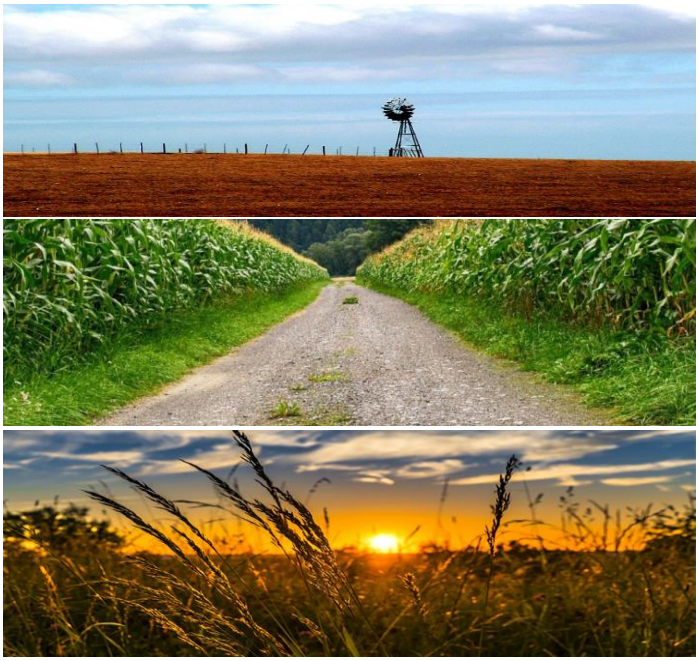
REPORT

An economic impact assessment of the Covid-19 pandemic on the agriculture, forestry & fishing sector in South Africa

Submitted to:

Agri SA

February 2021



GOPA Group
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Title page

Research topic/themes:

A study to determine the effects of the pandemic induced by the Covid-19 virus on the sector for agriculture, forestry & fishing in South Africa, based mainly on input/output table analysis of the declines in value added and revenues of linked industries, caused by lower levels of disposable income.

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Abbreviations

Agbiz	Agriculture Business Chamber
ARC	Agriculture Research Council
ACIAR	Australian Centre for International Agricultural Research
BMR	Bureau for Market Research (Unisa)
CCA	Census of Commercial Agriculture
CCSA	Competition Commission of South Africa
CHASA	Confederation of Hunting Associations of South Africa
DALR&RD	Department of Agriculture, Land Reform & Rural Development
DBSA	Development Bank of Southern Africa
EIA	Economic impact assessment
FAO	Food & Agriculture Organisation (of the United nations)
FSA	Forestry South Africa
GDP	Gross domestic product
GVA	Gross Value Added
NAMC	National Agricultural Marketing Council
NERPO	National Emergent Red Meat Producers' Organisation
NSHA	National Hunting & Shooting Association
NLTPF	National Livestock Theft Prevention Forum
PCE	Private Consumption Expenditure
RPO	Red Meat Producers' Organisation
SACGA	South African Cane Growers' Association
SAFDA	South African Farmers' Development Association
SARB	South African Reserve Bank
SARS	South African Revenue Services
SADC	Southern African Development Community
UNCTAD	United Nations Conference on Trade & Development
Unisa	University of South Africa
WRSA	Wildlife Ranching South Africa

Executive Summary

Agriculture is characterised by a pervasive value chain, with a large array of inputs required for production. The demand for its large and diversified product range also varies greatly amongst households and sectors involved in their downstream utilisation, especially food processing and the hospitality industry.

Fortunately for South Africa, good rains during the 2019/20 season in many parts of the country, combined with a highly efficient and globally competitive agriculture sector, resulted in an increase in the value added by agriculture, forestry and fishing during the first three quarters of 2020, when the pandemic induced by the Covid-19 virus wreaked havoc with virtually all the other key sectors of private sector economic activity.

However, this feat was achieved despite the agriculture sector having experienced significant disruptions at various points in the agriculture supply chain. Although agriculture was classified as being "essential" and therefore excluded from the lockdown regulations, this did not apply to the full spectrum of products from the agriculture sector, nor did it apply to all of the sectors that supply intermediate inputs to agriculture (via upstream linkages).

It was inevitable that a decline in demand from upstream and downstream linked sectors, combined with lower disposable incomes as a result of job losses, would also impact negatively on agriculture.

The purpose of this study is to identify and quantify the negative impact exerted on the agriculture, forestry & fishing sector by the Covid-19 pandemic, utilising various methodologies, including input/output analysis. The key conclusions arrived at are as follows:

- During the initial stages of lockdown, freight and other travel restrictions disrupted the transport of resources required by the farming industry. This led to temporary shortages of inputs, especially imported ones, such as fertilizers, animal feeds, veterinary supplies and agro-chemicals.
- Public sector services related to international trade activity was hampered during the initial stages of the lockdowns, due to the absence of skilled staff responsible for certification, accreditation, on-site audits and other regulatory services
- Lower levels of household income due to higher unemployment has resulted in a temporary switch from food consumption with a higher nutrient content to staple foods, leading to an element of output losses (for certain products), as well as commodity price volatility
- Agriculture products consumed through more discretionary spending or intermediate utilisation in other sectors have been more significantly affected. These include high quality food products for restaurants and specialised food retailers, some of which are sourced directly from farmers or indirectly via the country's fresh produce markets.
- The revenues generated by informal food markets declined sharply during the initial lockdown regulations, which also impacted negatively on the farmers and farm workers that provide informal traders with supplies

