Inclusive industrialisation in agro-processing: challenges faced by small and medium-sized dairy processors in South Africa

Innovation & Inclusion in Agro-processing

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1. Introduction

As part of the Innovation and Inclusive Industrialisation Project (IIAP), this working paper evaluates the dairy processing industry in South Africa to determine the factors that shape opportunities for inclusion of small and medium-sized enterprises (SMEs) in agro-processing.

Driven by urbanisation, income growth and changing consumer habits, the dairy industry is a significant contributor to the agricultural sector in South Africa and in the Southern African region. In South Africa, fresh cow's milk is the third largest agricultural product in terms of production volume and the fifth largest in terms of value (Midgley, 2016). The market for dairy-based products was valued at ZAR40 billion in 2019 (Who Owns Whom, 2019), with production of around 3.4 million tonnes. Dairy products are broadly categorised under liquid milk (63% – mainly pasteurised and ultra-high temperature (UHT) milk) and concentrated products (37% – such as hard cheese and butter), and there has been strong growth in the retail sales of UHT milk[1], pre-packaged cheese and 'maas', 'amasi' or sour (fermented) milk in South Africa (Who Owns Whom, 2019).

Consumption of dairy products is important for the nutrition and health profile of South Africans, contributing to meeting the key mineral, vitamin, fat and protein needs of the population. Dairy consumption in South Africa grew to around 2.2 million tonnes in 2016 (Who Owns Whom, 2019). However, in 2020, South African milk consumption was still only 58 kg per person, well below the world average of 110 kg per person, offering considerable growth opportunities.[2] The dairy sector is therefore important for food security for the country, with full cream long life milk being a component of the Statistics South Africa's reference food basket (StatsSA, 2019).

The dairy industry is also an important employer and export revenue earner for South Africa. Employment in dairy processing or the secondary level of the value chain accounts for around 10% of total employment in the Food and Beverages subsector within manufacturing. In terms of exports, South Africa has had a positive trade balance for dairy products since 2010, with significant exports to the Southern African Development Community (SADC) region of both liquid and concentrated dairy products (Quantec database). The dairy value chain further presents important linkages to other industries such as machinery and equipment, packaging and logistics. Development of processing activities in dairy at the downstream level therefore has multiplier effects along and across value chains.

Following the deregulation of the agricultural sector in South Africa the 1990s, there has been consolidation at the primary milk production level of the value chain, with many small-scale farmers exiting. There has been a decline in primary producers of around 63% between 2009 and

[1] Although a slight decline has been seen between 2018 and 2019 for UHT milk sales (see Section 2.4).
[2] SADKI10

2019 (Who Owns Whom, 2019), and decline of 90% from 1985 to 2020 (from 12,000 to around 1,200 farmers),[3] although production volumes and yields have increased as a result of more efficient feed mixes, farming methods and mechanization. This has resulted in more efficient herds, with a trend towards increasing herd size for lower capital and overhead costs.[4] Herd size has increased from 110 to 380 cows to 1,000 and more cows.[5]

The secondary or processing level has similarly seen consolidation with around 133 dairy processors in 2020. This level of the value chain is dominated by a handful of large, multinational processors with strong vertical linkages throughout the value chain and with considerable power, both in terms of **buyer power** exercised towards raw milk producers and **market power** in the sale of final products. These large players sell a wide range of branded dairy products primarily through formal supermarket chains and have significant advantages over medium-sized and small dairy processors in accessing customers through this channel. It is usually only the larger players, and to a lesser extent, medium-sized processors,[6] that can produce UHT milk given the scale, sophisticated and expensive equipment needed and complex processes.[7] UHT milk, which accounts for 43% of the liquid product market, has been one of the strongest growing categories of product and has been taking shares away from fresh milk (Who Owns Whom, 2019), although a decline has been seen in 2019 (see Section 2.4). Part of this growth is also due to the increasing demand for UHT milk in peri-urban and rural areas given its relative longevity, and therefore there is growing demand for it in informal markets[8] where retailers and consumers may not have adequate access to refrigeration facilities and electricity.[9]

There is, in effect, a dual-value chain for dairy products in South Africa, a legacy of the economic and social outcomes of apartheid. While large dairy processors and some medium-sized processors sell through formal supermarket chains, most medium-sized processors primarily sell the majority of their production volumes through other routes to market, such as formal independent wholesalers, hybrid wholesalers and retailers (known as 'cash and carrys'), independent retailers and informal 'spaza' shops. Independent retailers and spaza shops are often located in peri-urban, township and rural areas. Another route to market for these players is through community-level public or private school feeding schemes or public procurement for prisons and hospitals. These players also supply to the catering industry. It is typically too difficult

[3] SADKI10
[4] https://milksa.co.za/research/dairy-rd-in-sa/variation-herd-size-and-milk-production-south-african-farms-relation, accessed on 14 January 2021.
[5] SADKI10
[6] Only two medium-sized processors interviewed produced UHT milk, and one of these subsequently stopped UHT production following contractual disputes (SADS31; SADS15)
[7] SADS15; SADKI11
[8] Informal players are not registered companies and do not pay taxes.
[9] SADS31

for them to enter formal supermarket supply chains given numerous, and often onerous, requirements. The medium-sized dairy processors mainly supply at a provincial level and have carved out markets for themselves that do not compete head-on with the large multinationals supplying nationally. These markets include supplying niche products, such as cheeses, maas/fermented milk, dairy-blended juices and yoghurts.

There are significant differences between small and medium-sized processors in dairy processing in South Africa, and categorizing them under the broad, homogeneous, banner of 'small and medium-sized enterprises (SMEs)' misses important distinguishing characteristics and nuances in terms of sophistication of distribution networks, capabilities (management and operational), product range, technology utilisation and innovation between the two. Small processors are precarious, often only selling one or two dairy products. Some of the above-mentioned routes to market available to medium-sized processors are often out of the reach of small processors as consistent channels. The barriers to entry and expansion for small processors are substantial, and they typically supply immediate communities, niche markets or informal markets.[10]

A number of key institutions, mainly private-sector led, operate with the objective of supporting the dairy industry. These include industry associations, research bodies, testing facilities and standards agencies. The state capacity in these areas has declined significantly since markets liberalised and this has hurt small processors who are unable to access private support. The industry associations that have taken on many of these roles from the state wield a degree of **institutional power** (Dallas, Ponte and Sturgeon, 2019) in shaping outcomes in the sector through their collective action. However, they have fallen short in achieving the desired levels of transformation at the dairy processing level, which remains dominated by mainly white-owned and/or large processors.

There has been a recent resurgence in intermediation between producers and processors, many years after government-controlled bulk collection facilities closed down after liberalisation. This has been, first, in the form of traders who procure milk on behalf of processors from farmers; and second, through the unbundling of the procurement and UHT manufacturing arm of Clover, the Dairy Farmers South Africa (DFSA), between 2018 and 2020. The latter has resulted in both a large independent collector of raw milk and a 'new' large producer of UHT products. DFSA has joined forces with another large processor, Coega Dairy, to form a new industry association. The impacts of these players in the value chain are yet to be fully understood.

Although the growth in the dairy industry presents opportunities for industrialisation in agro-processing, these opportunities are not equally available to all dairy processing firms. The barriers to participation and growth faced particularly by small dairy processors limits their ability to industrialise and produce higher value products. While some of these barriers are structural in

[10] SADKI11

nature, strategic barriers arise as a result of power dynamics in the dairy industry. These barriers determine who participates and which players extract rents at different levels of the value chain. Lead firms with market power are often 'gate-keepers' of a value chain, and their actions determine who participates and who is excluded (Gereffi and Lee, 2014). Firms with market power govern the value chain through the standards and requirements that they set, as well as through their conduct (Humphrey and Schmitz, 2000).

The governance of value chains affects the upgrading of capabilities of SMEs. Upgrading capabilities, particularly in terms of technology, is necessary for SMEs to participate in the dairy value chain and to benefit from the opportunities presented by growth in demand for higher value-added dairy products both in South Africa and in the region. Stakeholders, like industry associations and customers, can also dictate the upgrading trajectory of firms, and therefore also hold a degree of power in value chain and food systems more broadly (Dallas, Ponte and Sturgeon, 2019). Political economy factors, in turn, affect how power is obtained and distributed in a value chain, and can serve to entrench the positions of incumbent lead players. Past industrial and agricultural policies have not always had the desired outcomes in the dairy sector in terms of inclusion and transformation.

To understand these and other dynamics, the Innovation and Inclusive Industrialisation Project (IIAP) has set out the following objectives:

- **OBJECTIVE 1**: Determine how differing institutional environments, structures and dynamics of the dairy value chains shape opportunities for inclusion of agro-processing small and medium-sized enterprises.
- **OBJECTIVE 2**: Determine the comparative political economy factors which enable or obstruct the upgrading of technological capabilities.
- **OBJECTIVE 3**: Identify patterns in the political economy of industrial policy to explain how industrial policy can successfully support the expansion of inclusive agro-processing.

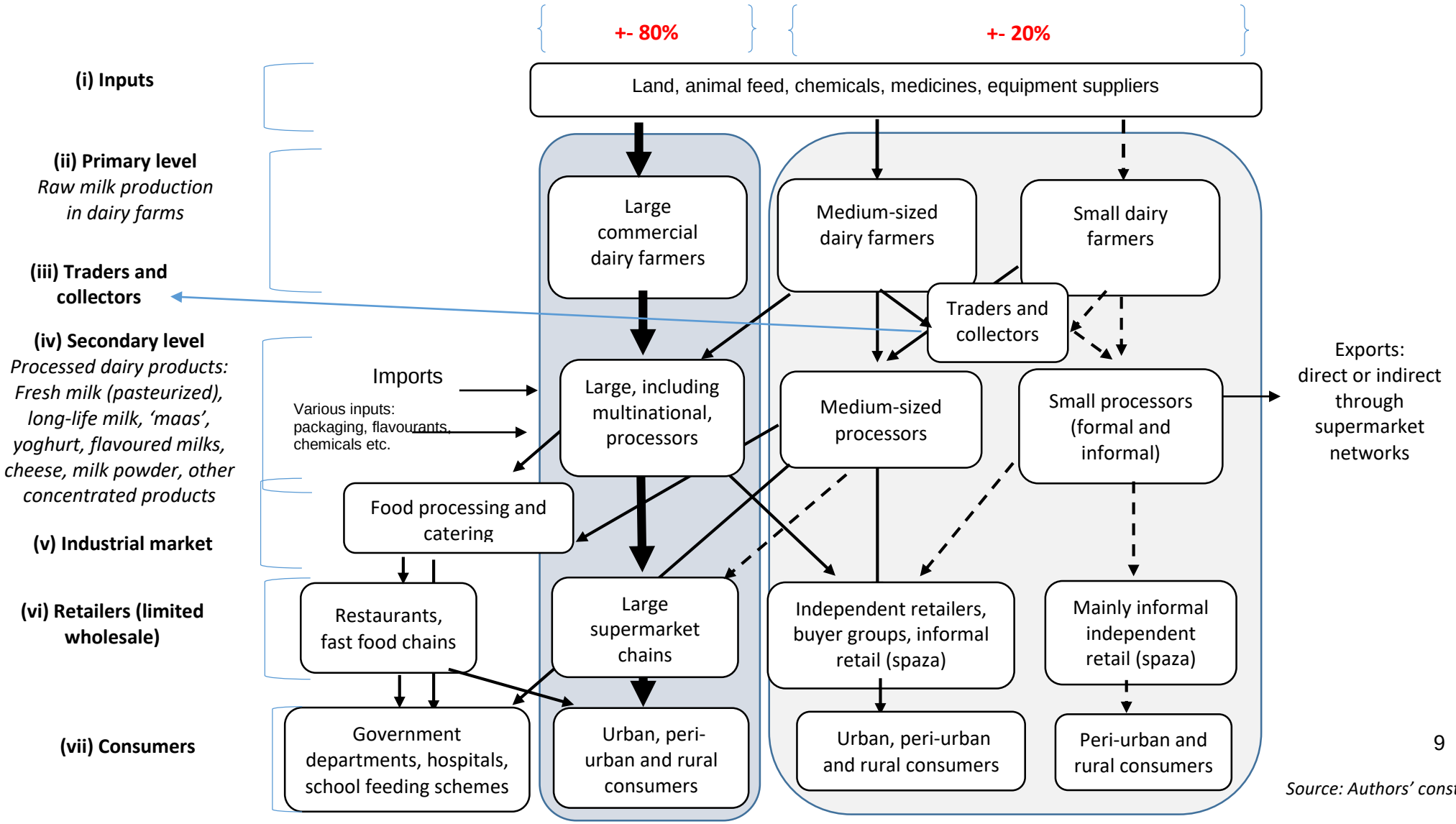
This working paper is a preliminary review of the data gathered as part of fieldwork aimed at providing insights into these objectives. It also reviews secondary data on the dairy industry from public sources. Section 2 provides a brief background of the dairy sector in South Africa setting out the dairy value chain, key players and institutions, its evolution since liberalisation, key economic trends, the applicable regulatory frameworks and competition concerns and interventions. Section 3 describes the methodology employed for the fieldwork, which was conducted through a survey of small and medium-sized dairy processors, and through in-depth semi-structured interviews with key informants (KI) in the dairy sector. Section 4 presents the variety and characteristics of the firms interviewed. In Section 5, a preliminary descriptive assessment of the data collected in terms of each objective is presented. Section 6 concludes.

2. Background to the dairy sector

We map out the dairy value chain in South Africa, highlighting key players, products and processes in Section 2.1. In 2.2., the evolution of policy applicable to the sector since liberalisation in the 1990s is discussed, laying the foundation to understand why we see certain structural outcomes in the sector today. Key institutions relevant to dairy are discussed in Section 2.3. Section 2.4 shows key economic trends in the dairy sector to better understand the potential of the sector. Section 2.5 sets out the applicable regulatory framework, as well as the competition concerns that have arisen in the dairy value chain.

2.1. The dairy value chain in South Africa

Figure 1: Stylized dairy value chain



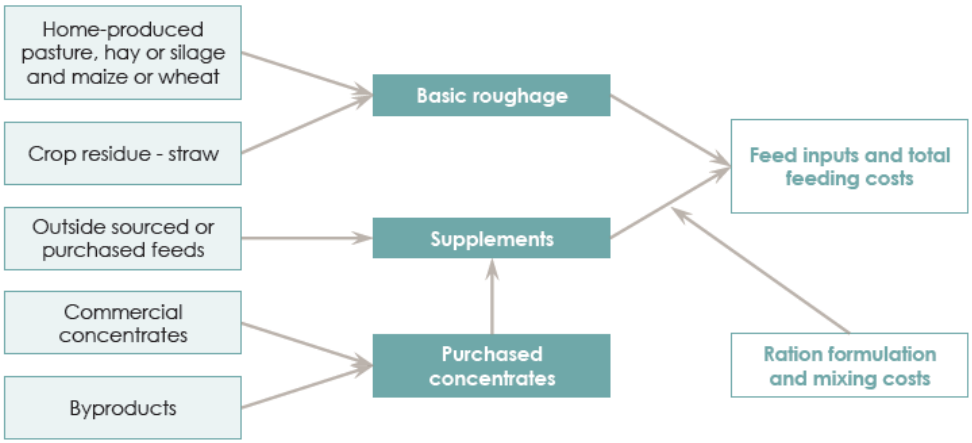
Source: Authors' construction

Figure 1 above maps out the dairy value chain in South Africa. Each level of the value chain and their linkages is briefly described below:

i. Inputs into dairy farming/primary production

Majority of dairy farms in South Africa are either extensive (pasture-based) or intensive systems (Total Mixed Ration, TMR) (van Marle-Köster and Visser, 2018). Key inputs into dairy farming include animal feed (maize, soybeans, other grains, supplements), fertilizers, energy, water[11], chemicals, medicines, hormones and equipment (Hawkins and Stanway, 2013). Extension and advisory services are also an important input into raw milk production. Getting the feed mix, quantity and quality right is essential for optimal yields, and feed is a significant cost component in dairy farming. On mixed rations the break-even point is about 30 litres per cow, on pasture-based production the break-even is 22 litres per cow (if the cows are fed a little concentrate).[12] Feed inputs are shown in Figure 2 below:

Figure 2: Feed inputs in dairy farms



Source: The Dairy Farming Handbook (2017)

The price, availability and quality of inputs are critical for competitiveness and sustainability of the processing level. In turn, these factors are influenced by the levels of competition in the respective markets. In the case of utilities, the industry has faced numerous challenges, like the rest of the economy, with electricity and water disruptions. Particularly for smaller players, the impact of erratic electricity supply and load shedding has been a major challenge (see Section 5).

[11] One cow needs 120 litres of water a day.
[12] SADKI10

The significance of the cost of inputs is seen in the shift of dairy farming towards coastal regions in South Africa since liberalisation (see Section 2.2 below). This is happening for climatic reasons, and because pasture-based systems, which are either irrigated or rain-fed, are cheaper (Bunce, 2020).

The main cattle breeds in South Africa are Holstein and Jersey, with average herd sizes of 400 cows, with small dairy farmers owning 5–15 cows. Artificial insemination is used to genetically improve the quality and productivity of the dairy herd, and semen from bulls is often imported (van Marle-Köster and Visser, 2018). This can be costly for smallholder farmers. Genetic resources are critical to ensure desirable traits and the ability to adapt to different environments, including food and water availability, climate, pests and diseases (DAFF, 2016). There is a state-funded genomic programme established in 2016 to promote genomic selection and training, however, the majority of the beneficiaries have been larger stud farmers (van Marle-Köster and Visser, 2018).

State of the art equipment is critical to produce the quality of dairy product required that meets standards. Equipment suppliers are significant to processors of all sizes and play a unique role in South Africa, often taking on additional support functions for processors given the lack of such support from the government. This is discussed in Section 5.

ii. Primary producers

The primary level of the dairy value chain comprises around 1,200 dairy producers or farmers. These own and operate dairy farms producing raw milk which is sold to the secondary level which comprises dairy processors. There is a degree of vertical integration where primary producers also undertake some processing activities. This vertical integration is partly motivated by the nature of the product. Given the perishable nature of raw milk, if there is insufficient offtake by processors, it is not cost-effective to store excess supply. Situations of excess supply can arise for at least two reasons. First, milk production is seasonal based on calving cycles. Periods of low milk production are from April to July. From September to November, milk production increases by 30–40%. Prices are lowest in this season when supply is highest (Who Owns Whom, 2019). Second, processors, particularly the large ones, have significant buyer power and can use the fact that raw milk is perishable and that producers cannot store it to depress the price they pay to producers. This can lead to withholding offtake as part of negotiation strategies. There have been complaints that the buyer power of the large processors has led to the squeezing of margins of milk producers, as well as concerns of collusive behaviour of buyers.[13] To even out some of the seasonality effects, it is reported that processors increase the prices offered to producers

[13] http://www.compcom.co.za/wp-content/uploads/2017/11/10year.pdf, accessed May 2020

between January and March as a means of encouraging farmers to produce more milk between April and July (Who Owns Whom, 2019).

To avoid loss of raw milk and to ensure offtake, some producers have vertically integrated forwards into basic processing facilities. In other instances, processors have vertically integrated backwards to the production of raw milk to ensure consistent input supply for their operations and to have greater control over quality and standards. Producers who directly sell to retailers or consumers are referred to as 'producer-distributors' (PDs) in the industry. These PDs undertake some degree of processing before selling to consumers.

The provincial distribution of dairy producers from 2009 to 2020 is given in Table 1 below. As is evident, there has been a significant decline of around 67% between 2009 and 2020 (and as previously noted, a decline of 90% from 1985 to 2020).[14] Milk production per producer (t) has, however, also as previously noted, substantially increased, by over 300%. PDs have also been declining substantially by 59% between 2009 and 2020 (see Table 2). According to the MPO, PDs face challenges in terms of consistent delivery of quality products and volumes during low producing months.[15] The standards, quality and volumes for PDs are generally low. Most of the PDs are in niche markets such as cheese or maas, primarily for low-income consumers. Producer-distributor models might further have a renewed opportunity given that consumers increasingly want farm to fork traceability, and this model lends itself well to this.[16] If some of the challenges noted were addressed, there are good opportunities for PDs in communal markets in rural areas where excess milk produced could be turned into maas, yoghurt or cheese.[17]

Table 1: Number of dairy producers in South Africa, 2009–2020

	2009	2011	2012	2014	2015	2016	2017	2018	2019	2020	% decline in producer numbers (2009–2020)	% increase in milk production per producer (2009–2019)
Western Cape	795	683	647	529	533	502	481	419	402	379	-52%	
Eastern Cape	387	314	283	264	262	251	244	212	201	206	-47%	
Northern Cape	37	28	21	25	14	14	7	7	6	4	-89%	
KwaZulu-Natal	373	323	322	281	267	253	247	221	212	208	-44%	
Free State	884	601	535	389	328	280	249	206	165	145	-84%	
North West	540	386	352	233	222	181	165	135	117	100	-81%	
Gauteng	217	127	126	109	100	97	98	84	83	65	-70%	

[14] SADKI10
[15] SADKI10
[16] SADKI11
[17] SADKI11

Mpumalanga	286	201	164	117	94	93	87	69	56	50	-83%	
Limpopo	32	23	24	14	14	12	15	12	11	7	-78%	
TOTAL	**3551**	**2686**	**2474**	**1961**	**1834**	**1683**	**1593**	**1365**	**1253**	**1164**	**-67%**	
TOTAL Milk production per producer (t)	**729**								**2949**	**(data not available)**		**305%**

Source: Who Owns Whom (2019) using Milk Producers Organisation data; Lacto data

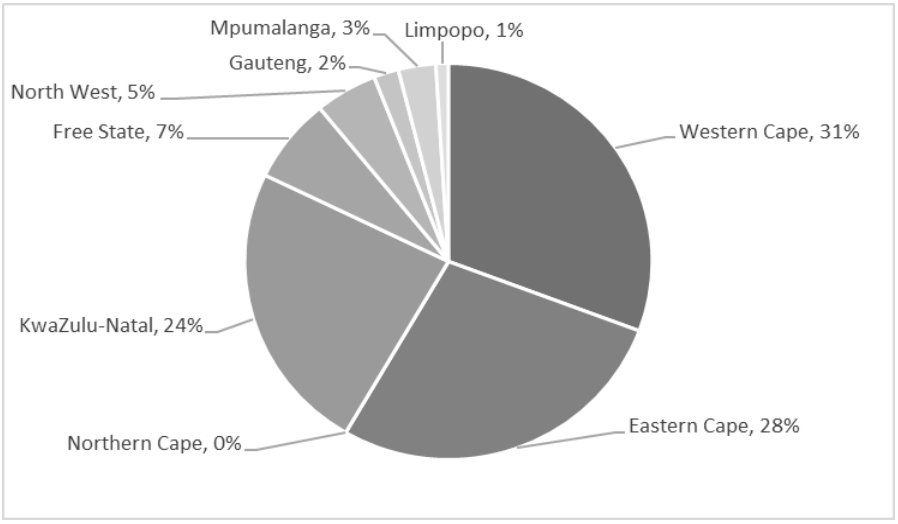
Table 2: Declining producer-distributor numbers, 2009–2020

	2009	2014	2015	2016	2017	2018	2019	2020	% decline
Western Cape	33	25	25	24	23	18	14	12	-64%
Eastern Cape	15	16	15	14	13	9	7	7	-53%
Northern Cape	11	9	9	8	8	7	6	3	-73%
KwaZulu-Natal	15	9	9	10	10	8	7	7	-53%
Free State	13	11	11	10	9	7	7	6	-54%
North West	7	5	4	4	4	3	3	1	-86%
Gauteng	37	21	21	21	22	17	15	15	-59%
Mpumalanga	17	10	9	9	8	9	8	8	-53%
Limpopo	22	8	7	8	9	10	10	10	-55%
TOTAL	**170**	**114**	**110**	**108**	**106**	**88**	**77**	**69**	-59%

Source: Lactodata, various publications, Milk SA

Most dairy producers are now located in the coastal areas of Western Cape, Eastern Cape and KwaZulu-Natal, following a major shift to coastal regions (Figure 3). The Western and Eastern Cape account for close to 60% of national milk production (Who Owns Whom, 2019; DAFF, 2017).

