order to ensure that the largest volume of milk is collected over the shortest possible distance to enable efficiency.

A lack of capital is another barrier especially considering the costs required to take a product from its raw milk state to processing, packaging and finally distribution. This challenge exists further down the value chain during transport of finished products from the processor to distribution centres and to stores. Managing this logistics process efficiently is often a significant challenge for entrants.

Packaging and labelling of processed products further represent approximately 17% of the cost of finished products in the dairy sector (Ncube et al., 2016). The packaging used for fresh and UHT milk is either imported or priced at import parity prices which contributes significantly to costs. Due to the high levels of concentration in the packaging market, this cost can form a significant barrier to entry for new processing firms.

While large and dominant firms are more capable of thriving in the sector, small and medium processors tend to exit the industry after a few years of operation due to the strategic behaviour of the dominant processors, including acquisitions as shown above, and heavy financial requirements needed to improve their capabilities. These capabilities include technical knowledge, skills and training necessary to survive in the secondary dairy sector.

However, Ncube et al, (2016) found that small-scale processors may find it beneficial to enter at the downstream level for value added products relative to the primary level where significant barriers to entry are higher due to the capital investment required for setting up plants to produce and process liquid products such as fresh or UHT milk and specialist logistics capabilities to transport milk efficiently. These barriers to entry are relatively lower at the value-added level where it is possible to process products such as cheese and yoghurt cost-effectively at small scale (Ncube et al, 2016). This is an opportunity for the government to develop targeted programmes that will ensure the sustainability of small processors amidst the competition from dominant players.

Several studies have been conducted to highlight the challenges facing SMEs in South Africa in the food processing sector (including Weatherspoon and Reardon, 2003; Louw et al., 2007 and Mather, 2007). Key insights from these studies as well as from the analysis of the sector can be drawn:

- Successful entry by small and medium sized dairy processors to actively participate in the economy requires significant investments in infrastructure such as cold chain technologies and access to retail markets

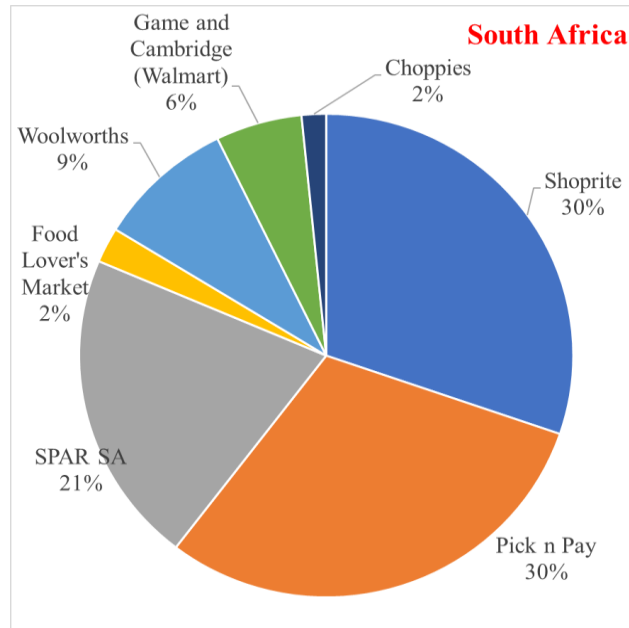
- Given the huge capital requirements in the dairy sector, finance remains a critical challenge for new and black-owned businesses. Access to funding with less stringent requirements and greater flexibility will serve as an incentive for new entrants to take risks.
- A multi-actor approach is a necessary condition for black-industrialists to thrive in the sector. Supermarkets can play an important role in facilitating the economic empowerment of new entrants by providing technical support through farm visits and by offering training in quality standards (Louw et al., 2007). (See Section 6 below).
- Coordination between sister departments such as the department of Agriculture, Fisheries and Forestry; Rural Development and Land Reform and Department of Trade and Industry is vital in achieving the vision of the National Development Plan.
- Curbing buying power of large supermarket chains can ease access to end consumers by small and medium sized dairy products processors (see Section 6 on potential interventions in the retail sector).