- As lockdown movement restrictions were eased, an escalation of criminal activity affecting the farming community was observed. In the case of stock theft, it increased to an unprecedented level estimated at 15% above the average.
- The most significant negative impact on agriculture (in terms of lost revenues) was felt in game farming, agri-tourism, the hospitality industry and inputs for processed food and beverages
- Surveys conducted by Statistics SA on the impact of the pandemic on South African businesses during the fourth level of lockdown regulations pointed out that more than three-quarters of the 177 agri-businesses surveyed reported declines in turnover, whilst agriculture had the highest ratio of temporary business closures between April and May 2020
- The economic effects identified in sections 3 to 5 of the study would have been captured in the national accounts data and section 6 analyses the net impact of Covid-19 on agriculture via the relationships encountered in the whole of the agriculture value chain (utilising input/output table methodology). This should therefore be regarded as representing the final verdict of the impact of Covid-19 on agriculture, which has been determined as a loss of demand for products of the agriculture, forestry and fishing sector of **R13.5-billion** (as summarised in the table below):

Summary of the negative impact of the Covid-19 pandemic on the agriculture, forestry and fishing sector

	%	R-million
Decline in intermediate demand	-14.2%	-9,846
Decline in final demand by households	-4.4%	-3,668
Total decline (loss) of domestic demand		-13,514

- In the absence of Covid-19, the growth rate of the agriculture sector during the first three quarters of 2020 would have been 25% (from the actual figure of 17%) and no job losses would have occurred (from an actual employment contraction of 8.7%)

1 Introduction

The main objective of this study is to calculate a single quantitative value of the negative impact exerted on the agriculture, forestry & fishing sector by the Covid-19 pandemic, utilising input/output table analysis.

A secondary objective is to also provide a broad overview of the costs, damages and other negative effects suffered by the country's farming community at large, utilising various methodologies, including input/output analysis. The advantage of extending the impact study to specific sectors of agriculture; sectors that are closely linked to agriculture; and demand components associated with the agriculture supply chain (especially food and beverages) is to confirm, to a varying degree, the validity of the results of the input/output table analysis.

Where sufficient data sources have been available, quantitative analyses have been included, but these have been supplemented by tangible evidence of other negative impacts emanating from the general economic downturn and substantial job losses.

It should be pointed out that South Africa was in the fortunate position to continue producing surplus food during the pandemic, including the second highest maize crop in history. This was made possible by an end to the drought in many regions, further modernisation of farming processes, especially in the area of scores of new digital applications, including drone technology and pro-active export marketing.

Agriculture was also the only key sector included in the determination of the country's gross domestic product (GDP) that recorded positive output growth during both the second and third quarters of 2020 (on a year-on-year basis). Furthermore, the agriculture sector managed to substantially lift export earnings for a variety of products, especially beverages, citrus and other fruit.

These achievements, however welcome, materialised **despite** the challenges and problems encountered during all of the lockdown stages. Agriculture and food production were also allowed to continue operations during lockdown. However, due to the pervasive supply chain that links agriculture to food production, retail trade, wholesale trade, transport & logistics and all the other sectors of the economy, it was inevitable that a decline in demand in these forward-linked sectors would also impact negatively on agriculture.

The remarkable performance of agriculture during the worst economic decline in South Africa's modern history therefore served to mask the fact that the sector also suffered a pervasive negative impact as a result of the pandemic.

The findings of the study therefore need to be considered against the output of agriculture that would have been achieved in the absence of the pandemic and not the actual output that was achieved (based on the first three quarters of 2020).

2 Methodology and structure of study

Section 3 commences with an overview of key elements of the agriculture supply chain in South Africa, which provides the basis for much of the subsequent analysis and quantification of the impacts on agriculture due to Covid-19.

This section serves to identify key areas of disruption experienced on both the input and output side of the agriculture production function, some of which are exposed to more rigorous assessments of the Covid-induced losses and costs suffered by agriculture, which are contained in section 5.

Due to the alarming increase in crime experienced by farmers across the country since the first easing of lockdown regulations (when people were allowed to move more freely), it is deemed necessary to include a brief discussion of its impact on agriculture, including a quantification of associated costs to farmers. This is presented in section 4.

Section 5 contains quantitative assessments of the negative impact of Covid-19 on agriculture from a variety of supply-side and demand-side perspectives. The negative impacts quantified in sections 3 and 5 are based on specific sectors that are interlinked with agriculture and the values are mostly based on gross output levels (sales), as opposed to the narrower concept of value added. This needs to be taken into consideration when attempting to reconcile the aggregated impact determined in section 5 with that of section 6, which should be regarded as representing the final verdict of the impact study.

The economic effects identified in section 5 would have been captured in the national accounts data and section 6 analyses the net impact of Covid-19 on agriculture via the relationships encountered in the whole of the agriculture value chain (utilising input/output table methodology).