Figure 3: Production by province, volumes (2016)



Source: (Former) Department of Agriculture, Forestry and Fisheries (DAFF) (2017)

iii. Traders and collectors

The decline of public collection centres after liberalisation has led to the emergence of an intermediary in the form of private traders, such as Desmanda and Tip Top Milk. According to the MPO, traders handled about 10% of the country's milk at the time of the interview in 2020 and are involved more in the central parts of the country. As discussed in Section 5, while they only control 10% of raw milk nationally, they may have more power in narrower regional markets. Traders like Tip Top bring milk from KZN up to Gauteng, with the latter province producing only about 3–5% of national milk output, but consuming 35%.[18] These players, which we discuss further in Section 5.1.3, play an important role in linking small farmers to processors. Further research is needed on the role of traders in the dairy value chain.

Another development, as noted previously, follows the unbundling of Clover. Dairy Farmers South Africa (DFSA), the largest collector of raw milk in South Africa, was initially a fully-owned subsidiary of Clover. DFSA supplied Clover's full raw milk requirements, including its own mainly UHT products under the Clover, retailer-owned brands and Ultra Milk brands.[19] In 2018, Clover first sold off its raw milk procurement arm to DFSA, which was then 74% owned by milk producers. Clover held the balance of 26% and provided support in terms of services, including sales, distribution and merchandising services. However, this relationship ended in 2020, with Clover writing off the revolving credit facility it had with DFSA (Who Owns Whom, 2020). DFSA has since partnered with large processor, Coega Dairy, to from a new industry association, Dairy Group. This is a very recent development (in 2020), and the implications are yet to play out in the markets.

iv. Secondary processors

At the secondary processing level, a range of liquid and concentrated products are produced. The main products include milk, cream, concentrated milk, buttermilk, sour/fermented milk (maas), yoghurt, whey, butter and cheese. The processing level has also seen consolidation, with the number of processors declining by 30% from 190 processors in 2009 to 133 processors in 2020 (Lactodata, 2020).

The largest multinational milk processors purchase more than 50% of the total raw milk production (Ncube et al., 2016). Twenty buyers buy 84% of all the raw milk in South Africa.[20] These include Clover SA, Groupe Lactalis (Parmalat), Danone and Nestlé. Large national players include Woodlands and Coega Dairy.

[18] SADKI10
[19] https://www.dairygroup.co.za/Static/Press_Release_2November2020.pdf
[20] SADKI06

In terms of sales of processed dairy products generally, the market is concentrated (see section 2.5.2). Within specific dairy product categories, there are even higher levels of concentration amongst the large processors (Chisoro-Dube et al., 2018). There have also been closures of large processors like Dairybelle in 2017 and Dairy Day in Kwa Zulu Natal in 2018[21] further contributing to high concentration levels.

Given that the focus of this study is on the inclusion of SME processors, large processors were not interviewed. However, they play an important role in shaping the development and outcomes in the value chain and some of their characteristics are highlighted here. These processors produce a wide range of dairy products which they primarily sell through the major supermarket chains. The large processors have sophisticated production facilities and have invested in logistics and distribution networks. For example, Clover has a large distribution network with 30,887 delivery points, which it also uses to distribute products for other players (Who Owns Whom, 2019). Clover earns 50% of its revenue from its distribution and logistics networks (Ncube et al., 2016). It is estimated that Clover has 30,887 delivery points through which it also distributes products for other industry players (Who Owns Whom, 2020). Large multinational players have been at the forefront of technology in the industry, (information technology, traceability systems and blockchain technology, packaging and labelling, barcoding and QR scanning (Who Owns Whom, 2019)). This is enabled by them being part of large multinational groups.

These players wield considerable power in the dairy value chain, and some have been implicated in competition violations. There has been consolidation at the processing level through mergers, in which multinationals have bought out local processors. This is discussed in Section 2.5.2. Allegations of violations have included the squeezing of margins of milk producers and collusion to depress the purchase price of milk (also discussed in Section 2.5.2 below).

The medium-sized processors, as previously noted, are typically regional and supply the province that they are located in or into neighbouring provinces. These players include Lancewood, Coega, Fairfield, Orange Grove, Sundale, Woodlands, Douglasdale and Crickley dairies.

Small processors mainly supply their immediate communities directly, niche product markets, independent retailers, catering (restaurants, hotels, guesthouses or school feeding schemes. They usually have a very limited range of products and have different capabilities than medium-sized processors that allows them to serve these markets. They also target markets where consumers have a very specific demand for home-grown or handmade products. It is not possible

[21] https://eprop.co.za/commercial-property-news/item/21059-major-milk-processing-plant-in-south-africa-in-liquidation-up-for-sale

for small processors to be competitive on volume-based products. These players are often 'boutique dairies', and attempt to find products they can sell at a premium.[22]

v. Industrial food markets and food service industry

Aside from selling milk products to consumers (through retailers or other routes to market), certain products are also sold as inputs into the industrial food and food service industry. For example, milk products go into the production of chocolate, baby foods and other food products.

Milk products are also sold to the restaurant, fast-food, hotel and catering sector, which is made up of restaurants, coffee shops, takeaways, fast-food outlets (both franchised and independent) and catering services. These and other opportunities exist for small processors, such as supplying to canteens of big companies, hospitals, prisons and army barracks, airlines and buffet breakfasts at hotels. The food service industry is known to pay faster than retail.[23]

In the fast-food industry, there is some vertical integration, where lead players such as Famous Brands that own well-known fast-food and restaurant retail outlets like Steers, Wimpy, Milky Lane and Mugg & Bean are backwardly integrated to producers and manufacturers of dairy products (Who Owns Whom, 2019).

vi. Retail

A large proportion of dairy products is sold through retail channels. There are formal and informal retail channels in South Africa:

a. **Formal supermarket chains.** Around 60% of all processed food products is sold via formal supermarket chains. The main supermarket chains in South Africa are Shoprite Checkers, Pick n Pay, SPAR, Woolworths, Game/Massmart and Food Lover's Market. The top five chains (Shoprite Checkers, Pick n Pay, SPAR, Woolworths and Massmart) hold around 64% of the grocery retail market at a national level based on sales (Competition Commission Grocery Retail Market Inquiry report, 2019). These retailers have spread from urban areas since the end of apartheid, into peri-urban and township and even rural areas. They offer multiple formats tailored to suit different customer requirements in different income groups in these areas. The main supermarkets have invested heavily in distribution centres through which they centralize procurement for a large proportion of their products, not only for sales through their South African store networks, but also for their SADC regional networks. The supermarket chains play an important role in driving supplier upgrading based on their requirements and standards. However, these requirements can also be exclusionary for suppliers who cannot afford to meet them. In addition, the market power of supermarket

[22] SADKI11

[23] SADKI11

chains has led to concerns of abuse of buyer power against suppliers, resulting in the squeezing of their margins. These, and other concerns of a lack of competition and growing concentration, have led to complaints and a retail market inquiry by the Competition Commission (das Nair and Chisoro-Dube, 2015; das Nair, 2019). In 2019, there was also an amendment to the Competition Act to include a prohibition against the abuse of buyer power by dominant firms in agro-processing and grocery retail sectors. These matters are discussed in Section 2.5.2, and in the context of dairy in the analysis in Section 3.

b. **Formal independent wholesalers and retailers.** Often located in peri-urban areas, formal and informal independent retailers are important routes to market in South Africa, targeting mainly the low-income consumer segment. Despite concerns of supermarket chains spreading into their traditional strongholds and 'taking over' these retailers,[24] as well as facing significant barriers to entry, have remained fairly resilient. In particular, buyer group-supported models in which independent retailers and wholesalers fall under the banner of buyer groups or voluntary trading organisations have grown in peri-urban and township areas. Buyer groups support multiple stores through sourcing collectively, and through supporting branding, advertising and marketing activities (das Nair, 2019). Around 30–40% of total grocery retail in South Africa is served by independent retailers who primarily access their products through buyer groups or wholesalers. Many of the independent retailers that are part of buyer groups are foreign owned.

   The main buyer groups in South Africa are Unitrade Management Services, the Buying Exchange Company, Independent Buying Consortium and Independent Cash & Carry Group. Each support independent retailers which range from small superettes to fairly large supermarkets. They also support wholesalers and cash and carrys (hybrid wholesalers and retailers) who on-sell to informal spaza shops.

c. **Informal spaza shops.** Spaza shops are an important feature of the grocery retail space in South Africa, especially in township, rural and informal settlements. It is estimated that the annual revenue from spaza shops is around ZAR7 billion (Euromonitor, 2018). Spaza shops offer low prices, convenience in terms of location and operating hours, flexibility and credit extension. In the last five years, the formal supermarket chains have started offering their own versions of formal spaza shops as a means of penetrating this market segment.[25] Cash and Carrys and wholesalers typically supply spaza shops. Spaza shops tend to sell products that are required more frequently by customers given perishability and shorter shelf life, such as dairy and bread. Dairy is part of the top ten purchased items from spaza shops in South

[24] The 'supermarketisation' trend (das Nair, 2019).

[25] https://www.foodformzansi.co.za/township-entrepreneurs-on-defensive-about-spaza-shop-spin-offs/; https://power987.co.za/news/listen-shoprite-pick-n-pay-roll-out-spaza-shops-in-townships/, accessed on 8 January 2021.

Africa and is typically the third most purchased item (with bread and airtime being first and second respectively) (Competition Commission Grocery Retail Market Inquiry report, 2019).

These routes to market, such as independent wholesalers, retailers and spaza shops, are significant for small agro-processors who are unable to meet supermarket requirements and who are unable to negotiate sustainable trading terms. This is discussed in Section 5.

vii. Customers and consumers

The final level of the chain is the consumption level. Consumers access dairy products from retailers, from direct sales from secondary processors, or through other 'customers' who provide the products to consumers. These include government or the private sector who procure dairy products as part of school, hospital and prison feeding schemes. End consumers in this context would be the recipients of products through these schemes.

2.2. Policy evolution and interventions relevant to dairy processing

Prior to liberalisation in the 1990s, the dairy industry was regulated under the Dairy Industry Act of 1961; The Marketing Act of 1968, as well as through the Dairy Board and the Milk Board. 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 (Chisoro-Dube et al., 2018). Under apartheid, such agricultural policy support in the dairy sector was primarily for white dairy farmers and processors. Commercialization of white, large-scale farming in general was greatly supported through the adoption of modern mechanical and biological technology (Vink, Kirsten and van Zyl, 2000).

As with other agricultural products, the dairy industry was deregulated over a short time period. Milk was one of last marketing boards to be liberalised. The Milk and Dairy Boards were merged in 1979, and, in 1983, the fixing of retail selling prices for fresh milk was ceased. In 1987, the Dairy Industry Act was repealed. The Marketing Act was abolished in 1997, and the boards shut down as the last steps in the deregulation of the industry (Chisoro-Dube et al., 2018; Greenberg, 2016; Vink and Kirsten, 2002; Louw, Vermeulen, Kirsten and Madevu, 2007). Government established milk collection points and cooperatives closed down.[26]

One outcome of liberalisation was the consolidation seen particularly at the primary level, where unfettered competition meant that many producers were no longer competitive without extensive state support. This was particularly the case for smaller, less efficient, white family-run farms, who relied heavily on state support (Greenberg, 2013). Further deregulation and amendments of the Dairy Act started in 1971, allowing for margarine to be coloured yellow. This

[26] SADKI06

led to the drop in the annual butter milk prices. Consequently, a large number of butter factories also had to close.

Pre-liberalisation, raw milk production was subsidized and supported by government in costlier and less suitable inland areas of the country. Post-liberalisation, producers no longer received guaranteed prices for their raw milk, and this spurred a migration of dairy farmers to coastal areas from inland areas in search of lower costs, given coastal areas had more pastures and higher rainfall (see Section 2.1 above).

Liberalisation also saw the entry of multinational processors and existing local processors requiring lower purchase prices for raw milk lead to extreme pressure on margins of farmers/producers. Producers were now 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) (NAMC, 2001), as part of negotiated processes. The power of the large processors in these negotiations and in determining prices is discussed in Section 5.1.3. Periods of under and over-supply as noted in the introduction also caused further volatility of prices.

The rapid deregulation of the sector therefore contributed to the consolidation at both the production and processing level, with players that survived purely based on state support being whittled out. Combined with the entry of multinationals and a series of mergers and take-overs, this consolidation has resulted in high levels of concentration at the processor level (see Section 2.5.2).

Post-apartheid, the country's long-term blueprint for socio-economic development has been the National Development Plan (NDP) of 2013 which strives to create a better life for all citizens in an inclusive society through a collaborative framework involving partnerships between Government, organised business, labour and citizens. The NDP guides sector plans, policies, programmes, projects and operations, as well as budgets, skills and resource investments in these plans.[27] The NDP sets out the development ambitions of the agriculture and agro-processing sectors, focusing on land reform, expansion of production of export-led high value crops, investment in integrated value chains and inclusive growth and job creation in the agro-processing sector, among other objectives. Along with the NDP, the New Growth Path (NGP) of 2011 was South Africa's vision to place jobs and decent work at the centre of economic policy, including in agriculture and agro-processing.[28]

Guided by the NDP, from the processing side, the Department of Trade, Industry and Competition's (the DTIC) series of Industrial Policy Action Plans (IPAPs) aimed to support

[27] National Development Plan 2030, available here.
[28] New Growth Path (2011), available here.

transformation in agro-processing. With respect to dairy processing, IPAP 2015 focused on developing and facilitating small-scale dairy processors 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 aimed 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. The progress of this targeted outcome in dairy was not reported in the subsequent IPAP 2018/19–2020/21.

Support programmes by the DTIC for the agro-processing sector more generally under IPAP 2018/19–2020/21 included the ZAR1 billion Agro-processing Support Scheme (APSS) established in May 2017. Core aims of the scheme included increasing capacity of processors, supporting the modernization of machinery and equipment and improving competitiveness. Another DTIC programme, The Black Industrialists Scheme, is an incentive programme of the Black Industrialist Policy. It provides grants to promote the participation of black manufacturers in key sectors as identified in the IPAP. The grant provides finance for capital equipment provided on a cost-sharing basis, and other forms of funding and support.[29] There have been a number of other support programmes that are open to the agro-processing sector, such as the 12I Tax Allowance Incentive, Manufacturing Competitiveness Enhancement Programme (MCEP) and Export Marketing and Investment Assistance scheme (EMIA). Unfortunately, we have no further disaggregation on whether beneficiaries have specifically included dairy processors.

The former Department of Agriculture, Forestry and Fisheries (DAFF), now the Department of Agriculture, Land Reform and Rural Development (DALLRD), also has several policies and plans to develop primary agriculture, and to a lesser extent, secondary agro-processing. Specific to agro-processing, the department has had the Agro-processing Strategy of 2012[30], the National Policy Framework on the support and development of Small and Medium Agro-processing Enterprises in South Africa 2014/30[31] and the Strategy for the development of small and medium agro-processing enterprises in South Africa of 2015.[32] A joint initiative between DALRRD and DTIC is the National Agro-processing Framework, run by the DTIC's Industrial Development Division (estimated to be a 2019 framework, document undated). It is not clear what the specific support

[29] Conditional loans, working capital support, Greenfield, Brownfield and Joint Venture support, concessional export insurance funding and market exploration support, acquisition of a plant, construction of a new plant, expansion of an existing plant, rehabilitation or replacement of existing plant or equipment, feasibility studies, licenses, quality assurance and standards.

[30] https://www.nda.agric.za/doaDev/sideMenu/AgroProcessingSupport/docs/DAFF%20agro-processing%20strategy.pdf

[31] https://www.nda.agric.za/doaDev/sideMenu/AgroProcessingSupport/docs/policy%20on%20small%20and%20medium%20enterprises%20web.pdf

[32] https://www.nda.agric.za/doaDev/sideMenu/AgroProcessingSupport/docs/Strategy%20for%20the%20development%20of%20SME%20agro-processing.pdf

granted to dairy processors under each of these programmes has been and there is no data available to assess this.

From an empowerment perspective, there is an 'AgriBEE' framework which aims to facilitate Broad-Based Black Economic Empowerment (BBBEE) in agriculture through initiatives to include black South Africans at all levels of agricultural activity and enterprises in agricultural value chains. There are a number of objectives of this policy, including facilitating transformation, and empowering black South Africans in owning, establishing, participating in and running agricultural enterprises. The amended AgriBEE Sector Code Scorecard provides targets for large enterprises in agricultural value chains to realise these objectives.[33]

Also guided by the NDP, Operation Phakisa[34] of 2016 is a programme of the South African government to fast-track the implementation of solutions on critical development issues with a bold ambition of "Food for All and 1 Million Jobs, by 2030".[35] It aimed to (1) create greater market inclusion and value chain development towards an inclusive rural economy; (2) review existing producer support models and (3) deliver development finance models aimed at fast-tracking land reform. The ambition was to translate detailed plans into implementable priority programmes in agriculture, with a focus primarily at the upstream production level in grains, horticulture and livestock and in cross-cutting areas of land reform, rural development, labour and producer support as part of twenty-seven initiatives.[36] Monitoring and evaluation of the outcomes of Operation Phakisa are beyond the scope of this project, however a cursory scoping suggests that the focus was not on food processing, and that not much progress has been made in agriculture Operation Phakisa, which has, in part, led to the most recent joint initiative between DALRRD and DTIC – the Agriculture and Agroprocessing Master Plan (AAMP) process to be finalized in July 2021.

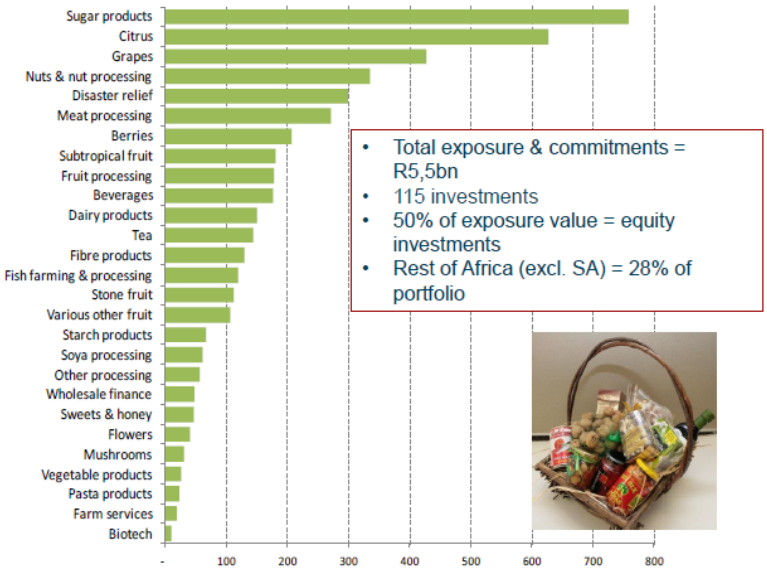
The AAMP seeks to build on past and existing sector plans. The Presidency undertook to engage stakeholders in the development of master plans for various strategic sectors, including agriculture and agro-processing. The aims of the masterplan are to achieve transformation and inclusion, ensure food security, expand markets, create jobs, access finance for growth and greater competition, among others. These it seeks to achieve through 'social compacts' involving coordinated, focused and pragmatic programmes of intervention with binding commitments from government, development finance institutions, business, labour and civil society. This master plan takes an integrated value chain approach, with multiple interventions at different levels of specific food value chains, and cross-cutting interventions that affect the sectors more

[33] http://webapps.daff.gov.za/AgriBEE/readmore.do;jsessionid=6a8e430cb2f0701b65ed616e9530
[34] A Sesotho word meaning 'hurry up' to highlight the urgency to deliver.
[35] https://www.ecsecc.org/documentrepository/informationcentre/160629phakisaagriculture_14362.pdf
[36] https://www.gov.za/speeches/agriculture-land-reform-and-rural-development-operation-phakisa-23-feb-2017-0000#

broadly, such as in routes to market (supermarkets and other retail channels), development finance, export promotion, land and water reform, skills development etc. The recommended interventions, once finalised and signed off by all partners, will affect the dairy sector. Research as part of the IIAP project has informed the development of the Master Plan.

In line with the NDP, development finance institution – the Industrial Development Corporation (IDC)[37] – has supported food sectors through its Agroprocessing and Agriculture Strategic Business Unit. The IDC has supported dairy projects as part of its support in the 'Animal Protein' category.[38] Support has included projects in which opportunities in dairy processing have been identified, such as localising high value dairy production (butter, high value cheeses and whey) and promoting dairy exports to Africa. Publicly available data from the IDC for 2013 shows that sector allocation for agricultural value chains was around ZAR7.7 billion out of a total of around ZAR100 billion.[39] This figure however also included forestry, paper and pulp. In terms of agro-processing, it is reported that around 3% of the total exposure and commitments of ZAR5.5 billion (around ZAR150 million) was on projects in the dairy value chain.[40] (Figure 4).

Figure 4: Allocation of IDC finance in agro-processing, 2013



Source: IDC, 2013

The criteria for support in the sector include that the project should preferably facilitate the creation of new industrial capacity (create jobs); the funding request must be for at least ZAR1

[37] An agency of the DTIC
[38] Other main agro-processing categories include Horticulture, Grain Crops and Forestry
[39] https://agbiz.co.za/uploads/documents/library/general-interest/13_10-idc-presentation-oct-2013.pdf
[40] https://agbiz.co.za/uploads/documents/library/general-interest/13_10-idc-presentation-oct-2013.pdf

million and risk sharing from operating private sector investment partners is required. There are also BEE ownership and related requirements. These criteria, and the complex process of applying for the support, have made it difficult for some small dairy processors to access this funding. We discuss this further in Section 5.[41]

In 2020, the focus in dairy processing was on:

- The expansion and diversification of dairy products industries
- The production of high value-added products
- Improved competitiveness for sustainability
- Integration of smaller and emerging players into established segments
- Export market penetration
- Import replacement
- Economic transformation and inclusivity.[42]

IDC agro-processing and agriculture value of funding approvals was ZAR0.2 billion in 2020 (IDC 2020 Integrated Report). We do not have a more detailed breakdown of what proportion of this was invested in dairy projects. However, investments in other sectors were considerably higher than in agro-processing in 2020. For instance, investment in chemicals and pharmaceuticals was ZAR4.83 billion and in metal and machinery was ZAR5.58 billion (IDC 2020 Integrated Report). These patterns of investment by the IDC are seen at least since 2016, and it highlights the bias that has persisted historically in terms of government support more generally for industries in the Minerals Energy Complex (MEC).[43] Continued support for MEC industries has created path dependency and has hampered structural transformation into higher value production, such as in high value agriculture and agro-processing (see Goga et al., 2019).

2.3. Key institutions: industry associations, standards agencies and research institutions

In addition to government departments and development finance institutions, institutions that are relevant for dairy processing include private industry association and standards agencies, and public research institutes.

All milk players in South Africa (producers and processors) are required by legislation to register with industry association and umbrella body, Milk South Africa (MilkSA), and have to pay a levy.

[41] Ibid
[42] Financing the agroprocessing and agriculture value chain, Dec 2020. IDC Presentation.
[43] Fine, B and Z Rustomjee (1996) The Political Economy of South Africa: from minerals-energy complex to industrialisation. London: Hurst.

Under MilkSA, primary producers are organized through the Milk Producers Organisation (MPO) and secondary processors through the South African Milk Processors Organisation (SAMPRO). Membership to these sub-associations is voluntary. These associations aim to support their membership through promoting and marketing milk products, providing consumer education on the nutritional and health values of dairy products, providing R&D, skills development, training and capacity building, engaging and lobbying government and providing access to information, amongst a range of other services.

The industry associations have transformation objectives that seek to create a more inclusive dairy sector with greater participation by previously disadvantaged black SME producers and processors. According to MilkSA, when the marketing boards were abolished, new trusts were formed for the industry. The marketing board funds were reallocated and the 'Transformation Unit' in Milk SA pulled finance from the Jobs Fund as part of efforts towards equitable transformation.

Milk SA is dependent on a levy that is approved every four years, and 20% is allocated to developing black emerging dairy enterprises for transformation. Although the objective is to support any black owned dairy enterprise at any level of the value chain, the focus in practice is mainly on dairy farmers at the primary level in helping them overcome challenges to become more productive and sustain them as commercial enterprises that are able to compete in the open market. The unit aims to assist farmers with 10–20 cows to grow their herd size to 50+ to get them into commercial farming levels. Past efforts have included providing electricity, which is a major challenge for small farmers, and upgrading milking parlours and milk machines which are not up to regulatory standards. They have also provided support in pasture management, record keeping, training and development requested by farmers,[44] and partnerships with larger enterprises.

According to MilkSA, the budget spent on transformation was ZAR10.39 million in 2017, representing 21.5% of the 2017 levy income, and growing by 50% from 2016 (Table 3).