6 The role of retailers in driving growth and development of agriculture and agro-processing value chains

Developing value chains in agriculture and agro-processing requires access to routes to market to get fresh and processed food products to consumers. Government or private sector initiatives to build capabilities in agriculture and agro-processing are futile if producers are unable to ultimately get their products to final consumers. Supermarket chains play a critical role in this regard as gatekeepers to an important and growing route to market. South African supermarket chains have grown and spread in urban areas as well as into low-income and rural areas. All the main chains operating in South Africa – Shoprite, Pick n Pay, SPAR, Woolworths, Game and Fruit and Veg City, in addition to chains from other countries in the region such as Choppies – have also spread into the southern African region. This presents important opportunities to access wider consumer bases in markets beyond just South Africa for agro-processors, allowing them to build scale and develop capabilities. Supermarkets can therefore be a strong catalyst to stimulate food processing industries in southern Africa.

However, past research has shown that onerous requirements and exertion of buyer power by large supermarkets can result in small and medium-sized suppliers failing to enter and grow within value chains. The procurement and sourcing strategies implemented as part of trading terms with suppliers, as well as the private standards that large supermarkets impose, have a significant impact on supplier participation and on the development of their capabilities (das Nair et. al, 2015, 2016 and 2017). Given that supermarkets are often the immediate interface or last link between products and consumers, they play a key role in what is offered to the final consumer (in terms of price, quality and other characteristics such as how products are packaged and presented). Large supermarket chains therefore can and do exercise considerable control over value chains and have a significant impact on suppliers of these products.

Figure 24: Market share of formal supermarket chains in South Africa based on store numbers, 2016



Source: Compilation from annual reports. Note: These only include grocery retail outlets of the chain. It does not include independent retailers and retailers under buying groups.

The South African supermarket industry is concentrated with only a handful of large chains holding majority of the national market share collectively in formal markets (Figure 24 above). This limits the options that agro-processing firms have in supplying their products and makes them vulnerable to abuses of buyer power of large supermarket chains.

Past research has revealed a range of costs that suppliers incur even before a single unit of their product is sold off supermarket shelves. These affect suppliers generally, including suppliers of sugar confectionery and dairy products. Supermarkets are often able to control pricing and trading terms with suppliers, especially smaller suppliers. This can include a range of fees such as listing or support fees paid by suppliers to get their products listed in supermarket books. For sugar confectionery, this can range between R100,000 to R200,000 for a single confectionery product range. Till positions are even more costly for sweets suppliers (estimates range from R250,000 to R300,000 for till positions for 6 months for inland supermarkets only). Other costs include rebates (ranging from 12% to 20% on average off the price suppliers can get), stock and merchandising costs (4%), promotion fees (3%) and returns given the perishable nature of some sweets (10%). Further, the average cost of a specific product launch for a sweets producer can be between R1.4 – R1.6 million. Other fees include various rebates such as advertising and promotional rebates.

Long payment periods to suppliers also make it difficult for small suppliers, affecting their cash flow (see das Nair, Nkhonjera and Ziba, 2017). While some of the quantified examples above relate to the sugar confectionery industry, similar fee categories apply to dairy and other processed food products. A non-exhaustive list of general cost categories to suppliers charged by supermarkets is given in Table 13 below. Collectively, these fees can be prohibitive for small and medium-sized suppliers and estimates are that they shave between 10-15% off the invoice prices of suppliers (das Nair and Chisoro, 2017).