Where the study makes reference to agriculture, it also encompasses the forestry and fishing sectors. Data sources utilised for compiling the study are detailed in the bibliography and include the information obtained from a survey and interviews with senior representatives from various agriculture organisations. Other data sources include:

- Various publications from Statistics SA
- Specialised publications on the agriculture sector
- Key fresh produce markets in South Africa (15 in total)
- *SA Weekly Agriculture Viewpoint*, published by the Agriculture Business Chamber (AgBiz)
- Academic research on the topic, both globally and by domestic researchers
- *Agribook.digital* (South Africa's most comprehensive farming and agriculture online handbook)
- The Department of Agriculture, Land Reform & Rural Development (DALR&RD)
- Quantec data on South Africa's input-output tables
- International trade data published by SA Revenue Services (SARS)
- Surveys and reports from Agri SA (including its provincial affiliates)

3 Disruptions to the agriculture value chain

3.1 Key components of the input and output equations

At the outset of determining the impact of Covid-19 on South Africa's agriculture sector, it is necessary to provide a simplified perspective of the pervasive supply-chain that characterises this strategically important sector of economic activity. Humankind will easily be able to survive without most products and services, but there is no substitute for the nourishment of food.

Table 3.1: The agriculture value chain in South Africa – key elements of the input equation

Seed	Chemicals
Feeds	Research
Fertilizers/pesticides	Engineering (roads & water)
Machinery & equipment	Bioscience
Storage facilities	Education & training
Transportation	Human resource management
Finance for working capital	Energy
Insurance	Marketing
Veterinary services	Wholesalers
Environmental protection	Regulatory compliance

Tables 3.1 and 3.2 contain a selection of the key elements required for agriculture production, as well as the output side of the equation.

It is obvious from scrutiny of these tables that agriculture was never going to be immune to the economic havoc resulting from the Covid-19 pandemic. The fact that agriculture was classified as being "essential" and therefore excluded from the lockdown regulations did not apply to the full spectrum of products from the agriculture sector.

Table 3.2: The agriculture value chain in South Africa – key elements of the production equation

Imports	Nurseries
Livestock	Fresh fruit
Game	Flowers
Dairy	Fresh vegetables
Poultry	Packaged fruit & vegetables
Staple crops	Alternative crops
Forestry	Animal care
Seeds	By-products
Feeds	Processed products
Agri-tourism	Exports

Most agriculture sector products find their way into secondary and service industries via forward linkages. One example is a cotton textile mill, which would have been closed during the most

stringent lockdown stage, but this halted the flow of the required primary product from cotton farmers. The repeated ban on alcohol sales is another well-worn example of how the decline in demand for a particular product also leads to a decline in demand for products that are part of the value chain. In the latter case, farmers producing wine grapes as well as glass manufacturers suffered well-publicised losses induced by Covid-19 lockdown regulations.

Table 3.1: Gross value of individual agriculture products (annual average 2013 to 2018)

Field crops	**R million**		**R million**
Maize	27,038	Canola	549
Sugar cane	7,999	Groundnuts	537
Wheat	5,806	Grain sorghum	449
Soya-beans	5,698	Other field crops	409
Sunflower seed	3,902	Cotton	393
Hay	3,819	Wattle bark	165
Barley	912	Oats	104
Dry beans	907	Lucerne seed	55
Tobacco	641	Chicory root	12
Total			**59,395**

Horticulture	**R million**		**R million**
Deciduous & other fruit	17,661	Nuts	2,872
Citrus fruit	15,046	Flowers and bulbs	1,532
Vegetables	13,352	Dried fruit	1,197
Potatoes	6,972	Rooibos tea	479
Viticulture	5,057	Other products	263
Subtropical fruit	3,990	Tea	18
Total			**68,439**

Animal products	**R million**		**R million**
Fowls slaughtered	38,407	Sheep and goats	6,777
Cattle and calves	30,137	Pigs	5,281
Milk	15,235	Wool & karakul	3,409
Eggs	10,168	Mohair	555
Other products	7,389	Ostrich products	405
Total			**117,763**
Grand total			**245,597**

Table 3.1 serves to further illustrate the wide variety of products that comprise agriculture (excluding fishing and forestry). A total of 94 individual products are represented by the key groups/products listed above. Each one of these products has its own particular demand and supply characteristics which are influenced by a multitude of factors, including the following:

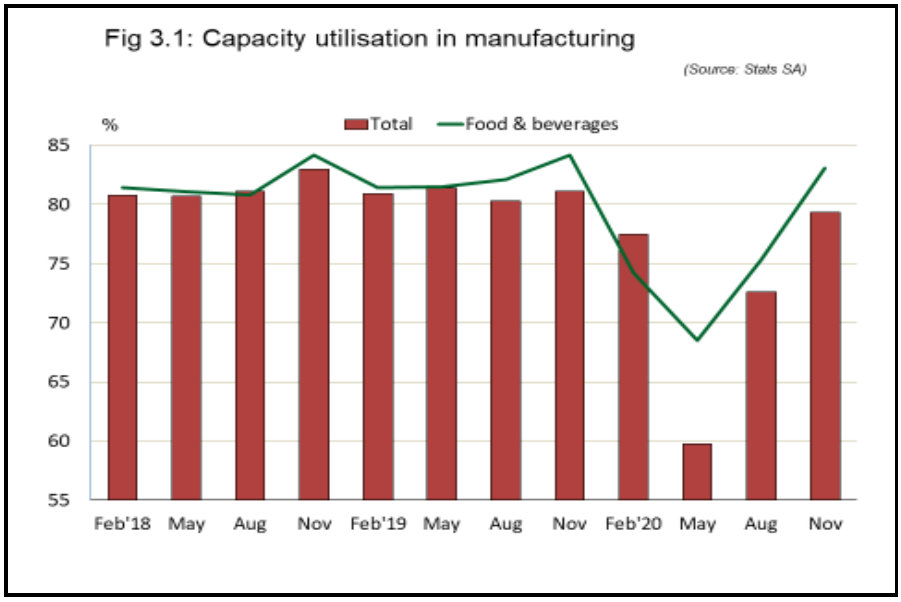
- Price levels (for inputs and production)
- Weather conditions
- Appropriate storage facilities
- Availability of intermediate inputs, some of which have to be imported