Table 3: Milk SA spend on statutory functions, 2016 and 2017

ZAR millions	2016	2017
Consumer education	17,725	21,926
Dairy quality and safety	6,715	7,756
Industry information	2,669	2,789
Research and development	1,642	2,247
Transformation	7,012	10,395

Source: Who Owns Whom (2019), using Milk SA data

[44] SADKI04

In 2019, MilkSA reported that transformation objectives accounted for 18.88% of the levy income for the year, and was the second largest category of spend, the largest being consumer education (MilkSA Annual Report 2019).

In 2019, Milk SA's Transformation Unit supported sixteen farmers, with five more planned for that year. Less focus has been placed on supporting black dairy processors however, with only one black processor being supported in 2019. Support for black processors is available but requires voluntary uptake, which the organisation cannot impose on processors.

Also supporting producers is the Milk Producers Organisation (MPO). The MPO has 1,200 members that are commercial dairy farmers. The industry association has several objectives which include sustainable dairy farming for all; economic growth through market, enterprise and business development, and through developing supply chain relationships; building the image of dairy through communication with customers and industry collaboration; providing training in skills and industry knowledge, training and qualifications[45]; offering support for environmental stewardship, animal health and welfare; aligning the value chain; providing value added services and support including on regulatory aspects and liaising with government on regulation; and supporting transformation processes.[46] Part of the MPO's role is to support small dairy farmers to become commercial farmers. However, many of the subsistence milk producers do not want to enter at commercial level, and it is difficult to convince them to move to commercial production.[47]

South African Milk Processors Organisation (SAMPRO) is a voluntary industry association representing dairy processors. It supports members, government institutions, news media, research orientated institutions such as universities and consumers through providing information on factors and market signals relevant to the South African and international dairy industries. Information compiled and published includes retail prices and quantities of various processed products (which SAMPRO calculates from Nielsen data).[48] It further aims to contribute to matters affecting trade of dairy products, both in terms of imports into South Africa and access to export markets of South African products. SAMPRO also provides training and skills

[45] For instance, Sector Education Training Authority (SETA) – approved training programmes are offered, in addition to various other grants and bursary schemes. See https://milksa.co.za/objectives/empowerment. The SETA programme has 13 modules, and it aims to fully equip participants with skills required to become a dairy farmer. Their programmes cover farm workers to managers.
[46] SADKI10
[47] SADKI10
[48] See for example, quarterly publications: https://sampro.co.za/wp-content/uploads/2021/04/SAMPRO-Nielsen-dairy-products-Dec-2020-Short.pdf

development to processors, ranging from dairy science and technology to quality management and standards maintenance.[49]

As discussed earlier, a new umbrella organisation, Dairy Group,[50] was formed following the joining of two farmer-owned companies: Dairy Farmers of South Africa (DFSA – see Section 2.1) and Coega Dairy. The association aims to use collective action for long-term viability and to promote the South African dairy industry's competitiveness in the face of sophisticated international players through achieving efficiency and economies of scale. The association claims that the combination of DFSA (former Clover's supplier of raw milk and manufacturer of UHT products) and Coega Dairy positions it well to grow in the African market, backed by its combined infrastructure, experience and capital-intensive process technologies.[51] Growth in the African markets is seen as a core aim, in addition to supporting emerging black-owned farmers and maintaining environmental standards. This new agro-business is positioning itself to support and nurture new entry as part of its own growth strategy. Given its very recent launch, the IIAP project has not been able to evaluate the impact it has had on SME dairy processors, if any, yet. However, its entry marks a contender to the long-standing industry associations that have otherwise existed in the industry.

The benefits of the older, more established industry associations to small and medium-sized processors against stated objectives, and the outcomes of transformation goals, are discussed in Section 5.

The Dairy Standard Agency (DSA) and the South African Society of Dairy Technology (SASDT) are private organisations that further support members through standards accreditations, technical training and advice, research and access to testing facilities.

The DSA is a self-regulation company, registered under the Companies Act, as part of the organised dairy industry. The DSA is funded through the MilkSA levy enabled through the Marketing of Agricultural Products Act. They also have funding from a non-statutory levy to render services to the industry on a user pays basis. Its fundamental role is around improvement of dairy quality and safety in line with food safety, composition and metrology standards. It undertakes testing of products throughout the value chain, including imports either through private labs or their own labs. They have a close relationship with the district and municipal food safety inspectors that are responsible for enacting the Department of Health's Food Safety Act to inspect dairy samples. Other mandates of the DSA include sharing information on best

[49] www.sampro.co.za
[50] https://www.dairygroup.co.za/
[51] https://www.dairygroup.co.za/Static/Press_Release_2November2020.pdf

practices on compliance with product safety and quality standards, providing support services and offering consultant services at a rate.[52]

The SASDT[53] is a voluntary non-competitive organisation, independent of MilkSA, which was established over 50 years ago when the industry was regulated. SAMPRO provides the secretariat for SASDT. They have 220 members made up of input suppliers, processors and sponsors. The SASDT is a forum for dissemination of knowledge and advancement of dairy science through seminars, conferences, publications and discussion groups. Their website provides critical information for members on micro-testing and labelling. During the regulated period, the SASDT played a much bigger role conducting research, and working with the ARC and universities. After deregulation, information and knowledge in dairy 'became private', so bigger companies would not always participate in these types of forums. This was also due to concerns of being implicated in collusive activities (see Section 2.5.2). SME dairy processors in particular require this information as many do not have access to food scientists and networks (see Section 5.2). The decline of state institutions providing such services (discussed below) puts SME dairy processors at a disadvantage.

Key public institutions include the Agriculture Research Council (ARC) and the Council for Scientific and Industrial Research (CSIR).

While the ARC has a stronger focus on primary agriculture, including undertaking and promoting research, development, technology transfer and dissemination, and information sharing, it also has objectives for agro-processing. In agro-processing, priorities include employment and job creation across full agricultural and agro-processing value chains, the improvement of existing techniques and the creation of new techniques for the processing of agricultural products, and the improvement in quality of perishable agricultural products. The ARC has a business division that focuses on agro-processing. Its business plan for 2019/20 speaks to a goal to '*generate knowledge, solutions and technologies for food safety, quality and improved efficiencies in the agriculture value chain'* (p60) through an agro-processing, food technology and safety programme. However, the ARC has seen significant budget cuts over the years due in part to significantly reduced government funds allocated to it through parliamentary grants and from the Department of Science and Technology, and due to an underperforming agricultural sector from which it derives external income.[54] Programmes by the ARC directly supporting the dairy processing level of the value chain in the past have been limited, and support to processing has mainly been in the context of supporting some level of value addition of smallholder dairy farmers to ensure they have an outlet for their milk production given that large processors

[52] SADKI07
[53] SADKI11
[54] ARC Business Plan 2019/20

generally do not buy from smallholder farmers.[55] Interviews have highlighted how ARC used to provide training and considerable support for the sector, but that this is no longer the case.[56]

The Council for Scientific and Industrial Research (CSIR) focuses on R&D activities in agro-processing, collaborating with industry associations and government departments, and also working directly with SMEs. It appears however, that most of the support is through collaboration with industry associations. Small players either respond to calls for support from the CSIR, or directly approach the CSIR for funding with ideas that they may have. The CSIR also offers training for SMEs and pilot facilities where applicable. Support is offered in improving existing technology and providing recommendations on equipment. The CSIR's Bio-Manufacturing Industrial Development Centre supports SME development through funding from both the CSIR and the Department of Science and Technology. Its Enterprise Creation Development programme supports SMEs in agro-processing by assisting with pre-feasibility studies and business plans. With regards to agro-processing, the CSIR assists in improving technologies that SMEs use and in developing new, including niche, products. An agro-processing strategy that focuses on 'Agri 4.0' to help prepare the sector for the 4th Industrial Revolution is a more recent focus of the CSIR. As part of this, the CSIR focuses on biodiversity, food safety (including working on mobile food safety testing labs) and technologies for traceability, sustainability and smart logistics. CSIR at the time of the interview, was working on customising a mobile app to support the dairy industry focusing on smallholder farmers.[57] The level of support to SME dairy processors specifically, appears limited.

2.4. Key economic trends in dairy

Key economic trends in dairy processing in South Africa are presented below. These trends provide insights on where the opportunities lie for medium and small dairy processors.

Sales values

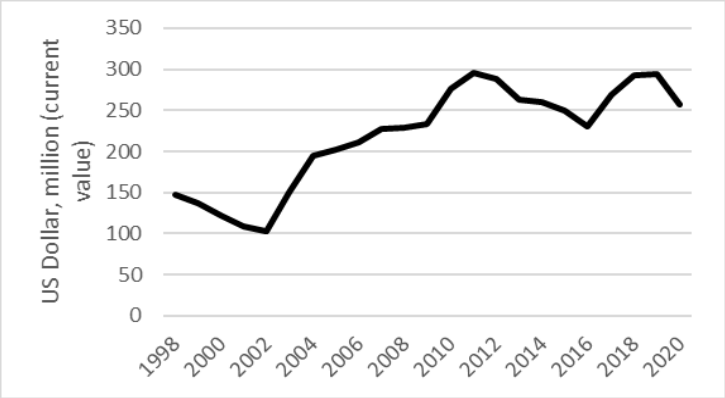
Sales volumes of dairy products increased by 74% between 1998 and 2020 (Figure 5).

[55] SADKI05

[56] SADKI08

[57] CSIR, SAG02.

Figure 5: Value of sales (Current prices (USD, mill)), 1998–2020



Source: Quantec. Average annual ZAR/USD exchange rate from https://www.ofx.com/en-au/forex-news/historical-exchange-rates/yearly-average-rates/

Dairy processing is part of the manufacturing sector in South Africa. The sales value of dairy products has been around 2% of total manufacturing sales over the 1998–2020 period (Quantec data). The fastest growing sales between 2018 and 2019 have been in the maas, yoghurt and pre-packaged cheese categories. UHT, which has grown significantly in previous years, as previously noted, has shown a slight decline between 2018 and 2019 in terms of comparable sales over twelve months between 2018 and 2019 (Table 4).

Table 4: Changes in quantities of retail demand by product category (Nielsen data supplied to SAMPRO, published in LACTO DATA May 2020)

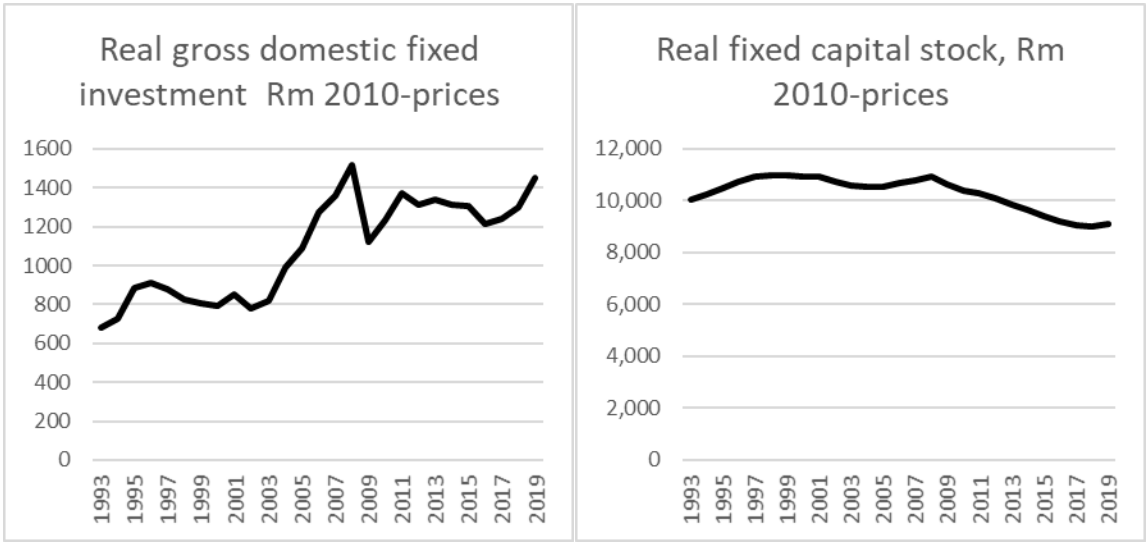
Product	Sales in the month of Dec'19 versus sales in the month of Dec'18	Sales in the 3 months from Oct'19-Dec'19 versus sales in the 3 months from Oct'18-Dec'18	Sales in the 6 months from Jul'19-Dec'19 versus sales in the 6 months from Jul'18-Dec'18	Sales in the 9 months from Apr'19-Dec'19 versus sales in the 9 months from Apr'18-Dec'18	Sales in the 12 months from Jan'19-Dec'19 versus sales in the 12 months from Jan'18-Dec'18
Fresh milk	-0,9	-1,6	-0,6	-1,6	-1,7
Ultra-high temperature treated milk	7,8	-6,0	-7,9	-5,4	-1,5
Flavoured milk	9,8	-5,2	-3,3	-1,7	0,1
Yoghurt	16,8	7,6	8,3	8,0	8,7
Maas	13,4	10,7	14,2	17,4	18,7
Pre-packaged cheese	12,0	5,1	4,7	5,3	5,6
Cream cheese	-4,4	-2,3	-1,6	-1,2	-1,0
Butter	12,1	-1,3	-0,9	1,3	3,2
Cream	-4,3	-5,9	-6,0	-5,0	-3,5

Source: Lacto Data, May 2020

Investment

Real gross domestic fixed investment has been increasing since liberalisation, spiking in 2008. This highlights an increase in physical assets in the dairy sector, such as machinery, land, buildings, installations, vehicles, or technology, likely to be as a result of investments by multinationals. Increased investments should lead to increased real fixed capital stock, however, as seen in Figure 6 below, fixed capital stock has seen a decline. This suggests that capital is being lost from the capital stock each year at a higher rate than it is being accumulated. Reasons for this include depreciation and scrapping of old, worn out or obsolete machinery.

Figure 6: Investment measures

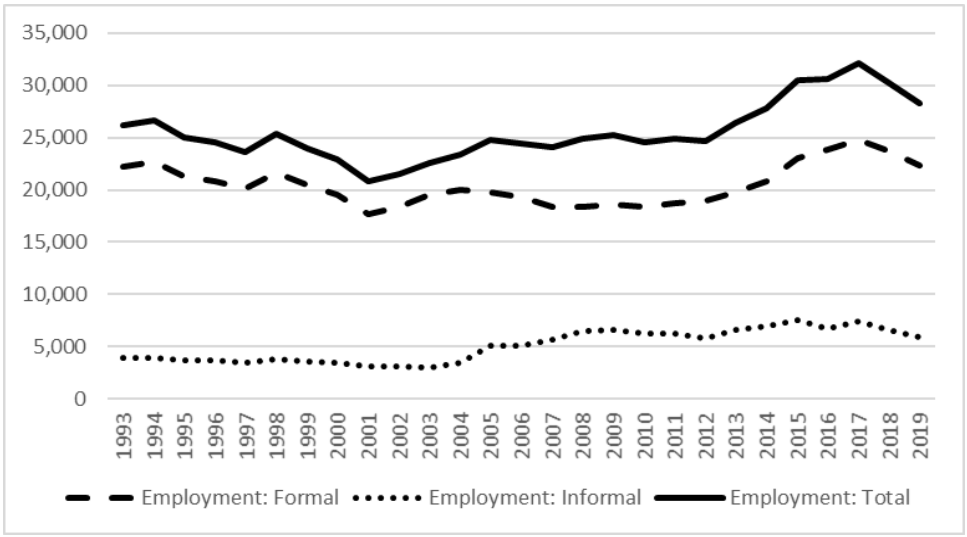


Source: Quantec

Employment

With unemployment being one of the gravest challenges in South Africa, the contribution to employment of dairy processing industries is of interest. As seen in Figure 7, employment growth (excluding primary production) has remained more or less stagnant, with (mostly) under 30,000 workers. Employment in dairy processing accounts for around 11% of total employment in food, beverages and tobacco manufacturing.

Figure 7: Employment in dairy processing



Source: Quantec

Trade

South Africa is a net exporter overall of processed dairy products since 2010, with significant exports to the Southern African Development Community (SADC) region. It is a large net exporter especially in the following categories (Figure 7 below):

- Milk and cream, not concentrated nor containing added sugar or other sweetening matter
- Milk and cream, concentrated or containing added sugar or other sweetening matter
- Buttermilk, curdled milk and cream, yogurt, kephir and other fermented or acidified milk and cream, whether or not concentrated or containing added sugar

In the following categories, it is a smaller net importer:

- Whey, whether or not concentrated or containing added sugar or other sweetening matter; products consisting of natural milk constituents, whether or not containing added sugar or other sweetening matter, not elsewhere specified or included
- Butter and other fats and oils derived from milk; dairy spreads
- Cheese and curd

However, imports of butter and cheese are reducing as is evident in the upturn in 2018 and 2016 respectively in Figure 8 below.

Growing exports of dairy products have been driven by the main South African supermarket chains that have spread into the region since the 1990s. Who Owns Whom (2019) reports that UHT milk imports have been a threat to fresh milk sales in South Africa. The interviews also suggest, although there have been conflicting versions of this, that milk powder imports have been substantial and have been the main threat.[58] The trade data available is not sufficiently disaggregated enough to isolate milk powder. According to the DSA, imports are of good quality milk powder and UHT, but these are periodic according to market conditions, seasonality, local supply and the strength of the Rand. Retailers also import when there are local shortages. According to DSA, imports are not a serious threat to local production.[59]

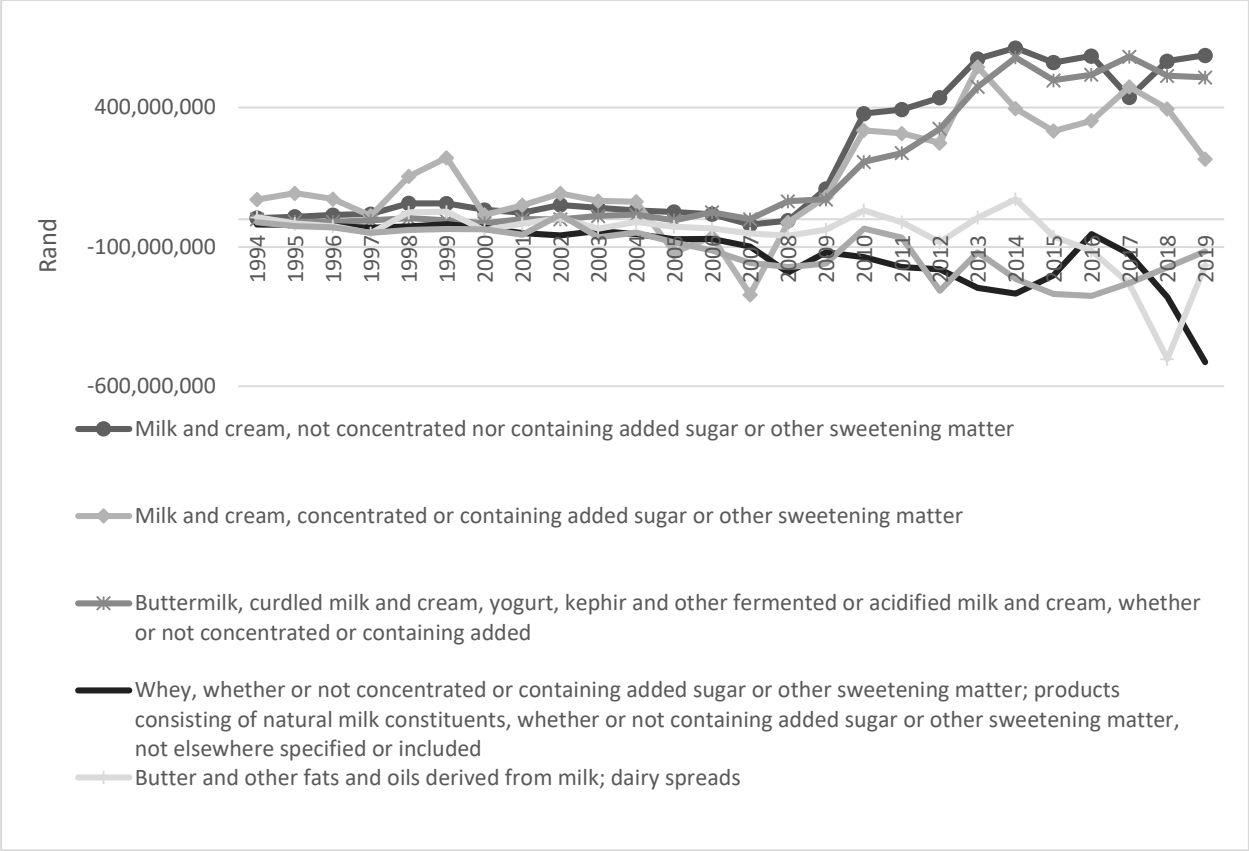
Another organisation, the SASDT, highlights that imports are significant but are for high specification or specialised milk-derivative products[60] that are not available in South Africa and

[58] SADS19: *'The other major policy issue they raise is the government's liberal approach to milk imports. Powdered milk imports are raised as a particular challenge because it threatens smaller dairy farmers. We know so many dairy farmers that closed due to powdered milk imports...government support for dairy industry is not there ... powdered milk and UHT [long life milk], they bring it in much lower than farmers can sell.'*
[59] SADKI07
[60] Such as infant formula, ice cream, whey.

that are used in the industrial food manufacturing market. Imports of such products are usually sold at a premium. Multinationals like Nestlé and Unilever further, have worldwide agreements with specific suppliers for specialised products. Whole milk powder and steamed milk product imports are said to come from Europe. UHT milk imports are dependent on the milking cycle in South Africa. Legislation does not allow processors to reconstitute imported powder into liquid milk. Powdered milk has to be reconstituted into value added and fermented products.[61]

Notwithstanding imports, the overall positive trade balance that has persisted reflects the capabilities that the large processors in South Africa have. It is rare that medium-sized and small processors export substantially, except for very high-quality niche products such as specialised cheeses.

Figure 8: Net exports of processed dairy products



Source: Quantec

[61] SADKI11

2.5. Applicable regulatory frameworks and competition interventions

2.5.1. Applicable regulatory framework[62]

The South African dairy industry is highly regulated. Under the Food Safety Act there are forty-eight regulations governing food, and thirty-five of those relate to dairy.[63] Some of the main legislations governing the sector include the following (Dairy Standard Agency, 2016):

- Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972) – governing most the health-related aspects in the industry
- The Animal Diseases Act, 1984, Act 35 of 1984
- Export: Veterinary procedural Notice 20/2010-01 Standards for the registration of a veterinary approved dairy establishment for export
- Agricultural Product Standard Act, 1990, Act 119 of 1990
- South African Bureau of Standards compulsory and non-compulsory standards relating to Food safety and quality
- International Standards Organisation requirements and guidelines
- Codex standards (Alimentarius International Food standards) relating to production of various products and processes along the value chain

There are also guidelines for the operation of the sector[64]:

- Code of Practice for Milk Producers
- Code of Practice for the Secondary Industry
- Documentation Development
- Guidelines for the interpretation of quality problems in milk
- Guide to Dairy Product Labelling
- International Dairy Federation/Food Agriculture Organisation (IDF/FAO) Guideline Documentation on: Animal Production and Health; Guide to Good Farming Practice 2004

[62] See Bosiu et al., 2017
[63] SADKI07
[64] Dairy Standard Agency website.

There is a range of regulations pertaining to the environmental implications of the dairy sector, including with regards to whey disposal into streams/natural river systems. These are not discussed further in this working paper. For a discussion of this and related issues, see Meissner and Ohlhoff (2020).

There are multiple platforms which influence regulation. Policy is made through the Department of Health's Directorate of Food Control, and its Food Legislative Advisory Group, in which industry participates. There are constraints to changing regulation, including from the WTO, the International Dairy Federation and Codex. Organisations like the DSA have an opportunity to influence regulation in conjunction with SABS. Legislation needs to evolve as technology and pathogens in dairy evolve.

New dairy regulation (R260) was introduced by the former Department of Agriculture, Forestry and Fisheries and implemented in March 2016. This requires firms to indicate ingredients lists, batch codes and best by/use by/sell by dates on packaging. It further added restrictions with fat content categorization (Euromonitor, 2017). Products with 4.5% fat are considered high fat products, 3.3–4.5% fat as full fat, 1.5%–3.3% as medium fat, 1.5–3.3% fat as low fat and products containing 0.5–1.5% fat as fat-free (Euromonitor, 2017). The impact of this on interviewed SME processors is discussed in Section 5.