Table 13: Categories of discounts, rebates, fees and allowances charged to suppliers by supermarket chains

Basic rebates (fixed percentage or variable volume based)	Quality assurance allowances
Advertising allowances or rebates (Newspapers, TV, Radio, Pamphlets)	Joint product promotion allowances
Listing/Support fees	Fridge space fees
Settlement discounts	Channel allowances
Growth Incentive discounts	Efficiency allowances
Trade discounts	Category management fees
Data sharing allowances	National/Theme promotion fees
Merchandising allowances	Distribution/Warehousing allowances
New store opening allowances	Adhoc spend
Wastage allowance/returns/backhaul fees	

Source: Compiled from a submission by a buying group/voluntary trading association, Elite Star, and testimony of Shoprite employees at the Competition Commission's Grocery Retail Market Inquiry hearings in Pretoria

In addition to these constraints, local suppliers have to compete with large, multinational rivals who own well-known brands to access good shelf space in supermarkets. It is critical for successful sales that products are displayed where shoppers can easily see them. Eye-level shelf space is often taken up by multinationals with considerable market power. Large players like Cadbury (Mondelez) and Nestlé in the confectionery industry; and Parmalat and Danone in the dairy industry, are in a stronger bargaining position than smaller players to secure attractive shelf space including through category management practices (where they control shelf lay out and displays).

Over and above legal requirements such as compliance with national standards, food safety, labelling and packaging, suppliers also have to adhere to private standards imposed by supermarkets. These can include bar coding, specific requirements in packaging, sustainability criteria and religious requirements (such as Halaal and Kosher certifications). These can also include higher accreditation requirements such as Hazard Analysis and Critical Control Point (HACCP) and Food Safety System Certification (FSSC 22000) which often involve on-going audits at the supplier's cost. In addition, suppliers need to meet volume, consistency and quality requirements to service all store outlets of a national chain as customers expect the different stores of a chain to stock the same products of the same quality. This places pressure on smaller suppliers who are only looking to supply a few stores in a given region.

There is however an opportunity to incorporate small and medium-sized confectionery and dairy product producers in supermarket value chains through house brands or private label brands. These are products that bear the supermarket's branding or no branding at all and are custom manufactured or packed for supermarkets. These private label brands are proving to be highly successful and fast sellers for supermarkets in South Africa as they compete with branded alternatives on price, value and quality, particularly for cost-conscious customers. Given limited branding and advertising for these products, costs of sales are often lower than for the equivalent well-known branded products. Suppliers can use this as a stepping stone to get onto supermarkets' preferred supplier lists especially for suppliers that have not yet built a brand name. However, house brands also confer bargaining power to supermarkets over suppliers. Concerns have been raised by suppliers of private label brands in South Africa,

including that they are sometimes 'forced' into supplying private labels/house brands at lower margins than their own branded products and that private labels are used as a tool to negotiate down prices for their branded products. Many suppliers of branded products in South Africa also manufacture and sell private labels to supermarkets (das Nair and Chisoro, 2016).

To reduce the cost of supplying supermarkets, to promote transparency in procurement procedures and in trading terms, and to reduce the risk of the abuse of buyer power, the recommendation has been made in previous studies for South Africa to adopt a retail industry code of conduct, which could be extended to a regional code of conduct. Such codes, whether voluntary or mandatory, regulate the conduct of supermarkets towards suppliers by setting minimum standards and obligations for retailers in drafting of supply agreements and various fees included in the trading terms. The DTI has stated this as an action plan item in the most recent IPAP (2017/18-2019/20) and the process to initiate discussions around this is underway.

Experiences from other countries are useful in this regard. Namibia recently adopted the retail sector charter in March 2016 aimed at increasing participation of local suppliers through transparent procurement procedures, fair payment terms and rebate provisions. The international experience in the UK, Ireland and Australia has also shown that voluntary or mandatory codes of conduct between suppliers and supermarkets are a useful way to control the exertion of buyer power and have been identified as a practical and effective approach in developing countries to level the playing field between suppliers and supermarkets.