- Availability of labour
- Condition and availability of infrastructure, especially roads and electricity
- High levels of government protection via tariffs and other barriers to trade in many export markets, especially Europe and the US
- The domestic regulatory environment
- Past and present levels of investment in new productive capacity (capital formation)
- Capacity utilisation in downstream industries (mainly food processing)
- Changing tastes and preferences for food and beverages by consumers

3.2 Major areas of demand-side and supply-side disruptions

Due to the Covid-19 pandemic, disruptions have been experienced in the agriculture supply chain, both in South Africa and globally. Some fairly generic examples that have been identified by the study's survey results and literature study, as well as research by the Food and Agriculture Organization (FAO) of the United Nations the Australian Centre for International Agricultural Research (ACIAR) are as follows:

i. Domestic and international demand for several products declined as a result of travel restrictions and the general unwillingness of skilled labour to travel, which has affected various product-specific supply chains in agriculture, most notably in food processing industries. Although agriculture was, to some extent, insulated from the worst sector-specific downturns in economic activity, it is clear from data on the utilisation of manufacturing capacity in the food and beverages sector that agriculture also experienced a decline in the demand for some products (see figure 3.1).



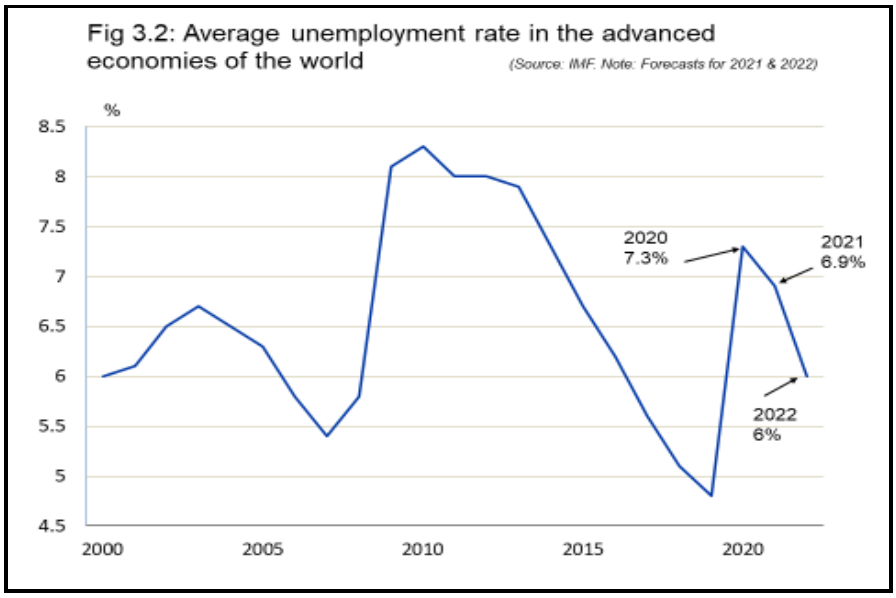
ii. International trade, which is crucial to the viability of the South African agriculture sector, has declined as a result of the pandemic. According to the latest data-led projections for the immediate future by the United Nations Conference on Trade & Development (UNCTAD), published on 8 December 2020, the value of global merchandise trade is predicted to fall by 5.6% in 2020 compared with the previous year. UNCTAD predicts an even bigger decline in

services trade, namely by 15.4% in 2020 compared with 2019. This would be the biggest decline in services trade since 1990 and also worse than in 2009, following the global financial crisis, when services trade fell by 9.5%. This plunge has been driven by a considerable decline in travel, transport and tourism activity.

Although South Africa's trade balance performed exceptionally well in 2020, this was mainly achieved through a combination of lower imports, increased global demand for a few agriculture products from South African (mainly beverages, citrus and other fruit) and higher prices for iron ore, gold and platinum. Much of the sound overall performance of agriculture exports can also be attributed to increased exports into the Southern African Development Community (SADC) region and good rainfall in the major crop producing provinces. Several trading partners imported less agriculture products from South Africa in 2020, including Germany, India, Malaysia and Saudi Arabia. During the initial stages of lockdown, it is patently clear that freight and other travel restrictions disrupted to some extent the transport of food, fertiliser and other resources required by the farming industry. The adverse effect on agriculture during lockdown due to temporary shortages of inputs required by the farming sector, especially imported ones, such as fertilizers, animal feeds, veterinary supplies and agro-chemicals, has been identified by Mkhabela (2020:1) as one of the challenges imposed by Covid-19.

iii. Public sector services related to international trade activity play a vital role in expediting the shipment of cargoes. This function was hampered during the initial stages of the lockdowns, due to the absence of skilled staff responsible for certification, accreditation, on-site audits and other regulatory services.

iv. Covid-19 has decimated the world's labour markets, with unemployment rates in high-income countries rising to their second highest levels in more than two decades, as illustrated by figure 3.2.