Certain regulations are imposed on dairy processors by supermarket chains as part of their private standards. These include the following, further discussed in Section 5.1.2:

- International Organisation for Standardisation (ISO)
- Food Safety System Certification (FSSC22000)
- Hazard Analysis Critical Control Points (HACCP)

2.5.2. Overview of past competition interventions affecting the dairy value chain

The high levels of concentration in the dairy sector, like in many other agro-processing markets, mean there are a few large firms that have market power. In Table 5, the contribution of the five, ten and twenty largest enterprises in different food and manufacturing markets are presented. As can be seen for dairy manufacturing, the top five firms contribute to around 60% of the income in manufacturing, while the top ten and twenty control around 72% and 85% of income respectively. This is higher than the average levels of concentration in the food and beverage sector in the country. These high levels of concentration in the dairy sector have been confirmed by the DSA, who note that the top twenty processors produce 85% of output, with the remaining 15% from SMEs.[65]

[65] SADKI07

Table 5: Contribution of largest enterprises in food and beverage manufacturing

Food and Beverage Manufacturing Income	Relative contribution of five largest enterprises (%)	Relative contribution of ten largest enterprises (%)	Relative contribution of twenty largest enterprises (%)
Average	**29.4**	**38.7**	**50.1**
Production, processing and preserving of meat and meat products	25.9	39.5	53.7
Processing and preserving of fruit and veg	51.0	64.6	77.2
Manufacture of vegetable and animal oil and fats	58.0	77.2	96.9
Manufacture of dairy products	**59.5**	**71.6**	**84.7**
Manufacture of grain mill products, starches and starch products	65.8	75.9	87.8
Manufacture of prepared animal feeds	45.4	61.7	77.0
Manufacture of bakery products	66.6	72.3	80.3
Manufacture of sugar, cocoa, chocolate and sugar confectionery	81.5	92.3	96.8
Manufacture of macaroni, noodles, couscous and similar farinaceous and other food products n.e.c.	44.8	59.5	70.1
Manufacture of alcoholic and non-alcoholic beverages	77.7	84.9	89.9

Source: STATSSA (2017) Manufacturing industry: Financial, 2017. Report No. 30-02-03 (2017)

Concerns of firms with market power abusing their positions have resulted in several competition interventions in the dairy sector:

- The Competition Commission initiated a complaint against seven processors in 2006 – Clover South Africa, Parmalat, Ladismith Cheese, Woodlands Dairy, Nestlé, Lancewood and Milkwood Dairy – for collusion through price fixing and the use of exclusive supply agreements. The processed colluded to fix purchase prices of raw milk from producers through the exchange of information, resulting in the squeezing of producer margins. Exclusive supply agreements forced producers to sell their total milk production to certain processors, which prevented them from getting better prices from others, or from selling to smaller processors. There were also concerns around milk surplus exchange agreements between the processors that served to keep end prices high, and concerns of bilateral price fixing and market allocation between players. The case was withdrawn by the Commission in 2011 on procedural grounds with respect to how the case was initiated and investigated. Prior to withdrawal however, the Commission settled with Lancewood in 2009, who admitted that it was involved in price information exchanges as alleged by the Commission. The case against the others was dropped.[66]

[66] http://www.compcom.co.za/wp-content/uploads/2020/02/Competition-Commision-Newsletter-Web.pdf

- In 2009, a complaint was brought by the MPO against the major retail chains, alleging that the supermarkets used their bargaining power to suppress prices at the farm.[67] There is limited public information about what subsequently happened to this complaint.
- In 2013, the South African Milk Co-operative (Samilco), made up of dairy farmers, applied for an exemption from the Competition Commission to share sensitive information with each other as part of collective negotiations with processors. The exemption was awarded to the applicants in recognition of their weak bargaining position with processors, and further allowed for an 'equalization mechanism' for farmers with excess supply in any period to re-distribute this to others who were unable to meet their contractual volumes. This ensured that prices were not depressed for all farmers if some flooded the market with oversupply of raw milk.[68]
- In 2014, the Commission investigated an abuse case against Parmalat around a bonus scheme to reward milk producers in the Eastern and Western Cape for continuous uninterrupted twelve months' supply of milk to Parmalat. The concern was that the scheme may amount to an exclusionary practice. The case was dropped in 2016 following a lack of evidence.
- There have been several mergers in the industry, at least four of which involved Clover buying up niche product processors (yoghurt, juice, Ayrshire milk etc.). The mergers involving Clover were subject to conditions on employment and on its distribution services, recognised as an essential service in which Clover had a strong position.[69] These mergers serve to increase levels of concentration in dairy markets.
- In 2015, the Competition Commission initiated the Grocery Retail Market Inquiry. Finalised in 2019, recommendations from the inquiry panel included finalizing the new buyer power regulations in the amended Competition Act. At the time the MPO lodged its compliant in 2009 noted above against the supermarket chains, abuse of buyer power was not explicitly prohibited in the Act. The buyer power provision was subsequently introduced to the Act as part of the amendments in 2019. In subsection 4(a) under the abuse of dominance provisions of section 8 of the amended Act, the provision prohibits a dominant firm as a buyer in designated sectors to require from or impose unfair prices or trading conditions on small and medium businesses or firms controlled or owned by historically disadvantaged persons. The amendments allowed for the Minister in the DTIC to designate certain sectors in which this

[67] https://mg.co.za/article/2009-07-04-supermarket-chains-investigated;
https://www.farmersweekly.co.za/archive/competition-commission-to-probe-retailers/
[68] Government Gazette for the initial exemption application, No. 36760.
http://www.gov.za/sites/www.gov.za/files/36760_gen856.pdf.
[69] Competition Commission Media Release 16 October 2014. Available here: http://www.compcom.co.za/wp-content/uploads/2014/09/Commission-recommends-approval-of-the-acquisition-of-Dairybelles-businesses-by-Clover-with-conditions.pdf

provision is applicable. These include agro-processing, grocery wholesale and retail, and the e-commerce and online services sectors. The key objective of the buyer power provisions is to enhance the participation of small and medium-sized businesses and historically disadvantaged firms in the economy by protecting these firms from unfair exploitation by dominant buyers of their products. The inquiry ventilated pervasive practices that could amount to such exploitation before the amendment of the Act came into effect legally, again paving the way for stronger future enforcement cases. Recommendations emanating from the inquiry included requirements that FMCG suppliers ensured uniform trading terms to different buyers, and that trading terms must have objective justifications based on cost savings, supply chain efficiencies, efficient risk-sharing or sales promotion. These needed to be clearly communicated to all retailers, including qualifying criteria. The inquiry stated that if voluntary compliance by suppliers on these recommendations was not reached, government should introduce a legislative framework in the form of a code of good practice. With respect to small suppliers, the inquiry recommended that the amendments to the Competition Act on buyer power be confirmed and that draft enforcement guidelines detailing specific practices as unfair be confirmed in the final regulations and guidelines. These processes were subsequently completed by the Competition Commission in May 2020. The Competition Commission is already undertaking enforcement investigations under the buyer power provisions in the dairy industry.[70] (Bonakele, das Nair and Roberts, forthcoming).

[70] https://www.polity.org.za/article/competition-commission-issues-buyer-power-enforcement-guidelines-2020-06-01

3. Methodology

For the purposes of this working paper, this section focuses on the primary data collection. The primary data collection involved two key methods.

First, a survey was conducted on selected formal small and medium-sized dairy processors in South Africa. Heterogeneous purposive, rather than random, sampling was undertaken, allowing the gathering of information from a diverse range of SME dairy processors to provide insights on the dynamics at this level of the value chain. The survey questions were semi-structured but with large numbers of open-ended qualitative questions. All formal players in the milk industry are required to register with Milk SA. This database was sorted by province and cleaned to identify processors. This was done through a combination of internet searches and telephone calls. Publicly available information was also used to understand the relative size of dairy processors based on number of employees and their product portfolios. Who Owns Whom industry reports were used to obtain this information for some of the processors, as well as details on production capacity, product profiles, sales values, as well as contact details. Similar data on informal dairy processors is not available.

Second, KIs were identified from internet searches, past research and Who Owns Whom industry reports, as well as organically from recommendations from the fieldwork. While the survey was administered to SME dairy processors, the KIs were targeted more widely at other stakeholders that have an important impact on the industry, including those as listed below.

The surveys and KIs were preceded by a stakeholder workshop conducted in Johannesburg in which identified stakeholders, including government departments such as the DTIC, the Department of Agriculture, Land Reform and Rural Development (DALLRD), the Department of Small Business Development (DSBD), the Agriculture Research Council (ARC) and the Council for Scientific and Industrial Research (CSIR), in addition to the industry associations and dairy processors, participated. This workshop aided in further refining the sample for surveys and KIs.

The project set out to conduct a minimum of thirty surveys and fifteen semi-structured KI interviews. The intention was to conduct these meetings at the firm's or organisation's business address, and to a large extent, this was achieved. Following restrictions of movement during the COVID-19 lockdown however, it was necessary to conduct some interviews and administer some surveys telephonically. A total of thirty-one surveys and fifteen KI interviews were conducted. A breakdown of the profile of the fieldwork is given below.

Surveys

The respondents for the surveys were dairy processing firms classified as either micro, small or medium according to the South African government's characterisation of firm size in manufacturing under which agro-processing falls under (as of 1 March 2019). The 2019 schedule

classifies an enterprise using two proxies – 'total full-time equivalent of paid employees' and 'total annual turnover' (Table 6).

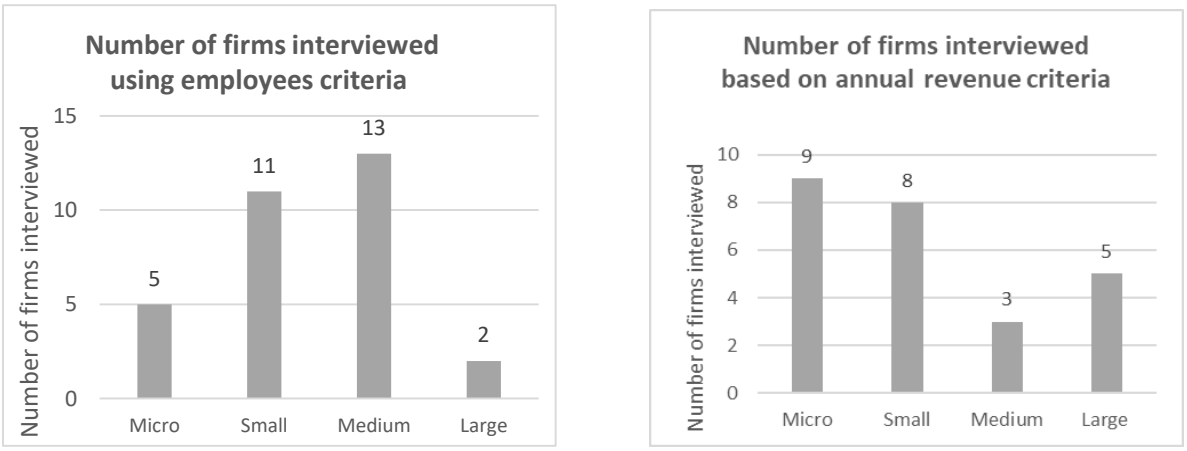
Table 6: Revised Schedule 1 of the National Definition of Small Enterprise in South Africa

(Standard Industrial Classification)	**Size or class of enterprise**	**Total full time equivalent of paid employees**	**Total annual turnover (ZAR)**
Manufacturing	Micro	0–10	<=10 mill
	Small	11–50	<=50mill
	Medium	51–250	<= 170mill

Source: No. 42304 Government Gazette, 15 March 2019

Based on the above, Figure 9 shows the number of firms interviewed based on each criterion separately. The five large firms surveyed, while large under the legal definitions, are not in the same league as the much larger multinationals like Clover, Lactalis/Parmalat etc.

Figure 9: Number of firms interviewed based on the National Definition of Small Enterprise in South Africa



Source: Survey data

Note: Six firms did not answer questions about annual revenue

The geographic distribution of interviews conducted is shown in Table 7 below. Interviews were conducted in Gauteng, KwaZulu Natal, Eastern Cape, and the Free State. Although Western Cape is a major milk producing region (see Table 1 and Figure 3 above), the dairy processors located in it are mainly large processors, and therefore not the focus of this study. For the small and medium-sized processors in the Western Cape, there was a low positive response rate of the firms. Gauteng was selected because it has the largest number of dairy processing companies in South Africa, as well as diversity in terms of size, despite not being a big milk producing region.

KwaZulu Natal and Eastern Cape were chosen because they are leading milk producing regions in South Africa. They also had high positive response rates with about 38% of firms in the Eastern Cape agreeing to be interviewed and about 29% of firms in Kwa-Zulu Natal agreeing to participate.

Table 7: Provincial distribution of survey respondents

Province	Number of interviews
Gauteng	15
Kwa-Zulu Natal	9
Eastern Cape	5
Free State	2
North West	0
Northern Cape	0
Western Cape	0
Mpumalanga	0
Limpopo	0
Total	**31**

Source: Survey data

Key informant interviews

KIs interviewed were identified based on desktop research and the stakeholder workshop. Some were also identified organically following recommendations gathered in other interviews. The KIs interviewed by category are given in Table 8.

Table 8: Types of stakeholders interviewed as key informant interviews

KI	Number of interviews
Small processors	2
Equipment suppliers	3
Government research and training centres	2
Standards agency (part of industry association)	1
Industry association/body	5
Producer-distributor	1
Support services, aggregation services, investor	1
Total	**15**

Source: KI data

A key limitation regarding key informant interviews is that there were no interviews in the packaging industry. The firms approached for interviews did not respond positively.

4. Variety and characteristics of surveyed firms

A snapshot of the variety of the firms surveyed is given in Table 9. These factors are discussed in more detail below.

Table 9: Snapshot of the variety of firms interviewed

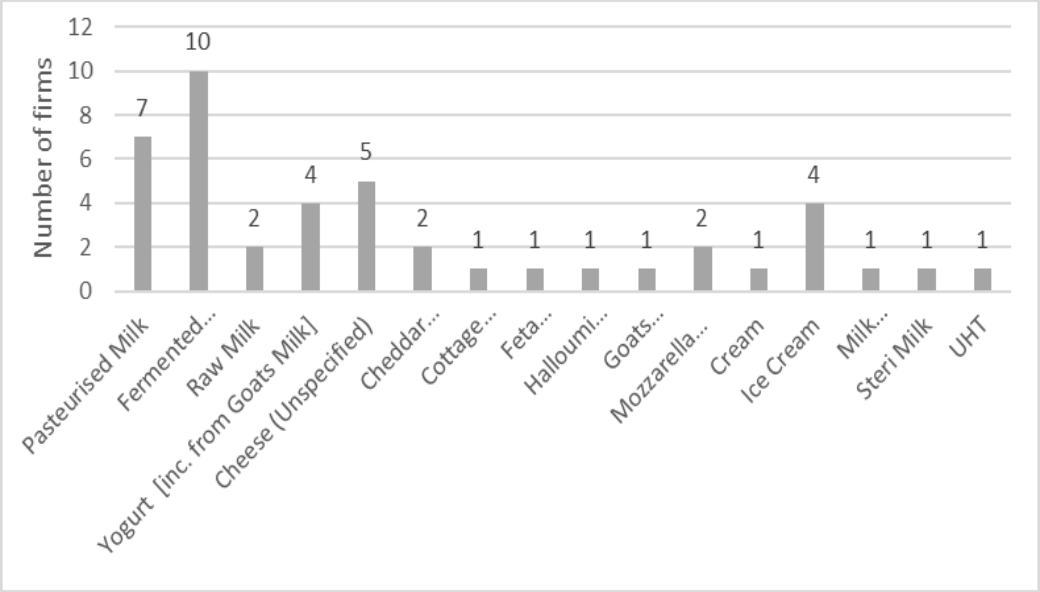
Variety of firms	
Number of firms	31 surveyed, 15 key informant interviews
Age of firms interviewed	59% were =<20 years old
Categorisation of firms (annual revenue)	9 Micro; 8 Small; 3 Medium; 5 Large
Categorisation of firms (number of employees)	5 Micro; 11 Small; 13 Medium; 2 Large
Registration	45% (company); 39% (sole proprietorship); 16% (partnership)
Average number of permanent employees	77 (Large and medium-sized firms skew this average)
Average revenue	$7,878,723 (Large and medium-sized firms skew this average)
Location of firms (province)	Gauteng, KwaZulu Natal, Eastern Cape
Location of firms	52% (Urban), 13% (Semi-urban), 35% (Rural)
Main product categories (Top 3 for the greatest number of firms)	Fermented milk ('maas'); Pasteurised milk; Cheese
Ancillary product categories	Cream; Yoghurt
Total number of products	Most firms produced either 2 or 4 products
Vertically integrated to milk production	35% of firms interviewed
Main sales location	Majority sold within the province they are located in; some sell to multiple location categories
Main sales channels	Main sales to supermarket chains and independent retailers; catering is third; wholesale is fourth
Sources of raw milk	Mainly independent (non-vertically integrated) farmers
Initial sources of start-up capital	Vast majority used personal funds
Who they compete with	53% compete with large firms
Had written contracts or supply agreements with buyers	57%
Membership with a trade association	87%

Source: Surveys

Most of the firms interviewed were established after 2000, with seven firms interviewed having been in operation since pre-1994. The average number of employees was seventy-seven. Most firms had between one and nineteen permanent employees. The average revenue for the surveyed firms was USD7,878,723 per annum and the median was USD2,471,754 (Survey data).

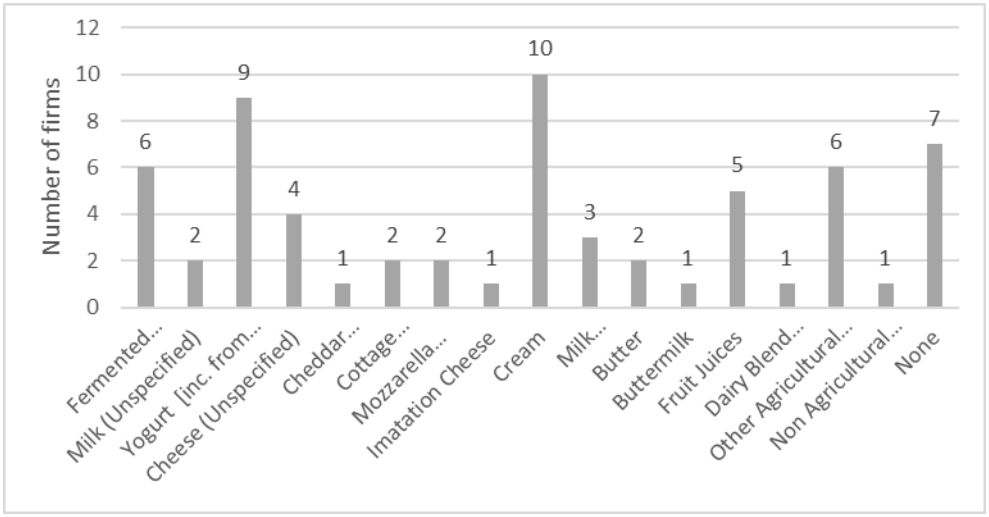
Ten firms interviewed produced fermented milk (maas) as their main product. Fermented milk is commonly consumed by low-income consumers along with the staple maize meal (Figure 10). Ancillary products were mainly cream and yoghurt (Figure 11). There is a large diversity of processed products in the dairy sector, offering opportunities for SMEs to produce differentiated and niche products such as cheese, maas and yoghurt.

Figure 10: Main product categories



Source: Surveys

Figure 11: Ancillary products



Source: Surveys

Most of the firms interviewed produced between two and four products. Few firms produced a wider range of products than four. This is in contrast with large processors that produce a wide range of products. Offering a wider product range gives the large processors an advantage in supplying the main supermarket chains as it allows them to negotiate deals across a wider range of products and supermarkets prefer to deal with fewer and larger suppliers.

5. Data presentation and preliminary assessment

This section presents data collected through the survey and KIs and undertakes a preliminary analysis which contributes to unpacking the three main objectives of the IIAP project for future publications. There are overlaps between the objectives and the analysis undertaken under one objective is relevant for the others.

5.1. OBJECTIVE 1: Determine how differing institutional environments, structures and dynamics of dairy value chains shape opportunities for inclusion of agro-processing SMEs

Several factors affect the structure of and dynamics in dairy value chains. This section focuses on barriers to entry for SME processors and the challenges faced in accessing routes to market. It also assesses the institutional environment that dairy processors are in. The assessment provides insights on factors that create or perpetuate barriers to entry, and on the question of power dynamics in value chains, particularly in relation to market and buyer power of lead firms at different levels. The distribution of margins is then discussed to further understand where rents are extracted in the value chain. Lastly, forms of competition and factors that affect competitiveness of SME dairy processors are evaluated.

Although this section focuses on barriers to entry into the secondary or processing level of the value chain, it is important to note that challenges faced at the upstream production/farming level also filter down to SMEs at the processing level, for instance, poor quality of raw milk because of a lack of skills and knowledge, poor extension and testing services and weak hygiene and safety compliance, among other factors. These are discussed more broadly in Section 3 under the political economy factors.

5.1.1. Barriers to entry in dairy processing

Small and medium-sized dairy processors face considerable barriers which limit their entry and participation in the dairy value chain. Although not a homogenous grouping, the barriers to entry faced by medium-sized dairy processors are similar, and amplified, for small processors. Barriers to entry fall under two main categories. The first is structural barriers to entry. These barriers exist because of factors inherent in the nature of the market, some of which are as a result of regulation and policies. The second category is strategic barriers, created by the conduct or behaviour of firms in the value chain with market power. Strategic barriers serve to exclude new players or limit their ability to access markets or expand (see Banda et. al, 2015). Collectively, the different barriers perpetuate high levels of concentration seen in Table 3 above. In this section,

structural barriers to entry are discussed. Strategic barriers are discussed in sections 5.1.2 to 5.1.4.

Economies of scale and scope

Following deregulation, the entry and growth of large, multinational dairy processors pushed large volume operations to cater for the growing consumer demand as urbanisation increased. Small producers or farmers struggled to supply these large processors. Small-scale dairy farmers had to either invest further and grow raw milk production to supply large processors,[71] become producer-distributors or find other routes to market that did not require large-scale production, or exit altogether.

Not having a wide range of products also makes it difficult for SMEs to supply to large supermarket chains. The large chains prefer to deal with fewer suppliers that can supply a wider range of products,[72] including for administrative purposes. This puts small processors with a small range at a disadvantage. As seen in Table 4, most SMEs interviewed produced either only two or four products.

Skills and industry knowledge

A major barrier to entry is the lack of skills and knowledge in dairy processing. The dairy industry in general is knowledge-intensive and complex.[73] This was also highlighted by equipment suppliers, who struggle to supply emerging and black farmers and small processors, and producer-distributors, who have not had experience in the dairy sector. Specialized education in the dairy industry was deemed essential[74], but equally important is the need for improved basic financial management skills, such as banking knowledge, saving for reinvestment and managing budgets. Specialised capabilities are needed to keep track of measurements of many variables, which requires experience.[75]

Another crucial skills shortage amongst SMEs is in marketing. Interviewees highlighted the importance of owner-managers' direct involvement in marketing to build trust in the product and to provide the relevant information about the product to buyers. [76] Government training programmes do not teach SMEs about how to sell their products in shops and the communication skills required for this.[77]

Small processors that have been family-owned businesses for many decades are often focused on production and are less savvy about marketing, particularly to modern retail channels. As one interviewee noted, they were not 'marketing people'.[78] The lack of skills and experience amongst

[71] SADKI02
[72] SADS31
[73] SADKI10
[74] Contributing to the dearth of skills has been the decline of a dedicated field of study in dairy science at universities. SADKI11.
[75] SADKI06
[76] SADKI03
[77] SADKI03
[78] SADS02

new entrants in dairy processing is further discussed in Section 5.1.3 from the perspective of equipment suppliers who step into the shoes of government and public training institutions to assist new entrants with basic training.