Notwithstanding the importance of formal supermarket chains as key routes to market, there are alternative routes to market that have gained popularity in South Africa for suppliers. Wholesalers, cash and carries and independent retailers which largely service lower income consumers through outlets like spaza shops are an important route to market for many medium-sized and new entrant confectionery producers, especially for candy and hard-boiled sweets. This has been spurred by increased disposable income in these communities through social grants, but also because of the less stringent requirements to supply these outlets compared to formal supermarket chains. While the distribution of sugar confectionery products in South Africa is largely through supermarkets being the main route to market, independent small grocers, convenience stores and other grocery retailers - all independent retailers - are collectively a significant route to market (Table 14). Large players also tend to sell to both informal markets (through wholesalers) and formal markets (through supermarkets), although a larger proportion is increasingly sold through formal retailers and far less through the wholesale route (das Nair, Nkhonjera and Ziba, 2017).

Table 14: Distribution of sugar confectionery by type of retailer (% shares)

Outlets	2010	2011	2012	2013	2014	2015
Store-Based Retailing	98.60	98.60	98.70	98.60	98.60	98.50
(1) Grocery Retailers	83.70	83.70	83.30	83.20	83.10	82.60
<i>Supermarkets</i>	<i>46.00</i>	<i>46.40</i>	<i>46.00</i>	<i>46.00</i>	<i>46.00</i>	<i>45.50</i>
<i>Independent Small Grocers</i>	<i>14.80</i>	<i>14.80</i>	<i>14.80</i>	<i>14.80</i>	<i>14.60</i>	<i>14.50</i>
<i>Convenience Stores</i>	<i>5.00</i>	<i>5.00</i>	<i>5.00</i>	<i>5.10</i>	<i>5.20</i>	<i>5.30</i>
<i>Forecourt Retailers</i>	<i>6.10</i>	<i>6.00</i>	<i>5.90</i>	<i>5.80</i>	<i>5.80</i>	<i>5.80</i>
<i>Other grocery retailers</i>	<i>11.8</i>	<i>11.5</i>	<i>11.6</i>	<i>11.5</i>	<i>11.5</i>	<i>11.5</i>
(2) Non-Grocery Specialists	3.90	3.70	4.10	4.00	4.00	4.20
Mixed Retailers	11.00	11.20	11.30	11.50	11.50	11.80
Non-Store Retailing	1.40	1.40	1.40	1.40	1.40	1.50
Total	100.00	100.00	100.00	100.00	100.00	100.00

Source: Euromonitor International (2015)

As with sugar confectionery products which include sweets (hard boiled candy, lollipops, chews, chocolate etc.) in Table 14 above, store-based retailing is the main route to market for baked confectionery like biscuits in South Africa. But independent retailers collectively are again also an important alternative route to market (see das Nair, Nkhonjera and Ziba, 2017).

Alternative routes to market, although also important for dairy producers, are more difficult given the lack of refrigeration facilities required for dairy products, particularly in informal retail outlets. This makes dairy producers more reliant on formal supermarket chains and larger independent retailers than producers of sugar confectionery products are.

Nonetheless, the above account highlights the importance of encouraging a diversity of retail models and creating an enabling space for alternative routes to market to flourish in competition to formal supermarket chains. Policy can play a key role here in opening up retail spaces for different models of retail and reduce the barriers to entry into these. Municipalities can ensure participation of independents as part of rezoning processes and local governments can encompass open and flexible retail space in urban planning to ensure a mix of formats. Competition authorities can act on exclusionary agreements that restrict access to retail or shelf space, opening up opportunities for new rivals and suppliers (see das Nair and Chisoro, 2015, 2016).