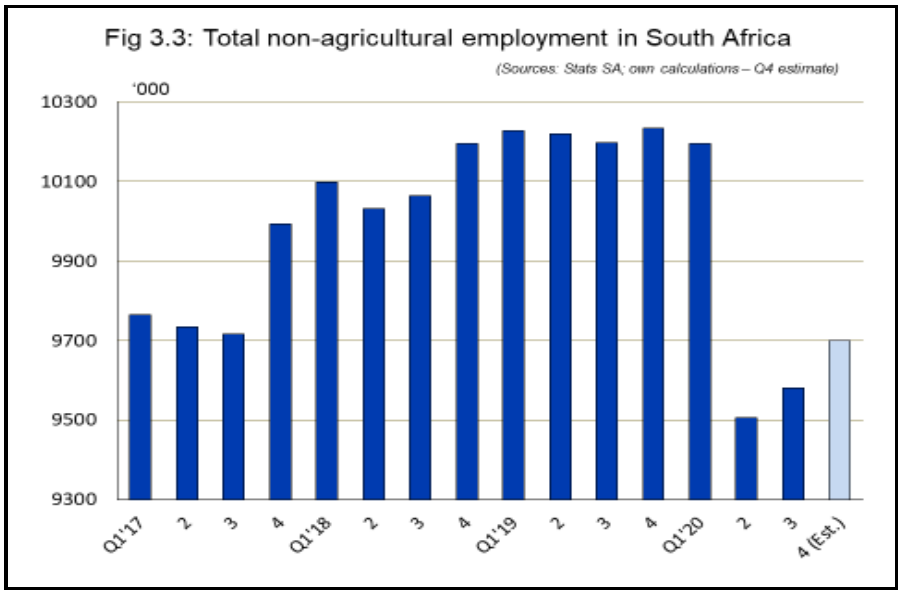


The upshot of higher unemployment has been felt in the agriculture value chain in most countries, due to a temporary switch that has occurred (in varying degrees) from food

consumption with a higher nutrient content, especially protein, to staple foods. This trend has impacted on agriculture via backward linkages with the sectors for processed food, leading to an element of output losses and commodity price volatility.

v. According to research by Anderson *et al.* the lockdown regulations deployed by the South African government have led to significant economic costs and have also led to negative implications for the factor distribution of income. Labour with low education levels experienced stronger negative effects than labour with secondary or tertiary education. As a result, some households with low levels of educational attainment and high dependence on labour income would face a real income shock that would jeopardize their food security. However, the study by Anderson *et al.* points out that in South Africa, total incomes for low income households are significantly insulated by government transfer payments.

From public health, income distribution and food security perspectives, the remarkably rapid and severe shocks imposed because of the Covid-19 pandemic illustrate the value of having in place fiscal transfer policies that support vulnerable households in the event of so-called "black swan" events, such as Covid-19. It is nevertheless administratively impossible for these extraordinary grant disbursements to reach all the vulnerable households in South Africa and this policy option is also limited by obvious fiscal constraints. Figure 3.3 illustrates the sharp decline in non-agricultural employment in South Africa as a result of Covid-19.



vi. The sudden and severe downturn in economic activity that occurred during the second quarter of 2020 did not have a noticeable impact on the demand for so-called essential food products, the definition of which will vary from one country to the other. However, not all products from the agriculture sector are considered essential items. It stands to reason that, as incomes were reduced via massive job losses (in South Africa and globally), products consumed through more discretionary spending have been more significantly affected. These include high quality food products for restaurants and

specialised food retailers. Apart from the lower demand for certain agriculture products, this demand shift caused a measure of price instability.

vii. Research by Wegerif (2020), Greenberg (2017) and the Competition Commission of South Africa – CCSA (2019) confirms the important role of informal and street traders in the South African food and grocery sector. Estimates of the informal sector share of retail food sales range from 40% to 50%. It consists of small-scale owner-operated business enterprises who sell food, including street traders, hawkers, spaza shops and so-called "bakkie" traders, who collectively employ more people than the formal food and grocery sector. According to Battersby *et al.* (2016), approximately 70% of households in poorer neighbourhoods in South Africa source some food from the informal sector, mainly due to enhanced accessibility and lower prices. According to Wegerif, a combination of loss of incomes, less accessible food retailing options and higher transport costs have exerted a negative impact on food and nutrition security in South Africa. The revenues generated by informal food markets declined sharply during the initial lockdown regulations, which also impacted negatively on the farmers and farm workers that provide informal traders with supplies.

4 Covid-induced escalation of crime

4.1 Lockdown easing & job losses

Immediately after the easing of lockdown level 5 (the first and most stringent set of regulations announced by government on 26 march 2020), an escalation of crime occurred against the country's farming community.

Literally hundreds of case studies that confirm an increase in criminal activity on farms have been documented at every provincial branch of AgriSA. In one case, reported by Free State Agriculture, a Ficksburg farmer experienced theft and nine separate incidents of arson on her property in July 2020 alone, resulting in the loss of 100ha of mature maize crops.

During the highly restrictive early weeks of the lockdown, there was a noticeable decline in reports of rural crime, due to strongly enforced control on the movement of people and the ban on inter-provincial travel, as part of the initial effort to curb the spread of the virus.

However, as the lockdown regulations were eased during the second half of 2020, a sharp rise in unemployment resulting from business closures created a social environment for an escalation of both opportunistic and subsistence crimes.