Brand loyalty

In South Africa, customers are very brand loyal. As retail becomes more sophisticated, branding becomes more important.[79] There is a perception that what is sold in the formal supermarket chains is always of better quality. The route through which the product is sold therefore affects the brand goodwill. A product may sell better just because it is in a high-end supermarket like Woolworths, even though the same product is sold at a spaza shop.[80] SMEs need to invest in creating customer loyalty and this comes at a cost.[81]

Regulatory requirements, including in packaging and labelling

Regulations present structural barriers to entry for SME processors. As set out in Section 2.5.1, hygiene and food safety are among the basic regulatory requirements to operate in the dairy sector. Firms appear to accept the importance of complying with basic standards set by the DOH given the serious health implications that contaminated milk products can present. However, concerns have been raised about the degree to which some of these basic standards are enforced. Some processors interviewed were rarely visited by DOH officials for inspections82, while others were of the opinion that some of the DOH officials that did inspections insisted on what was, in their view, petty requirements.[83]

More pressing concerns were raised about labelling regulations. Labelling is governed by the National Regulator for Compulsory Specifications (NRCS), and the Food Stuffs Act, 2010 in which regulation 146 deals with labelling.[84] At the time of interviews, this regulation was under revision, and was sent out for comment. The objective was to update the regulations to align with global standards, but this had not been formally published at the time of writing.

Interviewees noted that the frequent changing of labelling regulations (changes in print size, information required on labels etc.) imposed costs on them such as investing in new printing plates and new labels when new flavours are introduced.[85]

For medium-sized processors, differing packaging and labelling requirements in neighbouring countries make exports difficult. An example was given about Botswana's different requirements which meant that the firm had to invest in different labelling for exports. Additionally, exporting to Lusophone countries in the region like Angola and Mozambique require labelling in Portuguese.[86] Harmonisation of regional standards on packaging and labelling would reduce

[79] SADKI06
[80] SADS17
[81] SADS19; SADS23; SADS24; SADS25
[82] SADS02; SADS19
[83] SADS20
[84] SADKI07
[85] SADS18; SADS22
[86] SADS28

costs for exporters. Concerns were also raised by one firm about South Africa's use of 'E label', while internationally 'I' labels are used. Special concessions are required from DAFF/DALRRD to use 'I' labels.[87] Some firms noted the difficulty in getting export certification, [88] with one firm making the following claim: *'Government is prohibiting... we want to export, there is huge demand for export for flavoured milk. But I cannot export to SADC without the state vet coming and approving every truck that leaves here. The conditions required by the state vet are 'onerous', so we have given up trying to get the export license and have given up exporting.'*[89]

Middle income consumers are also increasingly demanding more knowledge about where their food products are coming from and what is in it, and labelling requirements conveying such information are becoming more important ('front of packaging' labelling). According to SADST, '*As soon as you go the labelling route, consumers want to know what is in products… If you are small [a small company] you are not going to spend all that money on labelling*.'

Consumer power from middle-income consumers therefore shapes certain labelling requirements. This can be described as a form of constitutive power. Constitutive power is a diffuse form of power that can be leveraged by social and consumer movements, which shapes norms and conventions (Dallas, Ponte and Sturgeon, 2019). The costs of investment to have information for labels determined and designs, as well as verification through lab tests is estimated to be around ZAR30,000.00. [90]

Low-income consumers however do not put the same emphasis on origin and contents of food products, as price is their main selection criteria. Therefore, for small dairy processors that are producing for low-income consumers, such legal requirements on labelling pose an additional cost for a feature that is not demanded by their customer base.

Given these difficulties with keeping up with labelling requirements, the DSA created a digital tool for SMEs to assist with understanding labelling requirements, in addition to providing free phone consultations.[91]

Adhering to regulations also requires access to testing facilities. SMEs do not have their own labs and often depend on one another and rely on the goodwill bigger companies that have access to facilities. Particularly in the Eastern Cape, access to labs is a problem. Alternatively, SMEs need to travel regularly to provide samples to private labs. This comes at a cost (estimates are that one sample can cost up to R1,000, and samples are needed for every batch). [92]

Labour regulations and costs

Labour regulations were raised as creating barriers to entry and expansion. Further, the complexity of the regulations often requires hiring external consultants to help the SME navigate

[87] SADS28
[88] SADS22
[89] SADS14
[90] SADKI11
[91] SADKI07
[92] SADKI07

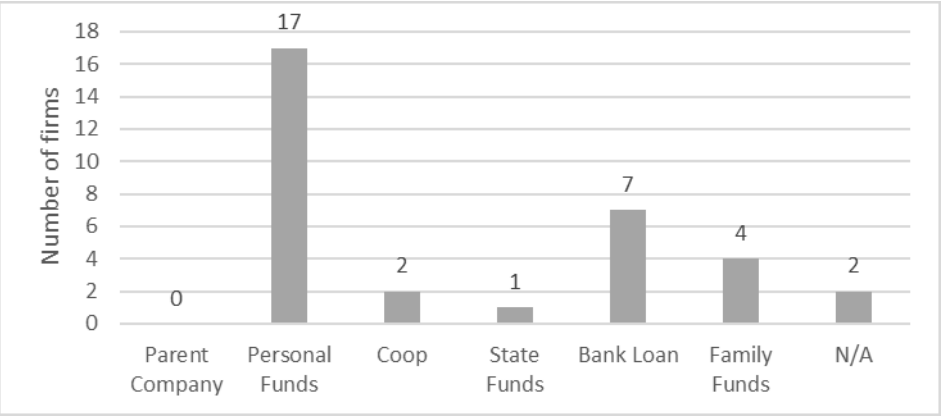
through the processes.[93] The recent minimum wage requirements also led to problems and retrenchments for some SMEs.[94]

At the production level, the MPO also noted that the increasing cost of labour was driving some farms out of business. An example was given on how in New Zealand, one person was employed per 100 cows, but in South Africa, one person was employed per 50–60 cows. There is also a movement of labour away from farms into cities resulting in a shortage of workers. Automated or robotic milking systems are being used in South Africa, with at least two fully robotic milking systems in place.[95]

Access to finance

Access to finance has been commonly stated as a barrier to entry. The survey revealed the typical sources of start-up capital for the firms interviewed. Figure 12 shows that seventeen respondents used personal funds to start up their operations, while seven accessed bank loans. Personal and family funds are often not available for previously disadvantaged individual-owned SMEs.

Figure 12: Initial sources of start-up capital



Source: Surveys

Seventeen firms interviewed had applied for loans over the past five years, while twelve did not try to apply for loans during this period. Of the firms that applied for loans, fourteen of the seventeen applied for commercial finance from banks, three accessed state funds and one used vendor financing.[96] In terms of whether these applications from banks and the state were successful, interviewees noted that all of those that applied were successful.

Overall, a key question is whether access to different forms of finance is available to SMEs at favourable and developmental terms. While around 55% of interviewed firms did indeed access funds, many respondents highlighted the costs and difficulties in doing so. The main reasons cited for not accessing finance were the high cost of loans and onerous requirements from commercial

[93] SADS19
[94] SADS21; SADS18.
[95] SADKI10
[96] Vendor financing refers to the lending of money by a vendor to a customer, who then uses the money to buy the vendor's inventory or service.

banks[97] and the red tape involved in accessing government funding. There was a general sentiment that sources of finance were not supportive of SMEs.[98] Other sources of funding like venture capital were also considered too expensive. Some firms interviewed did not want to take on debt and preferred to use retained earnings,[99] or use funding from parent companies.[100] A lack of collateral also made it difficult to access financing, with one cheese maker noting that banks and financial houses only finance hard, generic assets like generators and vehicles that they can seize in the event of default. Dairy equipment is highly specialised and customized and therefore is not often useful as collateral.[101] At the farming level, black farmers, particularly those in former homeland areas on communal land, struggle to access finance. Without ownership of land as collateral, black farmers struggle to get into the dairy industry.[102]

As highlighted in Section 2.2, development finance institutions like the IDC do not fund SME dairy processors if the funding request is less than ZAR1 million and if there is no risk sharing from operating private sector investment partners. For amounts over this, some of the firms interviewed received funding from the IDC.

High cost of equipment

The specialised equipment needed for dairy processing is expensive and presents a major barrier to entry for SMEs which is compounded by a lack of access to funding. The specific equipment includes pasteurisers, homogenisers and cream separators. Some equipment is not available in South Africa, while others require a high degree of technical skill to operate. This is discussed in detail under Objective 2 below.

Utilities and state of infrastructure

Major obstacles noted by all firms interviewed were in the costs and unreliability of electricity and water supply. Both utilities are absolutely critical in the dairy sector for food safety and hygiene purposes, and given the highly perishable nature of milk products.

Unreliable electricity supply from public utility quasi-monopolist, Eskom, and local municipalities, has held back expansion plans of some of the firms interviewed. Some firms are seeking alternative renewable energy sources, which come at significant cost,[103] and others are planning to switch from electricity to using paraffin to run boilers, which accounts for a significant portion of their electricity costs.[104] Unscheduled load shedding and power cuts spoil thousands of litres of milk in vats.[105] One firm noted that they sometimes faced two to three outages a week due to a combination of the municipality's and Eskom's unreliability, resulting in significant wastage due

[97] SADS10
[98] SADS02; SADS10; SADS21
[99] SADS21; SADS22; SADS25; SADS03
[100] SADS26
[101] SADS23
[102] SADKI10
[103] SADS19; SADS18
[104] SADS02; SADS12
[105] SADS07

to milk spoiling.[106] Pasteurised milk requires cold chain throughout the process, requiring electricity.[107] Several firms were forced to invest in generators to mitigate against load shedding, but this comes at a significant additional cost including that of diesel to run the generators.[108] There is also the risk of equipment damage during electricity surges and unplanned outages, and the period between the electricity going out and the generators kicking in can also spoil milk products. For producer-distributors, electricity outages lead to having to milk cows manually, and to having to choose between running their milking operations or their processing operations.[109] Further down the value chain, small independent retailers or spaza shops that SME dairy processors sell their products to often do not have generators and, according to one firm interviewed, are increasingly shifting away from perishable products as a result of electricity problems.[110] The high price of electricity was also raised as an issue by most firms interviewed,[111] with a general consensus that it greatly harms small businesses.

Unreliable water supply is equally damaging for the industry.[112] Some firms complained about not having adequate water supply, and the lack of maintenance by municipalities has contributed to deteriorating water infrastructure. Some firms have invested in big tanks on-site and have also had to purchase water when their taps run dry.[113] One firm had a borehole.[114] This problem is perpetuated by the drought, which affects dams that are on site for some processors.[115]

The poor state of infrastructure, particularly road infrastructure to farms, is also making it increasingly difficult for collectors to access farms. This is said to be worse in the inland provinces, although the problem is country-wide. Inability to access farms leads to needing to destroy raw milk after a period of seven days from milking, which comes at an additional cost.[116]

5.1.2. Relationships with buyers: routes to market

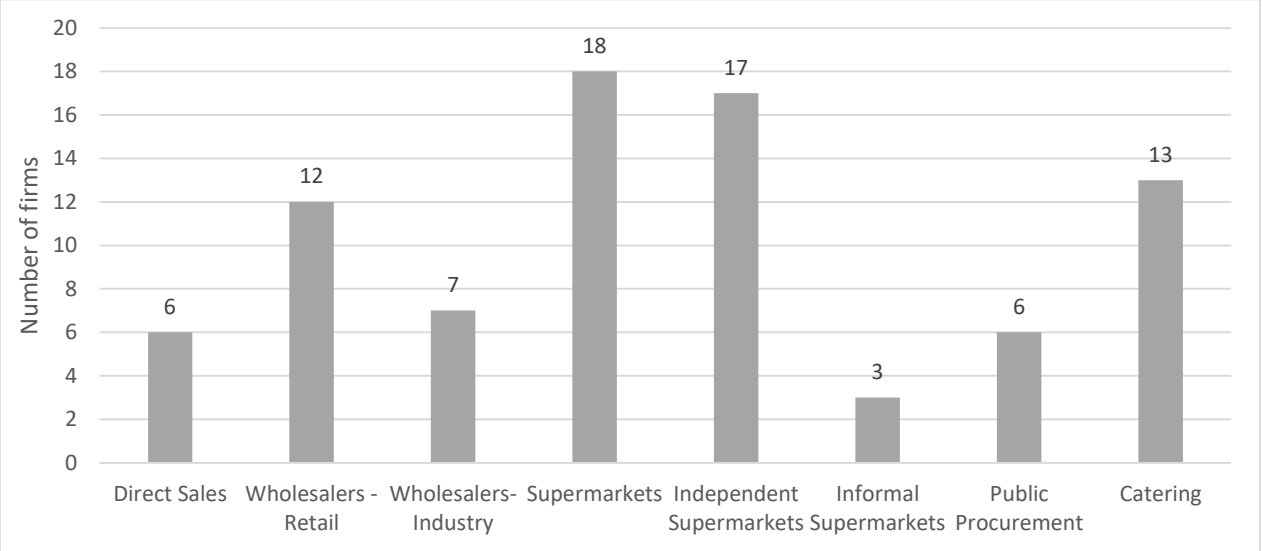
Access to markets is critical for SMEs in dairy processing and can be a major barrier to entry, particularly given the perishable nature of the products. Medium-sized processors tend to sell within their province, but some also sell into immediate neighbouring provinces, as well as nationally and internationally (particularly into SADC markets).[117] In certain cases, some small firms export niche products like specialised cheeses.

Within these destinations at a national level, processors often sell through more than one customer category or sales channel. Figure 13 shows that eighteen firms interviewed sell through

[106] SADS14
[107] SADS12
[108] SADS05; SADS07; SADS21
[109] SADS17
[110] SADS31
[111] SADS01; SADS02; SADS04; SADS05; SADS10; SADS11; SADS16; SADS22
[112] SADS10; SADS22; SADS26
[113] SADS28
[114] SADS30
[115] SADS29
[116] Steinacker, J. (2021). Dairy sector 'being milked dry'. Sunday Times, 25 April 2021
[117] SADS27; SADS03

formal supermarket chains, although these sales usually only made up a small proportion of their total sales. This was because of the difficulties in supplying the formal supermarket chains as discussed below. Other important channels through which greater proportions are sold are independent supermarkets and wholesalers who on sell to retail and to catering (restaurants, cafes etc.). These are discussed below.

Figure 13: Customer categories/Sales channels



Source: Surveys

Just over half the firms interviewed had not changed their routes to market in the past five years. For those that did change who they sold to, most added new channels or customer categories.

The firms highlighted some of the challenges they faced with buyers generally. The key challenges faced are delayed payments, or non-payments from buyers, rebates payable and costs of returns. Most of the firms interviewed had 30-day payment terms with buyers (all categories of buyers). However, more nuanced responses were provided to some of the open-ended questions around terms and conditions, and challenges in finding new buyers, that suggest significant difficulties, particularly in supplying supermarket chains.

Supplying supermarket chains

At least thirteen firms revealed the difficulties in supplying supermarket chains. With regards to supermarket private standards, firms highlighted the difficulties in getting the required higher certifications and standards, especially for firms that only have the basic Department of Health certification. According to one firm, these certifications are '*hard to get and maintain, cumbersome to adhere to in terms of reporting requirements and expensive*'.[118] Even those that have additional food safety certifications, like Hazard Analysis Critical Control Points (HACCP) as demanded by supermarket chains, highlighted that certification is not easy to acquire.[119] Food safety certification was highlighted as being difficult to obtain and expensive, costing one firm

[118] SADS02
[119] SADS10

ZAR6,000 per month for testing the product in an external lab. For the same firm, the audit certificate costs ZAR40,000 a year through an external consulting company that does the audits, reports of which get sent to the UK for validation.[120] A medium-sized dairy processor explained how supermarket chains will not buy from suppliers who do not comply with their private standards. These include International Organisation for Standardisation (ISO), and Food Safety System Certification (FSSC22000) which costs ZAR45,000 per audit per site. This is over and above health and safety FSSC 45001 requirements. Private standards by supermarkets are audited twice a year.[121] Meeting private standards of supermarket chains is out of reach for many small processors.

In addition to private standards, the power dynamics in the negotiation of trading terms is often heavily skewed in favour of the main chains. Firms noted the difficulties in securing good terms with the major supermarket chains given their small size.[122] One firm highlighted the power that the big supermarket chains like Pick n Pay and Shoprite Checkers have in that '*they can kill small processors in a tick by delaying payments, charging rebates, distribution and merchandise fees*'. This firm stopped supplying these supermarket chains given these and other reasons, such as the minimum 'retainer' the chains or distributors to the chains required (ZAR20,000 per month), fees that they incur (10% for the distributor that they would have to go through), and supermarket rebates (24% for Shoprite Checkers, and 12–14% for Pick n Pay). Other conditions imposed on them before they stopped supplying supermarkets included the requirement that they had to keep shelves 90% full at all times, and that payments were required to keep shelves full, as well as payments if they don't sell. Other costs passed on to the supplier included an advertising fee of 6%, even though the supplier was not a national supplier. All of these requirements raised costs to supply to supermarket chains and squeezed margins for the small processor.[123] For another processor, negotiating supply agreements with supermarkets was difficult, and some of the challenges they faced included rebates (9–10%), late payment (sixty days from statement), shelf space payments, returns policies (where they, in effect, have to 'buy back' 3–4% of their products).[124]

The onerous returns policy of supermarkets was also highlighted by another processor as one of its biggest challenges. According to this firm, supermarkets order large volumes to keep shelves fully stocked at all times, but then force suppliers to pay for waste if the product doesn't sell. Some stores return 10% of their products. This is a challenge because it is not in the supplier's control once the product is on the supermarket shelf. The power of retailers is evident from this firm's account in terms of the threat of not getting future business if they don't adhere to the supermarket's return policy, and in terms of the large markups made by retailers (estimated at 40–50%).[125] This speaks to the distribution of risk between retailer and supplier. The risk of non-sale is entirely borne by the supplier, even if the supermarket does not play its part in driving

[120] SADS11
[121] SADS28
[122] SADS11; SADS20; SADS22
[123] SADS11
[124] SADS14
[125] SADS13

sales. The value of the rebates and fees for specials that are payable are not always evident to the processor, and in one case, the processor was of the view that the specials that they were forced to pay for were not always conducted by the supermarket.[126] The challenge of rebates charged by supermarkets, particularly Checkers and Pick n Pay, as well as the liability of returns was noted by another interviewee as putting pressure on their margins. For these reasons, the firm does not supply supermarkets.[127]

One industry organisation highlights how, because dealing with the large retailers is so difficult, it discourages smaller processors from doing so, particularly because of weak/bad payment.[128] The following extract from the interview is illustrative of the nature of rents extraction by the main supermarket chains through delaying payments to suppliers – '*Whenever I deal with smaller companies, I would discourage them from going to [sell to] retail. For specific reasons, they [retailers] are extremely bad payers. They live off interest [since they typically sell products long before paying back the suppliers, the revenue earns interest at the bank*].' The interviewee highlights how retailers typically take several weeks (30–60 days) to pay suppliers while the smaller dairy farmers and processors have weekly or bimonthly expenses (such as weekly wages). This misalignment creates a cash flow crunch for smaller players.

These challenges are not limited to small processors, however. Even medium-sized processors highlighted that, regardless of whose fault it was, they were liable for all costs and logistics of returns when supplying supermarkets.[129]Another medium-sized processor also noted the high costs of rebates and merchandisers, especially if they are required to use the supermarket's own merchandisers. They estimate that retailers take about 7.5% off their margin for all the trading terms.[130]

The costs of merchandisers and head office fee requirements, in addition to long payment terms of the supermarkets, made it difficult for one of the producer-distributor's interviewed to sell to supermarkets. Payment terms of sixty days, with retailers like Pick n Pay taking ninety days, put pressure on them to meet daily running costs and weekly salary costs. They note that it is only the big producers like Clover who can meet these costs and end up supplying most of the brands including house brands to supermarkets.[131] This perpetuates the high levels of concertation in dairy processing seen in Table 3.

Another processor described the red tape involved in supplying supermarket chains. Despite being located 500m from a Pick n Pay store, it has not been able to list with them for ten years given the onerous processes of centralized procurement through head office.[132] Further, the rebates eat into their margins. The hierarchical relationship between supermarkets and suppliers

[126] SADS13
[127] SADS21
[128] SADKI11
[129] SADS27
[130] SADS28
[131] SADS20
[132] SADS18

is captured by this firm as follows: *'These retailers and wholesalers are a highly dictative bunch. If you don't accept the price they propose, it [your product] is off the shelf* '.[133]

Processors with niche products, like certain cheeses, appear to have a bit more bargaining power against supermarkets. However, even one of these players preferred to *'stay away from supermarkets'* given what they call *'exploitative trading conditions'*, which include complex processes and long payment terms (sixty days from statement). This is despite them having a niche cheese product, and alternative offtake from specialist retailers as well as their own retail outlet. [134]

Moving from supplying independent retailers, cafes and general dealers to supplying large formal retailers is also a challenge for even medium-sized dairy processors.[135] The basket of products offered is often too small and the delivery and other supply costs become too high for SME processors.[136]

Some firms interviewed also supply house brands to the main supermarket chains, for instance in UHT milk (although less so for small players who do not have the technological capabilities and capital to produce UHT), yoghurt[137] and flavoured milks.[138]House brands are sold under the supermarket's and not the processor's name and are made to the specifications of the supermarkets. Often given the lack of branding and marketing required, margins made on house brands are lower than on branded products. In some cases, exclusivity is required by supermarkets when supplying house brands.[139] A medium-sized player produces house brands for two main supermarket chains.[140] Another produces the house brands for a third large chain. However, one small processor interviewed highlights that supermarkets' own brand UHT milk and certain cheeses are actually imported, often through existing large processors. This processor claims that *'Millions of litres are imported for Checkers (Shoprite) through Coega Dairies, while SPAR UHT milk is imported through Woodlands Dairy*'.[141]

In summary, the research exposes typical forms of dyadic and direct power on the part of the supermarket chains, with the latter having considerably more bargaining power than SME processors supplying them (Dallas, Ponte and Sturgeon, 2019). The relationship between small and medium-sized dairy processors and supermarket chains has elements of different forms of governance as identified by Gereffi and Fernandez-Stark (2011). Elements of modular governance exist in that the complex transactions between supermarket and supplier are relatively easy to codify. Suppliers in modular chains tend to make products to a customer's (the supermarket chain's) specifications and are fully responsible for the risks involved. Modular

[133] SADS18
[134] SADS19
[135] SADS22
[136] SADKI10
[137] SADKI11
[138] SADS31; SADS22; SADS14
[139] SADS31
[140] https://www.fairfielddairy.com/
[141] SADS15

governance aspects, such as formal contracts, also apply here. However, so do certain elements of relational governance, such as the ability of lead firms to specify what it needs and to exert control over suppliers. Particularly in the case of supplying house brands, relational linkages take time to build, and the costs and difficulties required to switch to a new partner can be high. Lastly, several elements of captive forms of governance also resonate in the relationship between SME processors and supermarket chains, where small suppliers sell to a few large buyers that wield significant power, monitoring and control over them, and there is a higher degree of power asymmetry in the relationship. Private standards imposed by supermarket chains lead to close ties and high switching costs, particularly for the supply of house brands, for suppliers. However, even this form of governance does not completely apply as the relationship is not purely captive in that the processors interviewed all have other routes to market discussed below.

Therefore, the existing literature on forms of governance is not fully suited for these types of value chains. As an adaptation to the existing governance framework, the degree to which rents can be extracted, and the distribution of risks by players in each node of the value chain would be a useful indicator of power in agro-processing to retail value chains. This may require the creation of a new characterisation of governance.

Supplying independent wholesalers and retailers

While supermarket networks have grown and spread in South Africa from urban to peri-urban and rural areas, the difficulties highlighted above often mean that SMEs sell a much greater proportion of their production through other routes to retail market. These include independent wholesalers and retailers, who also on-sell to informal retailers like spaza shops in peri-urban and rural areas. Some wholesalers, independent retailers and spaza shops are members of, and are supplied by, buyer groups or voluntary trading organisations. The main buyer groups in South Africa are Unitrade Management Services, Buying Exchange Company, Independent Buying Consortium, Independent Cash & Carry Group and Elite Star Trading. These buyer groups play an important role to support the independent wholesalers and retailers that are under their banners. By buying in bulk for stores under their banners, these stores benefit from economies of scale and scope. They also assist independent retailers by providing marketing and advertising support, as well as skills development and technological support. Many of the retailers under their banners are foreign-owned (das Nair, 2019).

The power dynamics between dairy processors and independent wholesalers and retailers are a lot less skewed than that with the main supermarket chains. For one black-owned dairy processor for example, it is less onerous to supply independent wholesalers than the main supermarkets, given that wholesalers do not require merchandising and have lower rebates than supermarket chains. There are also fewer physical constraints with shelf space and storage with wholesalers than with supermarkets, which enables fewer deliveries relative to sales. According to this processor, business dealings with the head offices of supermarket chains which already have preferred suppliers is difficult, and it is easier to deal with independents.[142] With less market

[142] SADS17

power, the concerns around abuse of buyer power that arise in the case of supermarket chains are lower through these routes to market.