It is important for the large supermarket chains to recognise that they play a key role in stimulating industrial activity and that their strategies and conduct have an impact on local and regional value chain development not only for sugar confectionery and dairy products, but for fresh and processed products more generally. Supermarkets are best placed to champion successful supplier development programmes in agriculture and agro-processing value chains. As noted, they are the key interface between supplier and customer, and can provide valuable guidance on what customers want. Successful supplier development programmes require long-term, commercially oriented commitments by supermarkets possibly in partnership with government. This partnership can be through the creation of supplier development funds as part of programmes like the Massmart/Walmart supplier development programme. Co-funding for such programmes can come from fines levied by the competition authorities in abuse of dominance or cartel matters. Co-funding can also come from existing pockets of funding reserved for black industrialists and small businesses, including from programmes as highlighted in the 2018 Budget Speech.

The critical point is that this funding needs to be channelled appropriately to commercially sustainable business that are mutually beneficial to both supermarkets and suppliers in the long term. For this to happen, supermarkets have to be intimately involved in designing and structuring the programmes and in identifying and developing the suppliers qualifying for the support. It cannot purely be financial support without capability development (das Nair and Chisoro, 2017). In IPAP (2017/18-2019/20), the DTI has identified the need for such supplier development and upgrading programmes in the agro-processing sector in partnership with, and guided by, retailers and large producers.

7 Conclusions and policy recommendations

Structural transformation in high-value export sectors: the case of fruit

Growth in South Africa's fruit sector, and especially the participation of smaller farmers, has been limited by inadequate infrastructure, particularly ripening facilities, transport and logistics, pack-houses and cold storage facilities. This causes costly delays and breaks in the cold chain and limits entry and expansion into export markets. As an export-oriented industry, stringent import regulations in developed markets in the form of import tariffs, import permits and sanitary and phytosanitary standards further constitute key barriers to trade in fresh fruit. Trade barriers render local producers less competitive relative to other global market players. This is worsened by a lack of harmonisation or equivalence between multiple private standards, and between private standards and official standards resulting in suppliers having to acquire multiple certifications. Market access for local producers is therefore also determined by bilateral relations between countries.

Deepening structural transformation in the fruit sector as part of the wider development of agriculture in South Africa requires supporting investments along the value chain in productive capabilities (including in inputs, pack-houses, cold chain facilities, transport and logistics). It requires linking smaller farmers to international buyers, negotiating market access, and lowering the costs of meeting standards and certification.

In light of the above, IPAP and APAP aim to address certain key constraints in the value chain around improving access to markets, developing capabilities in meeting food and safety standards and investing in critical support infrastructure. There are initiatives such as the Agri-Parks programme launched in 2015 and the Strategic Infrastructure Project 11 by the Departments of Rural Development and Land Reform, and Agriculture, Forestry and Fisheries that aim to promote growth of smallholder farmers by providing key infrastructure and marketing support to emerging and marginalised farmers. However, these plans are yet to be implemented and small farmers continue to be excluded from supply chains. There is also limited capacity and skills in government to provide support and regulatory services throughout the value chain and to the point where the fruit is ready for export markets (Chisoro-Dube et al., 2018).

Linking farmers with large producer-exporting companies that already have access to critical infrastructure and international markets is important for growing global exports. The government can incentivise large producer-exporting companies to partner with smallholder producers. Large companies can extend technical services and information on production and standards to small farmers. In return, the large companies can be offered tax breaks, subsidies for investments in storage and cold chain facilities or assistance with raising capital (Gale, Huang and Gu, 2010). Given that the fresh fruit segment presents more opportunities for

industrialisation as a high-value product with export potential, the strategy for the sector also needs to maintain an ongoing focus on developing niche, high value agricultural products in export markets, such as berries and cherries.

The Departments of Trade and Industry, Rural Development and Land Reform, and Agriculture, Forestry and Fisheries are all working to improve access to markets for fruit producers. It is important that these departments work closely together with the industry association, Fruit South Africa, whose key activity is market access and has been successful in finding new markets.

Structural transformation in agro-processing value chains: Sugar and Dairy

The analyses of the sugar and dairy value chains bring to light opportunities for structural transformation in agro-processing.