According to Dr Jane Buys, safety risk analyst with Free State Agriculture, by mid-August 2020, more than 1,000 economic crimes had been committed on farms in the province during the lockdown. Reported crimes included the following:

- Theft of maize and other crops
- Arson

- Theft of livestock
- Burglaries and robberies
- Vandalism
- Motor vehicle theft
- Theft of farm tools, implements and equipment
- Damage to infrastructure
- Illegal hunting
- Malicious damage to property.

According to the detailed documentation on several of these crime, the negative impact was severe, with six farmers reporting a loss of between 10% and 50% of their maize crops between March and April.

In June 2020, Tommie Esterhuyse, chairperson of Agri SA's Centre of Excellence for Rural Safety, publicly expressed his concern over the sudden countrywide escalation in farm attacks, farm murders and economic crimes on farms. In comments published by *Farmers' Weekly* on 28 January 2021, he stated, *inter alia,* that the agriculture sector currently has to contend with uncertainty and escalating rural crimes, which are not conducive to creating an environment in which agriculture can perform and contribute towards economic development and growth.

4.2 Stock theft

In an article researched and written by Lloyd Phillips (2021), Aggrey Mahanjana, group managing director of the National Emergent Red Meat Producers' Organisation (NERPO), confirmed that NERPO's members have also reported being on the receiving end of many of the economic crimes highlighted by Buys.

According to Mahanjana, theft of sheep tops the list of reported stock theft incidents and that it is particularly devastating when these sheep are stolen while heavily pregnant and carrying their maximum wool.

Data collected by Willie Clack, chairperson of the National Livestock Theft Prevention Forum (NLTPF) and vice-chairperson of the Red Meat Producers' Organisation (RPO), indicates that livestock theft during Level 5 of the national lockdown was about 80% lower than the average over the same period in recent years. As movement restrictions eased, however, it increased to the point that during Level 3 it rose by an unprecedented rate to about 15% above the average (Phillips: 2021).

According to Clack, the Covid-19 virus led to police officers being infected and the closure of some rural police stations, stock theft units and other crime-fighting entities, which means that the criminal justice system simply did not have sufficient resources to deal with the escalating crime wave.

4.3 Timber theft

Francois Oberholzer, operations manager of Forestry South Africa (FSA), has been quoted in the media in stating that members of his organisation have reported an increase in theft since the Covid-19 pandemic erupted. Specific areas of heightened criminal activity include the following:

- Theft of standing timber in commercial plantations, ranging from the stealing of a few poles by individuals for domestic use to clear-felling of entire tree compartments by organised syndicates
- Timber stocks awaiting collection from roadsides or from depots have also been stolen
- Logs have been 'skimmed' off transport trucks
- Theft of forestry equipment, especially chainsaws
- An increase in poaching of game on plantations, due to the reduced movement of foresters and other staff during lockdown

FSA suspects that the increased occurrence of theft of timber (probably for building homes and for firewood) during lockdown is due to an increase in unemployment and poverty, induced by the Covid pandemic.

4.4 Sugar cane theft

According to Thandokwakhe Sibiya, strategic support executive of the South African Farmers' Development Association (SAFDA), reports received on a regular basis from the association's members indicate that they have collectively lost about 1 800ha of standing sugar cane during the lockdown period (until the end of 2020, as reported in Phillips – 2021).

Research by SAFDA indicates that stolen sugar cane has been used to brew home-made beer during the bans on alcohol sales, whilst stolen sugar cane has also been sold along the streets. According to SAFDA and reports received from members of the South African Cane Growers' Association (SACG), other aspects of increased criminality since the outbreak of the pandemic include:

- Theft of irrigation infrastructure, which is very costly to reinstall
- Arson in certain sugar cane-growing areas
- Illegal hunting on sugar cane farms
- Vandalism during violence from various service delivery protests
- Destruction of haulage trucks

4.5 Agriculture crime survey by Unisa's Bureau for Market Research (BMR)

The BMR determined that, in 2017, the direct costs of agriculture crime amounted to R5.45-billion, with the following major areas of criminality:

- Theft of livestock – R1.13-billion
- Arson – R917-million

- Theft of tools and equipment – R848-million
- Malicious damage to property – R687-million
- Burglary – R290-million

The 2002 Census of Agriculture conducted by Statistics SA also contained information on agriculture crime, with some categories of crime allowing for quantifiable comparison with the 2017 data of the BMR (published in 2018).

This provides a basis for a realistic estimation of the costs of crime in 2020 that can be attributed to the detrimental socio-economic circumstances flowing from Covid-19.

Table 4.1 explains the methodology utilised for a quantitative assessment of the additional costs of crime borne by farmers in South Africa as a result of the deteriorating socio-economic disposition in rural areas, particularly a significant rise in unemployment. The calculation yields a cost figure of R81.4-million.

Table 4.1: Methodology utilised for the calculation of the costs of an escalation of crimes against the farming community induced by Covid-19:

1. Determination of the average annual increase in the total cost of agriculture crime between 2002 and 2017, using the total direct cost of crime contained in two authoritative surveys for these two calendar years as basis (Statistics SA: 2002 and the Bureau of Market Research - BMR at Unisa): 2018. Only those categories of agriculture crime for which comparative data for these two periods exist were utilised for the calculation, which yielded an increase of 8.46%, on average, per annum.
2. The growth rate determined in step 1 was then applied to the total direct cost and extrapolated to yield a cost of R6.95-billion for 2020.
3. Based on the average increase between 2019 and 2020, the difference in terms of cost amounts to R542-million. According to analyses of reported agriculture crimes in the dominant area of stock theft, the socio-economic problems caused by the pandemic was responsible for an estimated additional cost of 15%, yielding a figure of R81.4-million.