Prices are negotiated primarily based on cost-plus factors, capped by prevailing market prices.[143] Seventeen firms had written contracts with buyers, while thirteen did not. However, the seventeen includes firms that also sell to supermarket chains. For dealing with informal retailers, there are typically no contracts.

The governance structure between dairy processors and independent wholesale and retail routes is more **relational** in nature than with the main supermarket chains (Gereffi and Fernandez-Stark, 2011). Although buyers and sellers do not rely on complex information that is not easily transmitted, as the literature describes such relationships, there are frequent interactions in which trust plays an important role.[144] These relationships require particular types of social knowledge and access to networks to navigate.

Despite these routes to market being critical for SME dairy processors, there are still challenges faced in supplying them. These outlets are much smaller in size and lack fridge space (if they have fridges at all. Informal spaza shops may not have fridges). Owners of these outlets often lack basic knowledge of hygiene and contamination, leading to wastage and dangerous products being sold to consumers. These outlets are looking to sell longer-life products, like UHT milk, because of this. However, SME processors do not produce UHT milk given the high costs. This leads to the possibility that these retailers would switch to purchasing from large dairy processors who have the capabilities to produce UHT milk, with consequences for SME dairy processors if they lose this route to market.

Further, many informal retailers operate on a cash-basis, with no bank accounts or insurance, given that they are foreign owned. At times, they are unable to pay for goods received, especially when their customers in-turn buy on credit and are unable to pay them.[145] The margins are slim supplying this route to market and price competition is said to be intense, given a key target market of low income consumers. Some degree of brand loyalty needs to be built to maintain sales.[146]

Like with sales to main supermarket chains, SME processors bear the costs of returns of spoilt milk if the independent retailer orders too much. There are also safety concerns of dealing with these retailers on a cash basis, with increased risk of hijackings.[147]

Independent wholesalers and retailers, both formal and informal, are a critical route to market for SME dairy processors and strengthening them benefits the whole value chain. However, greater research is required on the role of independent wholesalers and retailers.

[143] SADS02; SADS03; SADS04; SADS05; SADS07; SADS10; SADS11; SADS12; SADS13; SADS19; SADS17; SADS23
[144] SADS09; SADS15; SADS19
[145] SADS31
[146] SADS11
[147] SADS21

Supplying industrial food markets and food service industry

Another route to market for SME dairy processors is to food and food service industries. The latter is made up of restaurants and coffee shops, takeaways, fast-food outlets (both franchised and independent) and catering services. The sector generated a total revenue of around R68.27bn in 2018 and is estimated to employ over 200,000 people. It grew at around 2.8% (year on year from 2014 to 2018) in real terms and 9.3% in nominal terms.

There is significant vertical integration in the food services industry. Lead players such as Famous Brands that owns well known fast-food and restaurant retail outlets like Steers, Wimpy, Milky Lane and Mugg & Bean are backwardly integrated to producers and manufacturers of dairy products, potatoes, roasting and packaging of coffee etc. Taste Holdings, another large player, has its own distribution centres and manufacturing facilities that make pizza sauces, bastings, condiments, dough pre-mixes, spices, other value-added meat etc. (Who Owns Whom, 2019). Large companies, like Bidvest, are also key players who offer catering services to industries, such as airlines.

Some SMEs interviewed supplied a substantial proportion of their production to the catering market. One firm, for example, noted that 40% of its sales were to a catering group who runs kitchens in hospitals. This firm had a contract with the group.[148] Another firm started making yoghurt to supply private schools and old age homes through a catering company. They also supply luxury/exotic cheeses to a catering company.[149] For one firm, supplying the catering industry which in turn supplies schools, hospitals, airlines and hotels, as well as supplying these channels directly, constituted 90% of their sales.[150]

The relationship between SME dairy processors interviewed and the catering sector appears to be less onerous than that with supermarket chains in terms of contract negotiations and returns policies.[151]

This route to market holds potential for SME food processors and is largely under-researched. There is also little by way of targeted policy support for SMEs supplying through this route.

Supplying through public procurement

Some SME dairy processors interviewed also supply schools, hospitals and prisons through government procurement programmes. However, the reliability of this route to market has been questioned. Two firms interviewed noted that government procurement involved restricted contract terms, and that they had no certainty as suppliers were continuously changed.[152] One firm changed its labelling to cater for government procurement but was then dropped without explanation by the trader/intermediary between it and the government. The instability and uncertainty in government tendering processes has led to this firm preferring to move away

[148] SADS05
[149] SADS11
[150] SADS13
[151] SADS13; SADS05
[152] SADS25

from public sector supply schemes. According to this firm, they *'never know if the feeding scheme is going to continue, in terms of who owns the tender*'. They get asked to supply at very short notice through traders supplying the public sector.[153]

Supplying directly for public procurement is difficult for many of the white-owned dairy processors interviewed as they do not have the required BEE credentials (see Section 5.3.2). This forces them to use intermediaries, middlemen or traders[154] to access this route to market. For suppliers that do supply through public procurement, getting timeous payment has been a well-recognised problem, which has debilitating impacts on SMEs.[155]

5.1.3. Relationships with key suppliers and competition concerns

Relationships with main input suppliers

The relationship of SME processors with their suppliers is critical for their sustainability. While different firms interviewed ranked input costs differently as a proportion of total costs, with some not providing orders of magnitude, the cost of raw milk was unanimously the biggest proportion of input costs (Table 10).

Table 10: Cost category breakdown

Cost category	% of total costs, range
Variable costs	
Raw milk	50–90
Packaging	12–25
Electricity	10
Transport, distribution and logistics	7
Rent	No consistent figures provided
Fuel	No consistent figures provided
Feed (for vertically integrated firms)	70
Fixed costs	
Labour	8–40
Equipment	No consistent figures provided

Source: Surveys

The key cost determinants for producers include economies of scale (profitability is less or unviable in smaller herds); feed (pasture vs TMR); skills (highly technological environment); labour; technology; legal and environmental (methane emissions).[156]

Raw milk suppliers

Given the perishability of raw milk, supply is typically closely located to the processing facility. It is not surprising then that most processors source from within the province that they are located

[153] SADS18
[154] SADS29
[155] https://www.gov.za/speeches/public-service-commission-supports-president%E2%80%99s-call-payment-suppliers-within-30-days-12-nov#, accessed 31 January 2021.
[156] SADKI10

in. In terms of who dairy processors buy from, most source raw milk from independent, often smaller, farmers. Some source from multiple suppliers, including from their own farms.

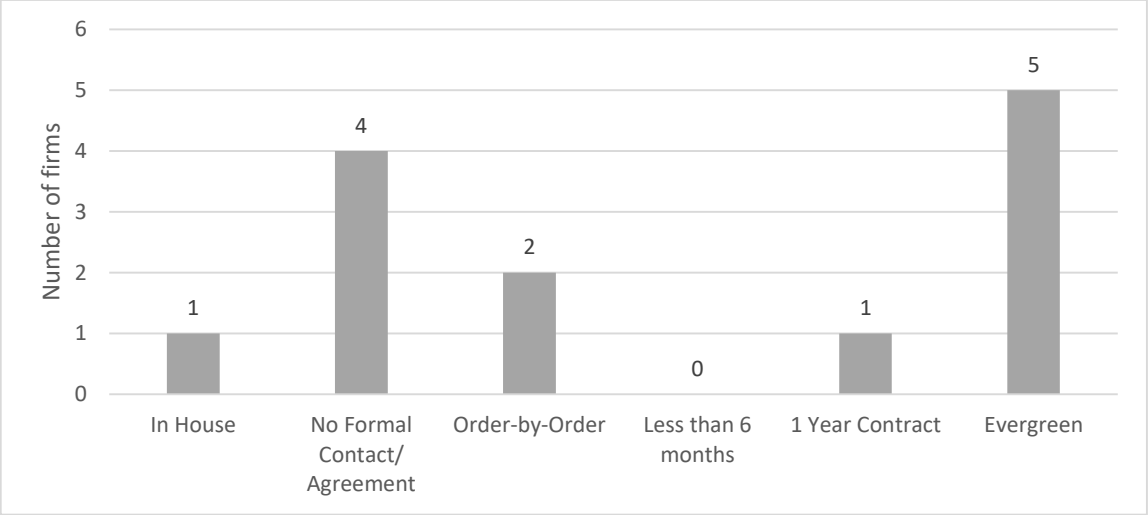
As noted in Section 2, in certain cases, traders such as Tip Top and Desmanda are used.[157] These (and other) traders are said to handle around 10% of the country's milk.[158] Desmanda is both a milk trader and logistics company. This reduces the transport and logistics costs for processors in collecting from small farmers. According to a processor, the use of traders gives them more flexibility than dealing directly with farmers. In the latter scenario, they have to take all the farmer's milk supply even if the farmer produces more raw milk than is needed.[159] Another interviewee noted that the use of traders makes it easier to manage the relationships with farmers, including the logistics of getting the milk from farms with poor road infrastructure[160] and difficulty in accessing farms if there are strikes and protest actions.[161] It also saves processors from having to look after their own fleet of transporting trucks, and the accompanying maintenance costs. A processor highlighted the difficulties in negotiating with farmers, particularly given the variability of milk production. Using these traders or brokers means that they face a more balanced situation and can consistently procure exactly what they need each month for their processing operations. This advantage does come at a slight premium however (fifteen cents per litre), but according to this interviewee, this premium is worth paying so that they do not get 'dumped' with extra milk in the summer months.[162] The traders therefore offer a new form of intermediation, which makes the relationship with farmers less onerous and complex for SME processors. It also reduces the risk for processors. On the negative side, the relationship and collaboration between the milk producer and the milk buyer/processor does not exist anymore and this forces the milk producer to find alternative sources of market information as part of advance planning.[163]

It is important to assess the degree of power that suppliers of input material have in the dairy value chain as this affects the margins and participation of SME processors. Our survey found that SME processors are in general price takers. However, this is a generalisation, and specific inputs have different dynamics. Processors may have a degree of negotiating power against milk producers, but less negotiating power against packaging companies. There are only a few, large packaging companies who supply material to the whole industry (discussed further below). The interviews highlighted how smaller processors had to 'take' pre-determined sizes and specs of packaging material given that they did not have the volumes to demand different moulds to be designed and manufactured for them.[164]

[157] SADS18; SADS14; SADS31
[158] SADKI10
[159] SADS18
[160] SADS18; See also SADKI10 on how the trader has the advantage of sourcing the milk where it is more convenient, allowing for better economic route planning and to source milk in a higher density production area.
[161] SADS31
[162] SADS14
[163] SADKI10
[164] SADS04; SADS15

Eighteen firms had credit facilities with their main input suppliers, while twelve bought on a cash basis. This needs to be evaluated against the terms these firms have with the buyers of their products. For instance, when they are forced to pay cash to their suppliers but have long credit periods with their buyers (for instance, with the supermarket chains), their cash flows are negatively affected. A range of responses was given on the nature of agreements with suppliers. While there were no formal contracts or agreements for four firms, five had 'evergreen' contracts (Figure 14). There was however a poor response rate to this question. Eighteen firms did not provide enough data to be categorised.

Figure 14: Nature of agreement with suppliers



Source: Surveys

With regards to payment terms, most firms reported to having 30 days within which they could pay suppliers.

Accessing raw milk of the required quality, consistently, is a challenge for SMEs. The large players sign exclusivity agreements with farmers, which ties up available supply of raw milk, even in surplus periods.[165] One processor likens the situation to 'a war' and notes '*A big processor like Fairfield, they won't share their milk with you. If you have a milk farmer doing 15,000 litres a day, Fairfield wants his 15,000. They don't want to take 13,000 and give you 2,000. They won't let you do 2,000.'* This processor highlights that it is difficult to find farmers to supply smaller processors, and that the large processors arrive at the farms in the early morning and take all the available raw milk.[166] The role that traders or intermediaries like Desmanda and Tip Top play in mediating the relationship between SME processors and farmers is therefore also important in this regard.

Quality has also been highlighted as a concern with emerging farmers. One processor highlighted how they dropped sourcing from three emerging farmers in a year given poor hygiene and high plate counts in the milk.[167] Another processor relies on small farmers for 20% of its raw milk

[165] SADS02
[166] SADS11
[167] SADS18

supply and has experienced more quality issues from them than from larger farmers.[168] A third noted that they had quality problems from time to time from raw milk that they procured through Desmanda.[169] Poor quality raw milk leads to wastage and to poor quality dairy products which fetch lower prices in the market. It also leads to reputational harm. Sixteen respondents noted that they had difficulties in getting the right price and quality from suppliers in general.

Price discovery for raw milk

Following the end of the administered pricing of raw milk, pricing has been determined through negotiations between processors and producers. The price of raw milk is said to vary based on volumes sold, milk solids and health of milk. This in turn, among other things, depends on soil quality, climate conditions etc. Different types of raw milk are used to make different products and prices can vary by 5 to 10% between high solid and low solid content raw milk.[170]

However, as discussed in Section 2.5.2 above, there have been competition concerns about the buyer power of the large processing firms, with allegations that prices of raw milk have been forced down to unsustainable levels for dairy farmers. The SME dairy processors are unlikely to be able to exert this downward pressure on raw milk prices given their much smaller volume requirements. But the depressed raw milk price also benefits SME dairy processors.

On one hand, the lack of a transparent price discovery mechanism appears to give large processors significant buyer power, allowing them to depress the price of raw milk from farmers. This works against the farmers who operate on lean margins.

On the other hand, there is sufficient 'transparency' of the price that the large processors pay farmers for raw milk, and this serves as the benchmark for the prices paid by SME processors. Several interviewees highlighted how the large processors, particularly Clover, determine buying prices which eventually set the benchmark. One interviewee noted that they pay a premium of 20% over what Parmalat and Clover pay.[171] Another makes the following observation, '*pricing is based on the 'Danone formula'. 'When prices increase, Clover talks first, the market will follow. We'll see, you speak to the other dairies as the other dairies pay a different formula. It is not price fixing; you ask them so all the farmers see what they are getting.*'[172] Firms like Clover are perceived to dictate the price of raw milk, in addition to allegedly controlling final market outcomes through offering specials and 'dumping' surpluses.[173] That the Clover price was used as a benchmark to 'check' prevailing prices of raw milk was also highlighted by a processor who noted that they would call Clover to check if the price of raw milk they were receiving from traders Tip Top and Desmanda.[174] This player goes on to note that such communication means that the dairies pay similar prices, within 5–10c per litre. Similarly, the traders also benchmark

[168] SADS12
[169] SADS06
[170] SADKI06
[171] SADS02
[172] SADS13
[173] SADS15
[174] SADS14

against Clover's price.[175] Another processor explains that the benchmark price from Clover determines '*the direction we should go in*'.[176] Even when there is no direct communication, the price that Clover pays to farmers acts as a focal point around which other processors coordinate tacitly on the basic milk price (see Scherer, 1970). There is some differentiation of this price based on quality, butterfat, plate count and somatic count.

Relationships with packaging suppliers

As seen in Table 9, packaging costs are significant in dairy processing. Packaging material includes bottles, containers, tubs and plastic sheeting and wrapping. There are only a few large suppliers of packaging material in South Africa. The firms interviewed sourced from the following companies: Nampak, Tetrapak, Pakpal, Polyoak, Polypak, Dairypack, MCG Industries and Gundle Plastics. SME processors, given their small volume requirements, as noted earlier, have limited ability to require these packaging companies to produce bespoke specifications of packaging that would suit them. They are often forced to purchase standard specifications from moulds that these companies already have and produce.[177]

In terms of negotiating power around prices, one firm noted that it had been able to play off packaging suppliers against each other to obtain lower prices.[178] Another was able to switch to a lower priced provider, although it noted that the lower priced supplier also raised prices three times in one year.[179] A third noted that packaging prices among plastic suppliers varied by around 5%, and therefore, it was not worth switching suppliers each time that there was a price change. This firm also noted that it was difficult for small processors to change suppliers given their small volumes.[180] There is therefore mixed evidence on the degree of competition between the packaging companies.

An interesting observation is the additional role that some of the packaging companies play. Nampak for example provides support in the maintenance of the bottling machine for one of the processors interviewed.[181] Tetrapak has also provided 'comprehensive' support for machinery, including technical and repair support, as well as spare parts.[182] There have been some innovations in packaging by the processors themselves, as discussed in Section 5.2.

Relationships with equipment suppliers

Similar to the role that some packaging companies play, the relationship with equipment suppliers is unique, and extends well beyond a simple supplier-buyer dyadic relationship. As discussed in Box 1, they fill a gap in providing services that government or agricultural/agribusiness training institutes should typically provide. As public expertise

[175] SADKI10
[176] SADS18
[177] SADS04; SADS15
[178] SADS09
[179] SADS20
[180] SADS21
[181] SADS06
[182] SADS15

hollowed out in this space, private companies stepped in to ensure that they continue to have a market to supply to in the future (see also Section 5.2.1 below).

Box 1: Relationship between equipment suppliers and dairy processors

Equipment suppliers for liquid hygienic foods like Guth South Africa supply equipment, installation services and aftersales services. Equipment in dairy processing is highly specialised and suppliers like Guth have significant capabilities, not just in high quality equipment supply, but also in building specialised capital equipment for which they have engineers and technicians, and in project installations. Guth supplies the South African dairy sector with stainless steel components (flow equipment, valves, pumps, fittings, heat exchanges), and has relationships with international manufacturers of cream separators, specialist homogenisers and cheese-making equipment, which they are able to install and run for dairy processors. They also build pasteurisers using imported components. Aftersales service is a very important component of their offering and maintaining relationships is an integral part of this.

Guth supplies all sizes of dairy processors in South Africa and in the SADC region, but a large component of their sales are to medium-sized dairy companies. Around 5% of its revenue is from small firms, although it noted that it has been receiving more enquiries from small companies seeking to enter the market. There are significant challenges in supplying small dairy processors, which highlight further barriers to entry. Guth notes that many small dairy processors lack dairy-specific experience, basic skills and training to run a dairy business. For these, and even more experienced customers, Guth has to provide much more than just the equipment. They have to provide extensive after-sales and technical advice. The need for this increases as technology becomes more sophisticated. Medium-sized firms expect firms like Guth to help them with aspects of their business, such as business plans, drawings and 3D models. Smalls firms also seek help with their business plans, commercial strategies and training. Guth highlights a critical training gap in the industry and note that MilkSA and ARC used to provide training historically, but no longer do so. A big problem that they see is a lack of adequate training given to smaller players who enter using government grants and loans. While the finance is important, how to run the business commercially is equally important.

Other equipment suppliers like Central Milk, a company that manufacturers a range milk processing equipment and cooling tanks, also creates business plans and does training for small-scale dairy producers. Central Milk aims to fill a gap in the market for small equipment for yoghurt, cheese and maas production by small farmers. This helps the farmer add value to unsold milk and produce products with longer shelf life. Central Milk makes equipment that can produce different products – fresh milk, maas, juice, yoghurt and water. The company runs short courses for farmers on how to make these products. The lack of education, skills, basic financial management know-how and marketing are cited as major constraints for small businesses in dairy.

Source: Guth South Africa, SADKI08; Central Milk, SADKI03

As discussed in Box 1, there is a gap in the market for high quality equipment for small processors. There are only a few companies that make small-scale equipment, and there have been issues with the quality which leads to hygiene problems. Imports from China are relatively cheap, but again, quality is a concern if suppliers are not known and trusted. [183]

5.1.4. Margins and rents extraction along the value chain

The previous sections mapped out the relationships between key players in the value chain. As discussed, dominance and issues of market power arise at:

- the processing level with respect to the large, multinational processors
- the retail level with respect to supermarkets
- input level with respect to packaging companies (greater research is needed to understand the dynamics at this level)

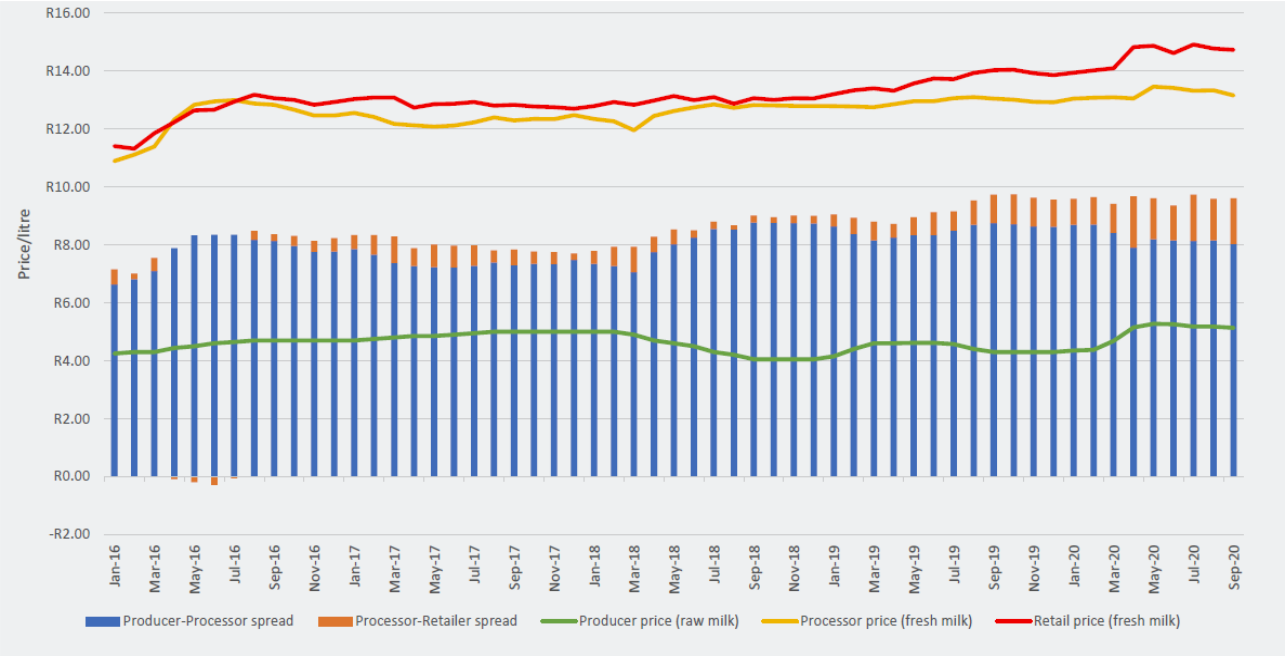
The Competition Commission in December 2020 released an essential food price monitoring report which assessed margins at different levels of the value chain between 2016 and 2020. In the earlier period, processors took significant margins in the spread between farm gate and retail prices of milk. This is in line with concerns that the industry previously raised, including the competition cases against the exercise of buyer power and the collusive 'depressing' of the purchase price of raw milk by large dairy processors. It is also in line with some of the interview findings highlighted above around the tacit coordination of raw milk purchase prices.

The Commission's report showed, however, that retailers seem to have started taking a larger proportion of the margin since 2019. This is evident in Figure 15 below where the processor-retailer spread is seen to increase and substantiates the evidence from interviews on the various fees and rebates charged by retailers.

The power of retailers was also highlighted by the MPO, who noted that retailers play a big role in shaping the milk price and affect the farm gate-to-retail spread substantially. The retailers are said to pressure processors, who in turn pressure farmers, to lower prices, while larger margins are extracted at the retail end.

[183] SADKI11

Figure 15: Producer, processor and retail milk prices and spreads, 2016–2020



Source: Competition Commission Essential Food Price Monitor (2020)

Note: Producer price is the price paid to farmers by processors for raw milk; Processor price is the price that processors sell processed fresh milk to retailers; Retail price is the price of fresh milk sold by retailers; Producer-processor spread is the difference between the processor price for processed fresh milk and producer prices for raw milk; Processor-retailer spread is the difference between retail and processor price for processed fresh milk

What is not yet clear is whether the traders are also able to extract rents within the value chain. While they handle only about 10% of the country's milk,[184] their share of milk handling in narrower regions or in specific provinces may be much higher and they may have a degree of market power in these regions. There have been concerns about traders 'destabilising' the market by shifting milk around the country. Bringing in milk in an area of shortage depresses the prices for farmers in that area.[185] We do not, however, have further information to evaluate this aspect.