The development of the sugar confectionery industry is one potential lever for supporting structural transformation through downstream value addition. While the upstream level of the value chain has benefitted from extensive state support and protection over a long period of time, this appears to have benefitted the concentrated sugar milling level disproportionately. The current domestic pricing mechanism and benefits of protection at the upstream level do not ensure that downstream levels of the value chain have access to competitively priced input sugar. So, although there is evidence of growth in exports of value added sugar confectionery products, structural transformation has been limited by the pricing of sugar as the main input. Changes to the regulatory framework that affect the upstream level are important to achieving competitive input sugar prices for downstream confectionery producers.

The dairy sector represents important linkages to a range of value-added processed milk products where there are indications of innovation in terms of niche, higher-value products. Structural transformation in this value chain therefore involves moving away from milk production towards the production of high value concentrated products (such as cheese, butter, yoghurt and cream). Value addition in the dairy sector has been hailed as one of the solutions to the perishability challenge of milk by converting it to a more durable form and hence reducing farm losses through higher prices demanded by concentrated products, relative to fresh milk. The positive trade performance of some value added dairy products is an indication that there has been some level of structural transformation in the sector. This can be attributed to increased demand of milk-based products and the large presence of South African retailers in the region who source these products from South Africa.

However, due to significant capital requirements, the behaviour of incumbent firms and capabilities required in the sector, small-scale farmers and processors have not been able to take advantage of the growth in the demand for processed dairy products. Small and medium-sized producers and processors have exited the industry after only a few years of operation, and many are bought out by the large MNCs. The heavy financial requirements needed to develop capabilities present barriers to small players. In order for them to actively participate in dairy value chains, significant investments in capabilities and infrastructure (such as cold chain technologies) are required. There are opportunities particularly in further downstream processing levels where barriers to entry and scale requirements are relatively lower, such as in cheeses and yoghurts. Supporting new entrants at these levels of the dairy sector can therefore contribute to structural transformation.

Cross-cutting issues

There are a number of cross-cutting interventions that can potentially benefit all three of the value chains evaluated.

A key area where concrete interventions can be made is in easing access to routes to market for farmers and food processors. The expansion of supermarkets in the southern African region provides a wide network of markets for smaller fruit farmers, producers of sugar confectionery and value-added dairy products, and can be an important stepping stone to upgrade their capabilities. The DTI's Agro-processing Supplier Development Programme (Industrial Policy Action Plan 2017/18-2019/20) aims to contribute to this by integrating smallholder farmers into supply chains by increasing procurement of smallholder farmers' produce by large retailers and processors. As noted, the development of focused supplier development programmes, and codes of conduct which guide the relationship between suppliers and supermarkets, are important to develop supplier capabilities and to ensure the sustainability of suppliers. Both these initiatives have been introduced in IPAP 2017/18. The production of house brands for major supermarkets as well as allocating a certain proportion of shelf space to SMEs are also ways in which small-scale processors can access supermarket shelves.

Developing capabilities required to sell into global markets entails identifying the technological and human capabilities required for processing. Greater support in terms of training, skills and technical knowledge is essential for fruit farmers and processors to take advantage of the growth in global demand for fresh fruit, dairy and confectionery products.

As previous studies have emphasised (see Ncube et al., 2016), entrants and existing players in the agro-processing business face significant challenges in accessing development finance. The ability of small firms to enter and grow in these value chains is highly dependent on the support received in terms of development finance, amongst other factors. There is therefore need for the provision of patient capital from funders and institutions such as the IDC and the dti.

In the sugar and dairy sectors, downstream development needs to be considered within the context of concentrated input markets, competition from large multinational producers as well as a concentrated retail market. There needs to be continued and greater efforts to incorporate black industrialists into these concentrated agricultural value chains who can access competitively priced inputs and access routes to market. There is thus an important role for competition policy in ensuring that the exertion of market power does not hinder growth of smaller players in these value chains.

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