5 Quantifying the impact of lower demand for food and hospitality services

5.1 Game farming

During most stages of the lockdown regulations, only subsistence hunting was permitted in South Africa. This meant that virtually the whole of the trophy hunting season was fruitless, whilst other categories of wildlife ranching, including the breeding and sale of live animals and supply of venison (especially for biltong), also suffered huge losses.

Although most of the sub-sectors in agriculture have experienced growth during the pandemic, most notably staple crops and horticulture, as well as those that are export-orientated, game farming is a notable exception, with almost all of its revenue evaporating in the face of the pandemic (according to a survey conducted by Wildlife Ranching South Africa (WRSA), the main body that represents more than 1,500 game farmers).

The financial, social and economic benefits of wildlife ranching in South Africa have been well-researched over the past decade, with its contribution to the viable utilisation of so-called marginal land especially relevant to the on-going process of socio-economic reform in South Africa.

According to a contribution by Cloete (2021) to *Agribook*, wildlife production experienced an average annual growth rate of 5.6% between 1991 and 2005. However, an increase in intensive breeding practices, especially of high-value animals, has since resulted in an acceleration of growth to 6.75% per annum. As a result, the wildlife industry is regarded as one of the fastest growing agricultural sectors in South Africa.

Recent research into the contribution made to the economy by game farming confirms the existence of substantial revenue and value added generation, as well as job creation. According to Taylor *et al.* (2016), the ratio of full-time employment in wildlife ranching stood at 0.0038 per hectare in 2014. When applied to the estimate of 20 million hectares of land dedicated to game farming (Cloete: 2015), this yields an employment level of 76,000, which is fairly close to the estimate of 65,172 of the Taylor study.

When extrapolated to 2020 by a real growth rate of 5%, the latter employment figure has swollen to 116,721. Accounting for the ratio of informal to formal employment in the economy, this figure increases further to 146,942 people.

Research by Adami & Mogashoa (2016) estimated the revenue generated by wildlife ranching in South Africa at R20.6-billion in 2014, which is much higher than the figure of R7.6-billion determined by Taylor *et. al.* (2016). The latter research was commissioned jointly by the Department of Environmental Affairs, the Green Fund and the Development Bank of Southern Africa (DBSA) and involved surveys with 251 wildlife ranchers, covering an area of almost 1.4 million hectares.

The research results on the economics of game farming included in the study by Taylor *et al.* is closely correlated to data published by the National Hunting and Shooting Association (NHSA) as well as figures quoted in *Agribook* by Munzhedzi (2018). The Taylor study is widely regarded as one of the benchmark data sources for the industry. Its estimates on the value of trophy hunting are nevertheless considered conservative when compared to records kept by the Confederation of Hunting Associations of South Africa (CHASA).

The former report placed a figure of R1.96-billion on the 2014 value of trophy hunting (by foreign and local hunters). Extrapolated to 2019 at a real rate of growth of 5%, this figure has increased to R3.19-billion. This figure is considerably lower than the view of Stephen Palos, CEO

of CHASA, namely that the industry's pre-Covid annual revenue was R11-billion (as quoted by Masihlelo - 2020 in the *Daily Southern & East African Tourism Update* of 9 July 2020), of which R9-billion was from domestic hunters.

Despite consensus over the fact that the largest single area of financial loss for wildlife ranching induced by the pandemic was for international trophy hunting, opinions over the size of this industry (and hence estimates of the loss incurred), vary greatly.

According to research by Saayman *et al.* (2018), trophy hunting by foreigners generated R2.53-billion during the hunting season between June 2015 and June 2016. Extrapolated to the 2018/2019 season at a real growth rate of 5%, this increases to R3.38-billion, but excludes domestic hunters whose spending, according to CHASA, represents 82% of the total trophy hunting industry.

In order to provide an assessment of the damage inflicted on game farming by Covid-19, it is necessary to gauge its contribution to the economy during 2019, the year prior to the pandemic. In attempting to quantify the loss to the industry, the most conservative data sources for particular variables have been selected. The methodology utilised for this assessment is presented in table 5.1, indicating a loss to agriculture of R7.46-billion.

Table 5.1: Methodology utilised for the calculation of the loss of income in the wildlife ranching industry resulting from the Covid-19 pandemic

1. Determination of the income from all game ranching operations in 2014, based on the research by Taylor *et. al.* (2016) and including live sales, trophy hunting, biltong hunting and culling for venison meat, yielding a figure of R7.55-billion
2. Extrapolation of this figure by a real growth rate of 5% per annum, based on research by the NHSA and adjusted to a nominal growth rate up to 2019, yielding total revenue of R12.27-billion
3. Calculation of the loss of trophy hunting revenue, based on data from Wildlife Ranching South Africa (WRSA), as quoted in *Food for Mzansi*, 28 May 2020, namely an 86% decline, yielding a loss of R2.74-billion
4. Calculation of the loss of revenue from live animal sales, biltong and venison meat, based on data from Wildlife Ranching South Africa (WRSA), namely a 52% decline, yielding a loss of R4.72-billion
5. The total loss of revenue to wildlife ranching thus determined amounts to R7.46-billion

Note: *The real growth rate of 5% translates into a nominal growth rate of 10.2% (between 2014 and 2019), by virtue of average inflation over this period of 5.2%. This is regarded as a conservative figure, as a survey of six different sources produces an average annual growth of the game farming industry since 2005 of 15.5%.*

5.2 Agri-tourism

The sectors for tourism and accommodation have suffered severe declines in business activity, with the re-introduction of adjusted level-3 lockdown restrictions at the end of 2020 bound to prolong their worst ever sales figures well into 2021.