5.1.5. Levels of competition and factors affecting competitiveness

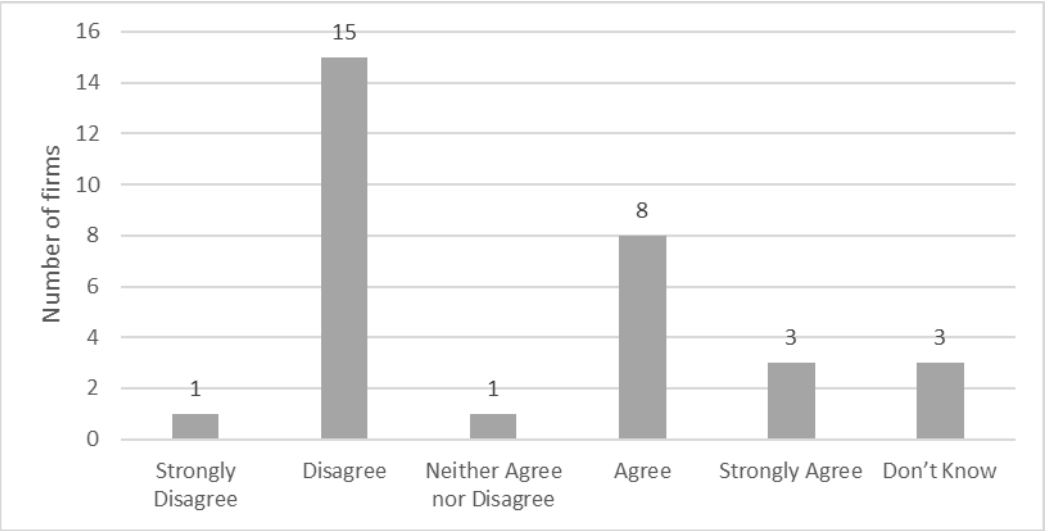
This section looks at the levels and forms of competition faced by SME dairy processors and the factors that affect their competitiveness. Nineteen firms interviewed perceived their market shares as increasing compared to their competitors, while the majority agreed or strongly agreed that competition is becoming more intense. Although the perception was that competition was becoming more intense, this seems to be from existing players, and not new entrants, as Figure

[184] SADKI10

[185] SADKI10

16 shows that almost half of the firms interviewed did not see the entry of new competitors as a threat, including the issue of some of the high barriers to entry discussed in Section 5.1.1 above. Some SMEs were in highly niche markets in which they felt that they were protected by their technological lead over rivals.[186]

Figure 16: The entry of new competitors is a threat



Source: Surveys

The majority of firms surveyed felt that there was a need to continually improve to remain competitive. This is important to understand the rationale for upgrading and the types of upgrading that firms undertook under Objective 2 below. Twenty-three firms had plans to expand output in the next year, although this was before COVID-19, and it is not clear if these plans were followed through. Table 11 below shows the factors that firms perceive as affecting competitiveness. Price and quality rank the highest. This is also important to understand the motivations for choices made by firms to upgrade. Firms that are not price competitive, or that do not provide the required quality, are at a competitive disadvantage, and need to upgrade in these aspects, at the very least, to survive.

Table 11: Factors that affect competiveness

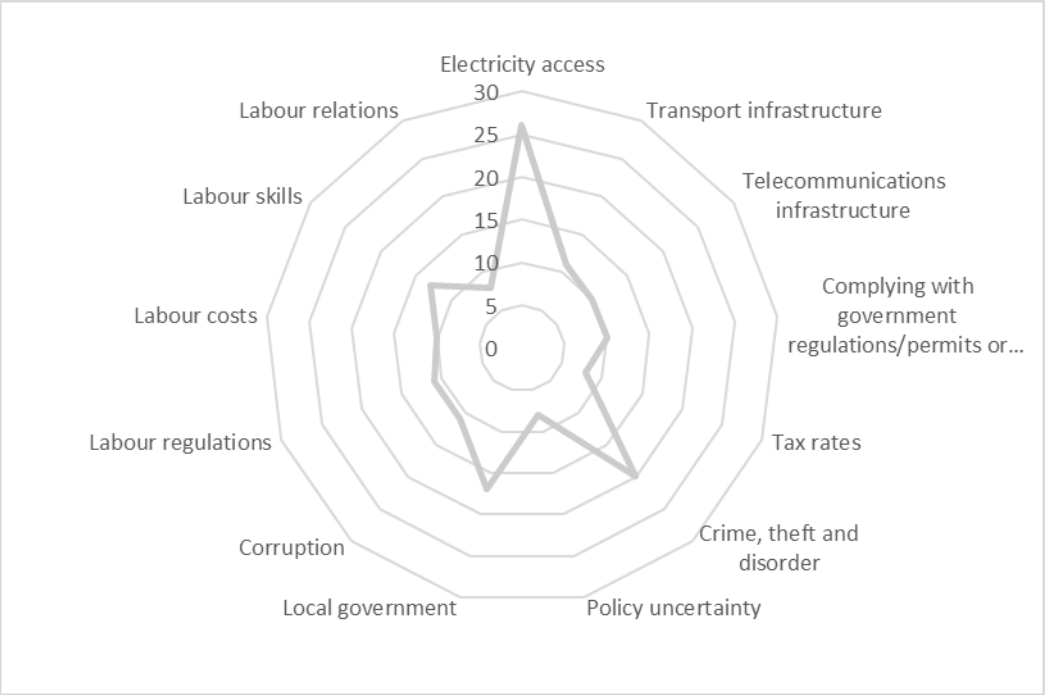
	Price	Quality	Delivery/ logistics	Volume	Brand	Location
Order of importance	Number of firms					
1st	13	15	2	0	1	0
2nd	9	14	2	0	4	2
3rd	5	1	12	7	4	2
4th	1	1	9	3	8	9
5th	2	0	5	9	9	6
6th	1	0	1	12	5	12

Source: Surveys

[186] SADS08

Figure 17 below speaks to factors that explicitly harm competitiveness. Most firms highlighted that a reliable electricity supply was a fundamental factor that affected their business, while around twenty firms noted that crime, theft and disorder negatively impacted competitiveness. Other factors harming competitiveness noted by more than five firms included lack of local government services and skilled labour.

Figure 17: Factors that harm competitiveness



Source: Surveys

5.2. OBJECTIVE 2: Determine the comparative political economy factors which enable or obstruct the upgrading of technological capabilities

This section sets out evidence from the survey and KIs on upgrading that reflects development of capabilities, innovation and adoption, or otherwise, of technology to contribute to the understanding of Objective 2. The political economy factors which enabled or obstructed upgrading have to be understood in conjunction with the assessments under Objectives 1 and 3.

5.2.1. Product, process and intersectoral upgrading

Upgrading refers to firms or countries maintaining or improving their positions within value chains. There are different types of upgrading – process upgrading (transformation of inputs into outputs more efficiently by reorganising the production system or introducing superior technology); product upgrading (moving into more sophisticated products); functional upgrading (acquiring new functions to increase overall skill content of activities); and intersectoral upgrading (moving into new activities) (Humphrey and Schmitz, 2000).

The different forms of upgrading, although discussed separately, overlap considerably. Often when a new product is introduced, there are new processes involved. Upgrading products and

processes are also both directly affected by the upgrading of equipment which is first briefly discussed below.

The hygiene standards of dairy products require highly specialised equipment. There are certain minimum equipment requirements for dairy processing: pasteurisers, homogenisers and cream separators. Medium and larger companies also use a standardiser in conjunction with a separator. Large companies can afford to use Bactofuges that remove bacteria from milk to give a longer shelf life. New technologies that are becoming increasingly important include those that allow for the recording of temperatures and pressures at all stages of production and create digital records of the temperatures. This is important for audit purposes for the retailers and for proof that milk has been correctly pasteurised. Automatic cleaning of pipes and equipment is also important to meet hygiene standards and new 'cleaning in place' (CIP) systems have been developed for this. These systems are expensive and complex, with sensors that digitally record various readings throughout the cleaning process. They are also labour-saving and without this the cleaning has to be done manually.[187]

The cost of new equipment is often prohibitive for SMEs, and as discussed in Section 5.1.3, there are few companies that supply small-scale equipment of the required quality to SMEs in dairy processing. This was further emphasized by a small processor, who would like to invest in small pasteurisers to produce cheese if this was available.[188] Difficulty in sourcing equipment locally has led to some firms buying second-hand equipment.[189] Another firm would like to invest in newer technology and equipment throughout the factory with PLC (Programmable Logic Controller) automation, but the cost of this investment makes it risky if there is no consistent throughput.[190] A small family-owned processor further noted that a new pasteuriser would cost them a minimum of ZAR250,000, which they cannot afford.[191]

Highly specialised equipment, particularly for niche cheese making, has been imported from Germany and Italy by one firm interviewed.[192] Another imported equipment type has been in the ice-cream market.[193] Firms have also upgraded their plants by acquiring higher capacity processing equipment (e.g. from a 1,000 litre per hour plant to 6,000 litre per hour plant)[194] or by purchasing equipment when they introduced new products such as long life milk.[195] The plant and equipment for liquid products, particularly UHT, is a massive investment[196], which is why it is often out of reach for SMEs. The process of upgrading equipment is also not always incremental

[187] SADKI08.
[188] SADS07
[189] SADS07
[190] SADS18
[191] SADS25
[192] SADS30
[193]SADS22
[194] SADS20.
[195] SADS14
[196] SADS03

in that only one segment of the equipment needs to be upgraded. Often, whole plants need to be upgraded, and this can be costly.[197]

Equipment suppliers have also given financial support in terms of credit periods to assist processors to pay off equipment over a period of time, directly financing upgrading. For example, one firm explained how they upgraded their yoghurt production by putting in a new automated packaging machine with the help of the equipment supplier which gave them credit to pay off the cost over a year.[198]

Upgrading to certain types of equipment can have labour displacing effects, such as the CIP system described above. One firm preferred to retain more labour-intensive equipment to save jobs given the socio-economic realities in South Africa. This firm noted that if an automatic packaging machine was introduced, it would cut out eight additional workers. This firm has deliberately chosen a more labour-intensive model for packaging and are seeking ways to improve labour productivity. [199]

Upgrading of equipment is also hindered given a lack of skills to operate more sophisticated equipment. One company noted the backlash from the community if skilled expertise was hired from outside the community, even though the required skills are not available in the area.[200] The lack of skills to operate equipment is also a reason why equipment suppliers offer training and support services as part of their after sales services.

With regards to product and process upgrading, eighteen firms surveyed noted that they introduced new products over the past five years, while twenty-four introduced new processes. This is a reflection of the opportunities for product differentiation in dairy processing. Product innovation is extensive and fairly rapid in the dairy sector, with a knowledge base built on food science and driven by growing demand from higher income consumers. This is not the case for other staple, commodity-type food products, like maize meal.

Product upgrading has happened in different forms:

- Developing better technology in inputs, where stabilizer suppliers have found new ways to stabilize milk protein ingredients. These stabilizer suppliers send technical teams which include food scientists to processors to assist with the development of a better product, for instance, a double-thick milkshake.[201] Other inputs that have improved are cultures, with support from the company that sells cultures.[202] This signals innovation in inputs.

[197] SADS23
[198] SADS18
[199] SADS08
[200] SADS15
[201] SADS14
[202] SADS23

- Producing brand new products such as dairy blend fruit juices[203]; imitation cheeses[204]; ice cream flavours, and diabetic ice cream and yoghurts using artificial sweeteners[205]; goat milk yoghurt and Kefir[206]; protein shakes and steri (long life milk)[207]; impulse stick ice creams[208]; yoghurt/magau (Yamagau) mixture[209]; 'braailloumi' (BBQ'd Halloumi cheese)[210]
- Producing a wider range of products from what the firm initially started off with[211], for instance, moving from producing cheeses to producing more capital-intensive liquid dairy products
- Changing recipes[212]
- Producing bespoke products according to customer specifications, for instance, specific cheeses or forms of cheese offerings like grated parmesan[213]
- Creating better quality and safer products as a result of upgrading of standards (see below under process upgrading)
- Creating new pack sizes and product packs such as tub yoghurt[214], 4kg fermented milk, 1.5 litre milk juices, 1 litre double cream yoghurt[215]

While a defining feature of dairy processing is the huge scope for product innovation/product differentiation, there has been a slow-down in product launches, especially during COVID-19.

Process upgrading has taken the following forms and is closely linked to the product and equipment upgrading discussions above. Forms of **intersectoral upgrading** have also been undertaken in the development of innovative packaging in-house. Process upgrading broadly categorised under production-related and process-related are given in Table 12 below:

Table 12: Process upgrading undertaken by SME dairy processors

Production-related	Process-related
Automated capping system[216]	Upgraded standards by moving from ISO (International Organisation for Standardisation certificate) to FSSC (Food

[203] SADS31
[204] SADS08
[205] SADS10; SADS13
[206] SADS11
[207] SADS14
[208] SADS24.
[209] SADS27
[210] SADS30
[211] SADS02; SADS03
[212] SADS28
[213] SADS08
[214] SADS25
[215] SADS13
[216] SADS31

	Safety System Certification certificate)[217] or to HACCP (Hazard Analysis Critical Control Point)[218]
Automated packaging[219]	Batching processes for yoghurt production[220]
Vacuum packaging machinery system[221]	Operating processes such as how product is received in tanks, frequent testing, incubating samples; new cleaning and routine maintenance procedures[222]
New bottling sizing machinery[223]	New controls, engineering upgrades, new scalar system, equipment upgrades, dispatch bays[224]
New heating systems to clean equipment; new cooling systems to conserve energy[225]	New laboratories to test for bacteria and pH levels to improve quality[226]
Automated incubator to control the temperature for kefir and yoghurt[227]	
New slicing machine for cheese that allowed for the sale of vacuum packed cheese portions to supermarkets, rather than just wheels for deli counters[228]	
New homogenisers[229], pasteurisers and cream separators[230]	
New liquid plant[231]	

Source: Surveys

The product and process upgrading that has occurred in dairy processing by SMEs, for the most part, has been incremental and not radical. Most of the firms noted that they were not the first to introduce new products or processes and that they were followers and adopters in this respect.

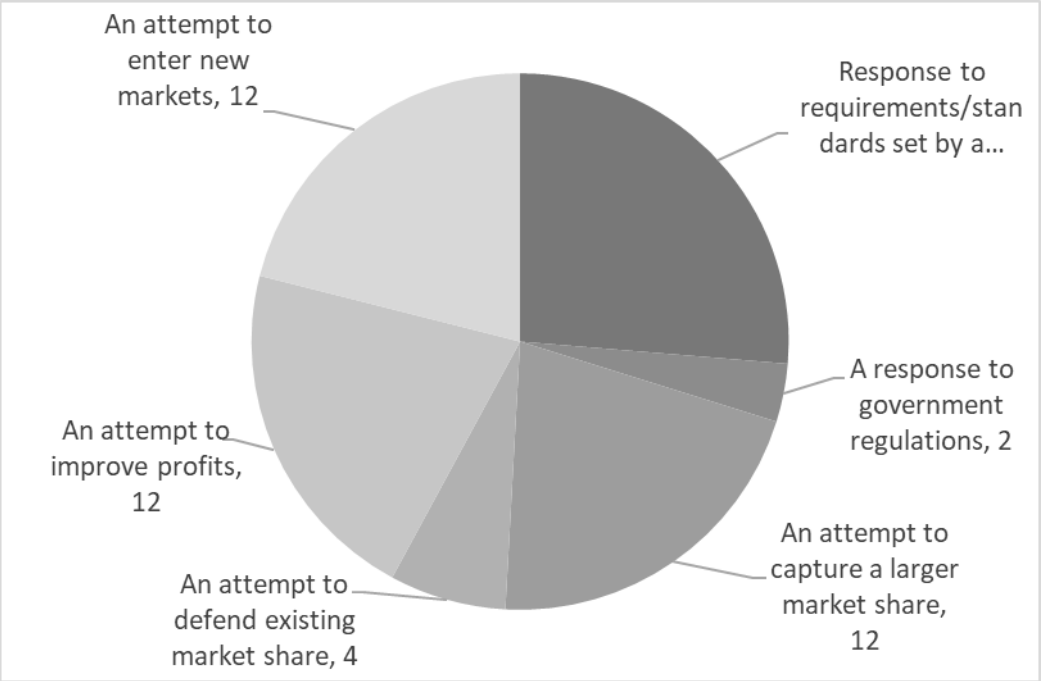
What has driven upgrading?

Upgrading has been necessary to improve on the competitiveness factors that the firms noted were important in Table 12 above. Figure 18 shows that fifteen firms introduced new products

[217] SADS03
[218] SADS10
[219] SADS09; SADS18
[220] SADS02
[221] SADS19
[222] SADS15
[223] SADS05
[224] SADS03
[225] SADS08
[226] SADS09
[227] SADS11
[228] SADS11
[229] SADS31; SADS15
[230] SADS29
[231] SADS03

as a response to customer requirements or standards. These requirements include producing better quality and safer products more cost effectively. Some of the upgrading, particularly on standards, was also to be able to supply supermarket chains (for instance, upgrading to HACCP or FSSC). Firms also upgraded to grow their market share, to improve their profits, and to access new markets (including supermarkets and export markets).

Figure 18: Reasons for the introduction of new products



Source: Surveys

While it was too soon after the investment in upgrading for some firms to see the impacts, for others, the following impacts were noted (Table 13). These impacts are not mutually exclusive.

Table 13: Impacts of upgrading

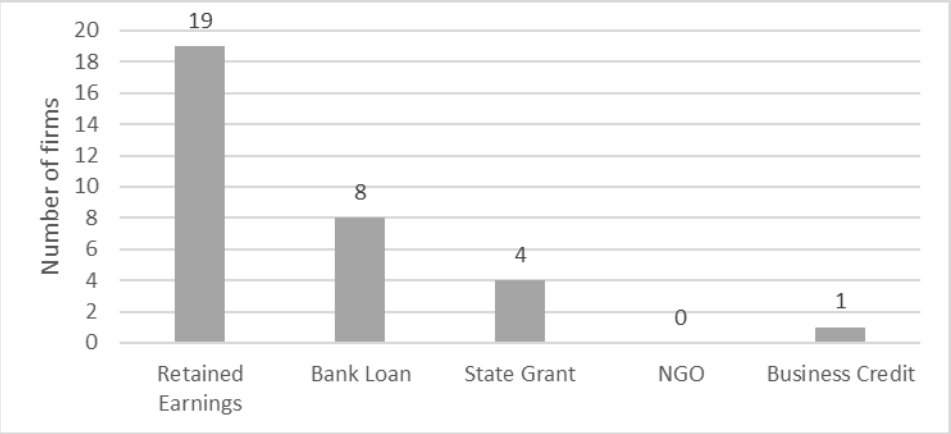
Impact on margins	Impact on production, sales and productivity	Impact on customers
Increased revenue and profits	Higher volumes	Ability to provide greater guarantees on products to customers
Reduced costs	Increased sales	Ability to attract new customers
Better margins	Greater efficiency	Better product consistency
Fewer returns, which is claimed to offer huge cost savings	Improved safety for staff	Improved safety of products
	Improved shelf life	
	Quicker production	
	Less staff and better productivity	

Source: Surveys

Firms that did not invest in product or process upgrading noted that they were either happy with their existing status, or that it was too expensive to upgrade. Some also noted that upgrading products required marketing and branding expertise which was a challenge.

For those that did invest in upgrading, the following were the sources of their funding (Figure 19). Again, most preferred or were forced to use retained earnings given the challenges to access finance discussed in Section 5.1.1.

Figure 19: Sources of funding for upgrading

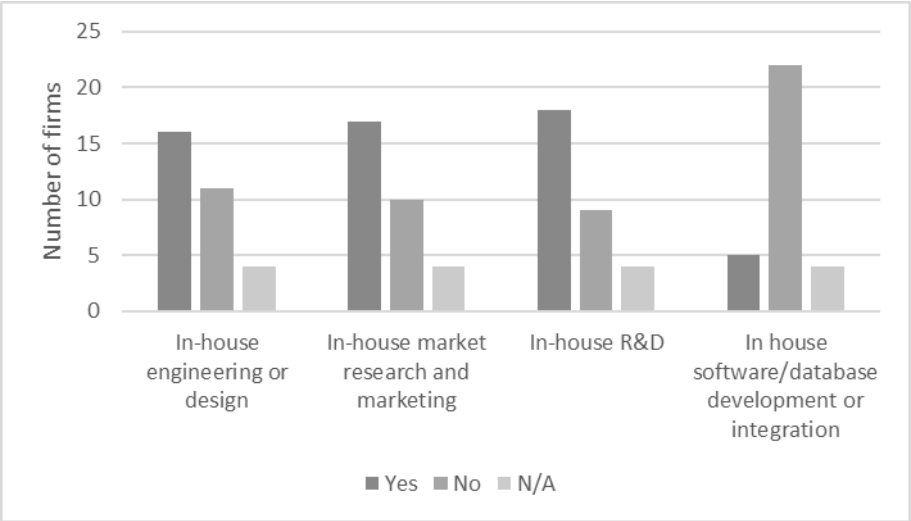


Source: Surveys

5.2.2. R&D capabilities and other skills

Although firms outsourced some of the capabilities required to upgrade, a number of firms reported that they had certain capabilities in-house. These included in-house engineering or design, in-house market research and marketing, in-house R&D, and in-house software/database development or integration (Figure 20). However, despite these claimed in-house capabilities, there is still considerable outsourcing of these functions, including to packaging and equipment suppliers as highlighted above.

Figure 20: In-house capabilities



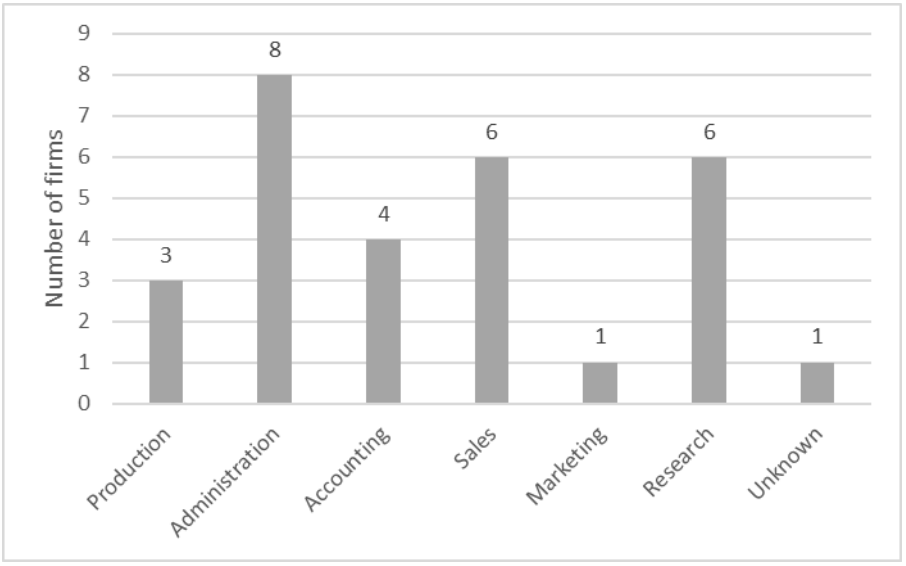
Source: Surveys

There is also a clear distinction between small and large firms with respect to certain in-house capabilities. For instance, large processors have the resources to employ specialised quality managers to maintain standards and to ensure compliance with upgrades to international standards like HACCP and FSSC2200. These firms have good record keeping systems in place which allow for traceability and product recall if needed. In small processing firms on the other hand, it is often the production manager who is also the quality manager and/or sales manager. Given a lack of resources, the owner or single manager takes on multiple roles. This can negatively impact quality.

5.2.3. Computerisation, digitalisation and internet use

In terms of computerisation and digitalisation, modest upgrading appears to have occurred over the past five years. Nineteen firms surveyed over the past five years used computers to perform tasks previously done manually or on paper. Figure 21 shows that this was more for administrative type functions, research and sales, than for production.

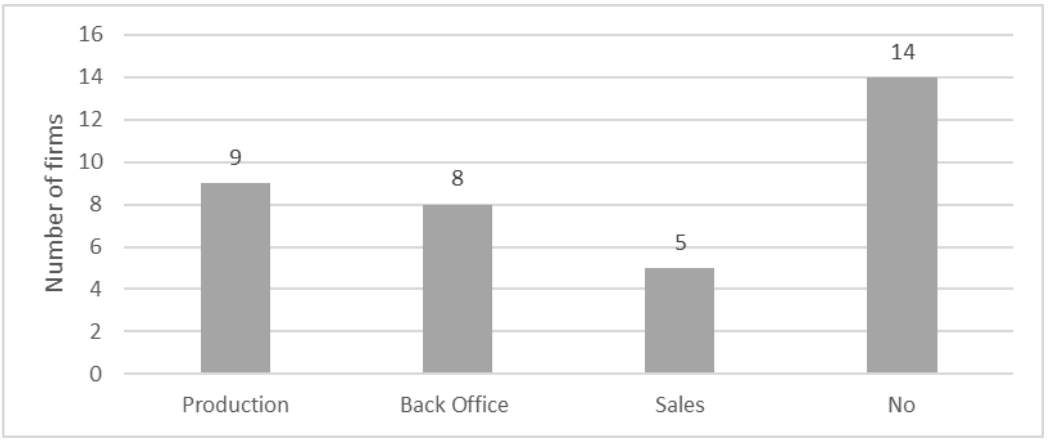
Figure 21: Types of functions that computers were used for



Source: Surveys

When asked if there are areas that the firm wanted to computerize or digitalize in, but have not been able to, there was a greater proportion of firms that wanted to digitalize production (Figure 22).

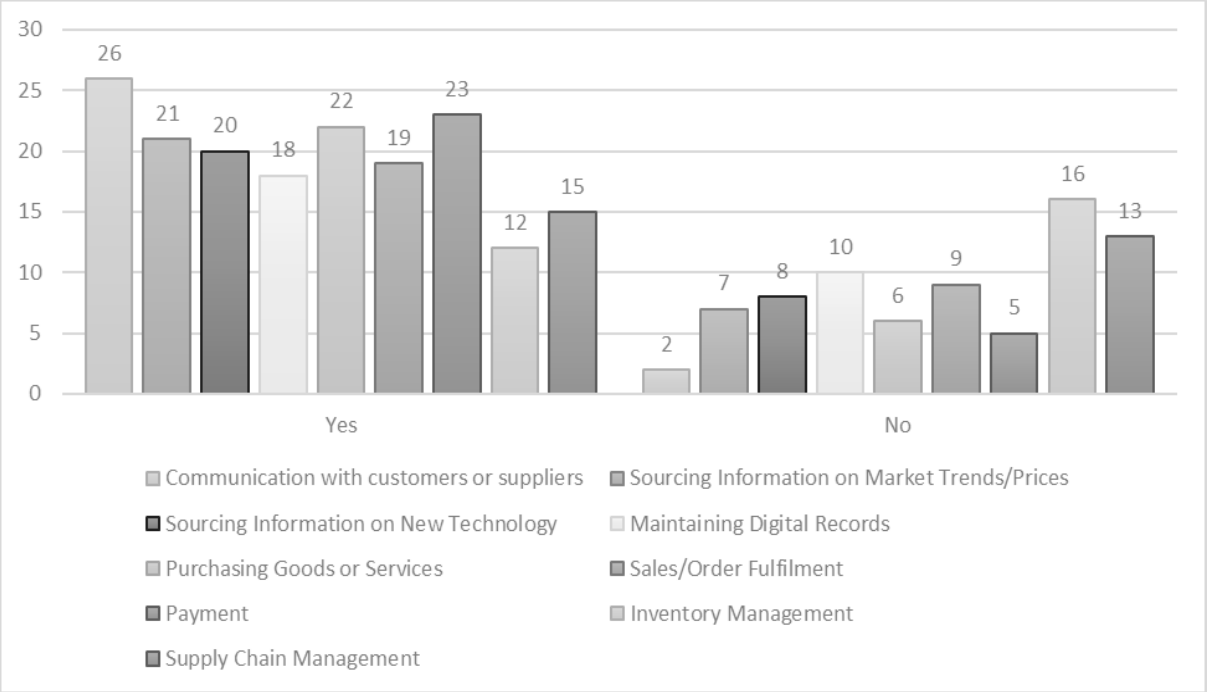
Figure 22: Areas of the business firms wanting to computerise but have been unable to



Source: Surveys

Linked to computerisation and digitalisation, the use of the internet by most firms is for communication, payments, and purchasing goods or services. The internet is used by fewer firms for more sophisticated operations like inventory management and maintaining digital records. This may be a function of a lack of skills and training, but also affordability (Figure 23).

Figure 23: Current uses of the internet by firms



Source: Surveys

5.3. OBJECTIVE 3: Identify patterns in the political economy of industrial policy to explain how industrial policy can successfully support the expansion of inclusive agro-processing

Section 2.2 above highlighted the evolution of agricultural and industrial policies and interventions in the dairy sector that have contributed to shaping the outcomes in dairy processing markets today. This section discusses the role of key institutional actors both private-sector and government in supporting SME dairy processing as part of contributing to Objective 3 of the project. This has to be further understood in conjunction with the assessments under Objectives 1 and 2.

5.3.1. Perceptions of the value of industry associations to SME dairy processors

As discussed in Section 2.3., there are a number of industry associations that impact the sector. The stated roles and objectives of these associations were discussed above in Section 2.3. Their services and offerings are wide-ranging and comprehensive, but they have had relatively little success in generating transformation in the sector, particularly at the dairy processing level of the value chain.

Here, we focus only on the perception of the SME processors interviewed about the value of these associations to them. Twenty-six firms interviewed were part of a trade association. As noted previously, MilkSA membership is mandatory for all firms dealing or producing milk

products. Membership requires paying a levy based on volumes of milk procured. This in turn requires submitting information on milk throughput.

However, four firms interviewed were not members of any association. Reasons given for not being a member included not seeing any benefit in being part of associations; perceiving associations as being a 'waste of time' as the large processors were seen to have more voice; not wanting further red tape, expenses and the associated admin issues related to membership; and caution of falling foul of competition laws.

Several SMEs interviewed stated that the industry associations were not particularly useful for their businesses, and that aside from 'getting to read a newsletter', market data and other publications periodically, membership was not impactful.[232] Another firm noted however that although it didn't see much benefit of associations, the Dairy Standards Agency's research was useful for them.[233] Firms further noted that the associations did not do much to fight imports[234] (although another noted that MilkSA has negotiated on behalf of the industry on import protection),[235] help them deal with the power of large supermarkets,[236] provide technical support and advice[237] and help deal with regulations in the industry.[238]

There was also scepticism of the role of large players that were part of the associations. One firm alleged that since MilkSA's executive board was made up of members from the large player, and therefore as a competitor, this large player had access to all information submitted by members. This took away the independence of the industry association, according to this firm.[239] This also raises concerns about potential competition transgressions depending on the nature of the information shared. The power of large firms was further noted by another firm in terms of their ability to '*bully people out of communities*' and '*they buy over your supply to try and become the biggest brand*'.[240] One small processor also highlighted the power that a particular large firm had on the industry associations.[241]

Other firms had more positive views of the value of the industry associations in terms of networking and keeping up to date with industry developments, trends and changes to regulation and developments in food safety initiatives.[242] Support provided also includes testing of milk following new fat content regulations,[243] training courses and consumer education, advertising on behalf of the industry, [244] and according to one firm, serving as a collective that lobbies for the

[232] SADS08; SADS11; SADS13; SADS10; SADS20; SADS18; SADS30
[233] SADS13
[234] SADS15
[235] SADS06
[236] SADS21
[237] SADS19
[238] SADS19
[239] SADS23
[240] SADS15
[241] SADS15
[242] SADS04; SADS09; SADS24; SADS31; SADS28
[243] SADS15
[244] SADS05

interests and needs of the industry as a whole.[245] Another firm, however, sees the lobbying as just benefiting large players and not the smaller firms. According to this firm '*the really big players are more involved, like Clover and Parmalat ... lobbying affects the big dairies more than us, if there is cheese being imported, they lobby.'*[246]

The associations also play a role in liaising with government on legislation and matters of compliance. The influence of large firms in industry associations raises questions about the degree of representation of, and benefits of membership to, SMEs.

The information shared through the associations is also valuable to members. One firm noted that the raw milk average pricing information shared was useful as a benchmark that was widely used by the industry.[247] However, as noted in Sections 2.5.2 and 5.1.2, this could raise competition concern in terms of such benchmarks acting as focal points to coordinate the buying price of raw milk.

In terms of the transformation objectives of MilkSA, the association is said to be undertaking various initiatives to empower black entrepreneurs to become more successful and to contribute to a more competitive South African dairy industry.[248] As noted, both the MPO and SAMPRO also have mandates and objectives for greater transformation. However, while there has been some tangible impact at the farming level, there appears to be few substantial initiatives to support SME dairy processors.

The industry associations nonetheless wield a degree of power in shaping outcomes in the sector. Dallas, Ponte and Sturgeon (2019) characterise **institutional power** as a form of direct power that is exercised by formally organised collectives. They use their collective power for the objective of uplifting the industry from economic, social and environmental perspectives. However, as Dallas et al. (2019) also point out, this does not imply 'perfect harmony' within the collective of actors. This is evident in the skewed forces within the associations, with the agenda of dominant players being better represented and addressed.

5.3.2. Industrial policy, development finance and general government support

As set out on in Section 2.2., there have been numerous initiatives and a plethora of policies for the agriculture and agro-processing sectors in South Africa since liberalisation. South Africa has never been short of good policies and plans for these sectors. The policies and programmes discussed in many instances have correctly and repeatedly identified the relevant pressing problems that limit the entry and participation of SMEs in these sectors. The well-recognised problem in the policy space in South Africa is implementation of plans and programmes. The trend of developing new plans every few years, without proper monitoring and evaluation of costs and outcomes of previous plans, or without enough specificity and focus of interventions, has meant that development and outcomes in the agro-processing sector in South Africa has not

[245] SADS12
[246] SADS14
[247] SADS27
[248] https://milksa.co.za/transformation-handbook-south-african-dairy-industry-201415

been as positive as it could have been. The fragmentation and lack of coordination between different government departments has also resulted in wastage and inefficient allocation and use of public resources. This has perpetuated the high levels of concentration seen in many markets, including dairy.

The level of scepticism of government involvement in the sector is evident in some of the survey and KI responses where interviewees noted that government should focus on getting the basics of service delivery, extension and testing services, skills development, crime prevention and appropriate regulation right. The perception of the government's role in developing the industry was generally very negative. Over half the firms interviewed were not aware of the support offered by government, such as the support under the various programmes of the DTIC discussed in Section 2.2. Firms interviewed did not see the government as having a clear objective for the sector and highlighted the numerous challenges they continued to face.

Failed programmes and those riddled with corruption have further created a level of mistrust of government. The most publicized case of corruption involving the dairy sector, the Estina dairy project in Vrede, Free State, has contributed to the mistrust of government intervention in the sector. It is alleged that almost R1-billion was transferred from the Free State province's agriculture department as part of corrupt activities and political interference involving high ranking officials in the ruling African National Congress (ANC) and the Gupta family.[249]

Further, attempting to use Black Economic Empowerment (BEE) policies in its current format and interpretation does not appear to be achieving the desired transformation results in the dairy processing industry. There are still very few black dairy processors in South Africa, despite BEE policies and other targeted programmes for black industrialists noted in Section 2.2 above. BEE requirements are either crippling existing, non-BEE compliant white-owned SMEs which has the additional effect of removing skills from the sector permanently when they shut down, or firms are finding loopholes to bypass the legislation as discussed below. This highlights the complex state-business relations when it comes to empowerment.

Most SMEs interviewed raised serious concerns around Black Economic Empowerment (BEE). Many of the firms were white-owned family businesses that did not meet, or struggled to meet, BEE requirements.[250] One firm explained that to get their BEE status confirmed, they had to hire private consultants given the complexity of the process. This comes at a cost. Audits of ZAR20,000 each were required according to one company.[251] Another noted that their consultant costs amounted to ZAR8,000 per month and took considerable focus away from core business management. This firm also noted that it was unable to hire or promote skilled employees to train staff if they were white and have had to send staff for external training to companies that had BEE certification. Getting new business and accessing new markets was also difficult without BEE certificates, with large buyers like Bidvest or retailers like Pick n Pay requiring BEE

[249] https://mg.co.za/opinion/2020-12-11-we-need-answers-about-the-vrede-dairy-project/
[250] SADS18; SADS06; SADS11
[251] SADS18; SADS11

certification from suppliers.[252] Another complication for SME processors is, in turn, finding suppliers of raw milk that are BEE accredited because there are so few black dairy farmers. This makes achieving 51% BEE supply of raw materials difficult. Similarly, there are few black suppliers of packaging and equipment. One company noted that it was forced to go through third party purchasers, intermediaries or 'middlemen' with BEE accreditations who source main inputs on its behalf, at additional costs of ZAR15,000 per month. For packaging, estimates of going through the intermediary were between ZAR300,000–R450,000 a month. This company was of the view that BEE middlemen were often politically connected.[253] Middlemen, in effect, extract rents in value chains without adding any value. These costs are either borne by consumers of dairy products through costs being passed on or have to be absorbed by SME processors. In many dairy product markets however, SME processors have little or no market power to set end market prices, and therefore are more likely forced to absorb these costs at the expense of their margins.

Government is also seen to be failing in the enforcement of standards in the industry. While there are good regulations, the enforcement of these regulations is lacking. As one stakeholder notes '*if there is no traffic officer at the red light [people will skip it]*'.[254] This is attributed to a lack of capacity and competencies in government. To mitigate some of this ineffectiveness on the government's part, the industry associations try to capacitate industry and offer alternatives. For instance, the dysfunctionality of the South African Bureau of Standards (SABS) has led to industry using its own standards body, Dairy Standards Industry, and testing is also done by MilkSA. A lack of high-quality district/municipal health inspectors in small towns and rural areas outside the large metros is a further challenge for the dairy sector in these areas. Even this function (compliance to the Product Standards Act) which used to be undertaken by government, is now outsourced to the private sector through 'appointed assignees' by DALRRD to perform inspection services. These assignees charge 'exorbitant' prices, for example, two or three samples can cost farmers and processors around R8,000.[255] This also opens the door for corruption in both the appointment of such assignees and in attempting to get fraudulent certifications at lower costs. There is also non-compliance and poor enforcement by municipalities of the sale of raw milk through bulk tank sales and milk-on-tap directly to consumers, which is not allowed unless in adherence to regulation 155 of the 1997 Dairy Regulations. Much of this milk gets sold in informal settlements through foreign-owned spaza shops on a seasonal basis when farmers need to dispose of surplus raw milk during peak months.[256] Government health inspectors often do not inspect these shops for compliance.

In terms of development finance support for agro-processing, and the dairy sector specifically, the role and contribution of the IDC was set out in Section 2.2. Of the firms interviewed, one firm received 50% of its required project funding from the IDC – an amount of ZAR20 million – at a rate of 2.5% below the prevailing prime interest rate at the time. BEE ownership requirements

[252] SADS11
[253] SADS15
[254] SADKI07
[255] Ibid
[256] Ibid

by the IDC were met through a partnership, and the project was for the production of a highly-processed imitation mozzarella cheese, in which there was good growth prospects given low prices. In general, the firm's experience with the IDC funding was a good one, although they noted that with the IDC having control over their equipment for collateral, it was difficult to access commercial bank loans for working capital, which was a major challenge for daily operations. The IDC had to subsequently release control of their assets for them to obtain an overdraft facility with a commercial bank. Other aspects of the IDC funding that were challenging included a 'punitive' approach when the firm did not meet its employment targets, and the onerous processes.[257]

Another player received a loan from the IDC that was interest free for 50% of the value of the loan, with the balance of their requirements from Kigema, a KwaZulu-Natal development finance agency.[258] A specialist cheesemaker obtained a ZAR2 million interest free loan from the IDC to start producing commercially after setting up a 10% employee share ownership scheme, in addition to obtaining support from the Department of Small Business Development (DSBD) and the Small Enterprise Development Agency (SEDA). The difficult process to obtain this funding was again highlighted, although once in place, the firm noted that the support was good and that IDC was accommodating to challenges in achieving growth targets.[259] A third dairy processor used a brokerage consultancy to assist them in obtaining IDC funding,[260] highlighting again the complex process of applying for such funding. The firms interviewed did not specify if they had to partner with operating private sector investment partners. While IDC funding has been used by some dairy processors, it is not easily accessible for small firms and the requirements are often too onerous.

6. Conclusions

This working paper provided a scoping of the dairy industry in South Africa, with a focus on evaluating opportunities for, and bottlenecks to, the inclusion of small and medium-sized dairy processing firms in dairy value chains. A central theme throughout this paper has been on power distribution, its exercise at different nodes in the value chain and the implications for SME dairy processors. In this section, the key findings are briefly summarized under each of the research objectives and preliminary policy direction is provided.

OBJECTIVE 1: **Determine how differing institutional environments, structures and dynamics of the dairy value chains shape opportunities for inclusion of agro-processing SMEs**

Following deregulation and liberalisation after apartheid, a dual-value chain for dairy products developed in South Africa. In one segment of this dual-value chain (the main segment which accounts for around 80% of milk and dairy product sales), large multinational and national dairy processors supply a wide range of products, including more capital-intensive products like UHT milk, primarily through the large supermarket chains. In the other segment, small and medium-

[257] SADS08
[258] SADS15
[259] SADS19
[260] SADS14

sized dairy processors sell through other routes to market like formal and informal independent retailers, cash and carrys, school feeding schemes and certain food service industries.

There are widely differing power dynamics in each of these segments. In the main segment, there are high levels of concentration at both the dairy processing and retail or supermarket levels. The large supermarket chains with buyer power are able to extract rents through imposing various costs, terms and conditions and other requirements on processors. Since SME processors often cannot meet or absorb these, they opt to sell through the other, more localised channels and routes to market that are less onerous to deal with and pay them quicker. SME dairy processors, by their nature, also do not have the scale and scope or range of products to sell to supermarket chains. The large processors have greater ability to negotiate with the supermarkets, but are also able to absorb any cost increases imposed on them by in turn using their market power to extract rents from raw milk producers/farmers. This puts pressure on the margins and sustainability of milk producers/farmers. The power dynamic is mostly dyadic and direct, imposed on processors by retailers, and by large processors on producers. There have been previous competition concerns around the abuse of such power, and on the collective depression of the raw milk price by dairy processors. The Competition Commission's new Buyer Power legislation is well placed to deal with such concerns, and we understand that investigations are already underway in the dairy sector.

Supporting SME processors also requires strengthening their accessible routes to market. Ensuring a more competitive and diverse retail level of the value chain offers SME processors alternative channels to the main supermarket chains to reach consumers and improves their bargaining positions with the main chains. Infrastructure investment (such as distribution centres and warehouses) for smaller, independent retailers, as well as opening up trading space for these players is important.

The surveys and interviews also revealed that the existing characterisation of governance structures in the value chain literature does not fully apply to the relationship between SME dairy processors and supermarkets, and between SMEs and other routes to market. With elements of modular, relational and captive forms of governance evident in these relationships, an adaptation to the existing governance framework is necessary. This would entail closer scrutiny of the degree to which rents can be extracted, and the distribution of risks by players in each node of the value chain as a useful indicator of power in agro-processing to retail value chains. This requires the creation of a new characterisation of governance.

Another interesting development in the industry that also affects power and governance dynamics is the emergence of intermediate players in the form of traders or collectors. Following the demise of state-run bulk collection points post liberalisation, it became difficult to access raw milk from small farmers in widely spread-out farms, particularly in rural areas. Relatively large local traders have stepped into this role and act as bulk collectors of milk from different farms for processors, an outcome of which is the 'shifting' of milk balances in regions and subsequent impacts on prices of raw milk. In 2020, another independent, large vertically integrated entity emerged as a result of the unbundling of Clover's milk collection/procurement arm and UHT

production operations. This development also places greater emphasis on the power in the milk collection level of the value chain as this player continue to build networks and collection infrastructure.

Intermediaries that have not been researched as part of this working paper are co-operatives. In South Africa, cooperatives were significant prior to liberalisation but have declined substantially since. Co-operatives are very active in the dairy sector in other African countries, like Tanzania, and play an important role in coordinating dispersed small farmers.[261] Further research is needed to understand if co-operatives would lower barriers to entry for small dairy farmers and processors.

There are also nodes of power at other input levels of the value chains such as in packaging and equipment suppliers, where there are only a few suppliers of these key inputs. A unique dynamic that has evolved here is the additional support packaging and equipment supply firms give to SME dairy processors that is well beyond the typical supplier-buyer dyadic relationship and extends to skills development, business planning and management support, and even marketing assistance. This is as a result of the hollowing out of public expertise in the dairy sector since liberalisation such that private companies have stepped in to ensure that they continue to have a market to supply to in the future.

Although not a homogenous grouping, the research also highlighted that there are a range of other barriers to entry faced by SME dairy processors. The barriers faced by medium-sized firms are amplified for small processors, and include consistent access to quality raw milk, equipment, finance, skills, utilities (especially stable and affordable electricity), regulations, poor roads and other infrastructure. Some of these barriers can be lowered through better government support and public-private partnerships with large and established players. These are highlighted further under Objectives 2 and 3.

OBJECTIVE 2: Determine the comparative political economy factors which enable or obstruct the upgrading of technological capabilities

Various forms of product and process upgrading were undertaken by SME processors, some of which required upgrading of technological capabilities. For the most part, upgrading has been incremental and not radical, and SMEs were largely followers and adopters of exiting technologies in this respect. Nonetheless, the upgrading that has taken place in terms of new inputs into dairy products, new products and flavours, better packaging, longer shelf life, higher quality of products, reflects the huge scope for innovation in the dairy value chain. The high degree of product differentiation in dairy processing is driven by demand from consumers. This provides opportunities for SMEs to produce niche products, such as maas for low-income communities especially in informal and township markets sold through formal and informal independent retailers, and opportunities for specialised cheeses and flavoured yoghurt to other routes to market. The producer-distributor model has potential for selling such products into these local markets, and also into more high-income target markets where traceability is

[261] See Tanzania Dairy working paper, available at https://iiap.info/publications/

important for consumers. Technological capabilities to improve food safety and consistency of SME production, including cold chain technology, is critical to support inclusion as this opens up more markets for them. Digitizing food chains is an area that can be supported and promoted by government and industrial and development financing instruments.

The product and process upgrading that has taken place at the processing level was to meet requirements including producing better quality, and safer products, more cost effectively. Some of the upgrading, particularly on standards, was also to be able to supply supermarket chains. Firms further upgraded to grow their market share, to improve their profits, and to access new markets. Some in-house capabilities for upgrading were present, but much of it is outsourced. There is scope for both governments and the private sector to facilitate upgrading by SMEs through supplier or enterprise development programmes and other public-private partnerships.

OBJECTIVE 3: Identify patterns in the political economy of industrial policy to explain how industrial policy can successfully support the expansion of inclusive agro-processing

The research showed that a continuous hollowing out of state support for small-scale dairy farmers (state vet and extension services, testing laboratories, skills development and training etc.) and limited support for SMEs processors (skills development, access to finance, business training, access to markets etc.), as well as poor service delivery and enforcement of regulations, has led to the private sector taking over some of these roles. Industrial development outcomes have therefore been driven by the private sector with government policies having little impact on objectives of inclusion of SMEs and previously marginalized businesses. The private sector steering the ship has served to protect the interests of a few, mainly larger players, and without adequate support from government, SMEs and new entrants have struggled to enter and survive, perpetuating high levels of concentration.

A proliferation of agricultural and industrial policies and a lack of coordination between government departments and agencies has not led to the desired outcomes of transformation and greater inclusion in dairy processing and in agro-processing more broadly. Limited transparency in monitoring and evaluation of support programmes offered means that there is little direction on the value and true costs of many past programmes. Failed government projects in dairy, including as a result of large-scale corruption, have further reduced trust in government involvement. BEE policies in dairy have not seen the desired change in ownership patterns, and instead have resulted in the skills exiting the industry completely or have been by-passed through middlemen ('fronting'). Development finance for the dairy sector has been taken up by some of the firms interviewed, but several noted the complexity and costs in accessing such funding.

As a result of the private sector steering the trajectory, another form of power that influences the development of the industry is institutional power. The different industry associations in the milk industry organize themselves and use their collective power for the objective of uplifting the industry from economic, social and environmental perspectives. There are nonetheless concerns of skewed power dynamics even within the associations, with the agenda of dominant players being better represented and addressed. While the industry associations offer a wide range of support and services to members, especially relative to other associations in the food sector in

South Africa, for instance, the maize milling sector, they have been relatively less successful in generating transformation in the sector than some of the other associations have, such as in the citrus industry. The power and varying outcomes of collective representation and action through industry associations therefore offer an interesting comparison across different food markets in South Africa. The 2020 entry of a new industry association, Dairy Group, which is positioning itself to support and nurture new entry as part of its own growth strategy, is a contender to the long-standing existing industry associations that may impact transformation outcomes. Competition between industry associations is a novel area that requires further research.

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