Agriculture is intimately involved and affected by trends in tourism, via two key causalities: Firstly, a significant number of farmers have become involved with agri-tourism, including the operation of guest houses on their properties. Secondly, lower income from food and beverage sales in the tourism sector at large impacts the output of the agriculture sector via a strong value added-linkage between agriculture and the food & beverage processing industries.

Table 5.2: Key categories of agri-tourism in South Africa

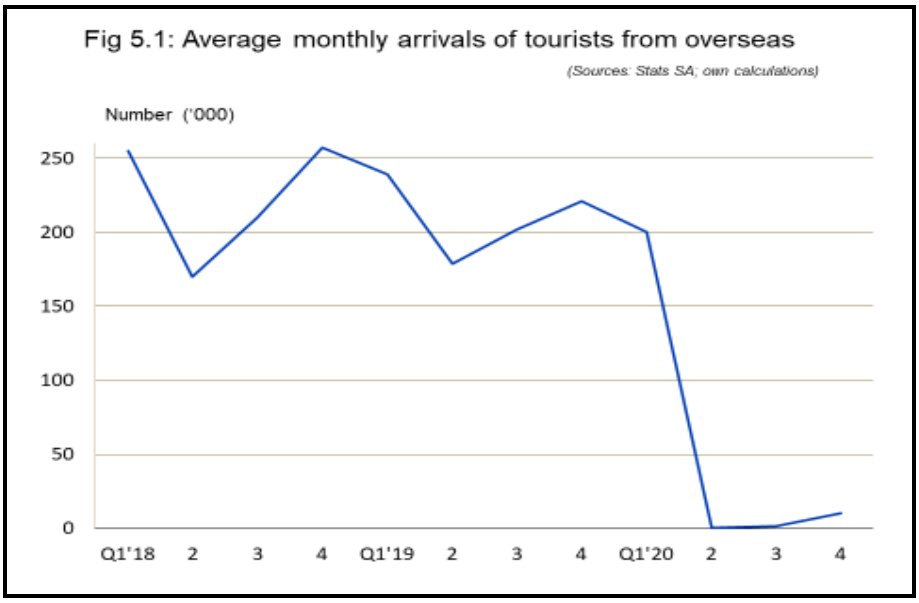
Accommodation	Fishing
Animal rides	Hunting
Auctions	Mountain climbing
Beer tasting	Nature hiking trails
Biking	Off-road vehicle routes
Camping	Petting zoos
Catering	Photography
Conferencing	Picnicking
Cooking/culinary classes	Retail trade (on-farm)
Educational tours	Water sports
Environmental education	Weddings
Farm produce stalls	Wildlife viewing
Farming activities	Wine tasting

Sources: *Agritourism Africa; Van Zyl (2019); Mnguni (2010)*

Unfortunately, the emergence at the end of 2020 of a local variant of the Covid-19 virus has become so prevalent that several countries have also returned to stricter lockdowns and some have even closed their borders to South Africa. This means that international tourists will remain virtually absent until substantial progress has been made with mass vaccinations globally.

Figure 5.1 illustrates the disastrous decline in the arrivals of tourists from overseas, which is not expected to be reversed until population immunity has been achieved in South Africa via effective inoculation against the Covid-19 virus. Between March and November 2020, a cumulative total of 1.65 million fewer tourists from overseas arrived in South Africa.

Foreign and domestic tourists spend a considerable amount of money on food and beverages, which is captured, to some extent, by the statistical data series on income for the latter industry. Data on the value of expenditures on meals provided by hotels and bed & breakfast establishments are also captured by Statistics SA and will supplement the assessment of the impact of Covid-19 on agriculture, flowing from declines in these expenditure groups.



In addition to providing a quantifiable measure of the negative impact of Covid-19, the collective calculations of the intermediate inputs from agriculture that are required by the food and beverage processing industry also serves as a verification of some of the other elements contained in the overall impact assessment of Covid-19 on agriculture. The methodology utilised for this assessment is presented in table 5.3, indicating a loss to agriculture of R11.3-billion.

Table 5.3: Methodology utilised for the calculation of the loss of income in agri-tourism resulting from the Covid-19 pandemic

1. Determination of the total income from all farming operations in 2020, based on the income figure as per the 2017 census of commercial agriculture (CCA), adjusted by the rate of increase in agriculture value added between the first three quarters of 2017 and the first three quarters of 2020
2. Calculation of the provincial composition of total agriculture sector income, based on the 2017 CCA
3. Calculation of the regional composition of farming sector income derived from agri-tourism, based on survey data obtained from a Master's thesis on the subject (Van Zyl: 2019) and applied to the data derived in step 2. (The lower end of the income range for the different provinces has been utilised, except for Mpumalanga and the Northern Cape - mid-range and Gauteng). The median range has been utilised for Gauteng, due to the small size of the survey sampling group.
4. Determination of the loss of income from agri-tourism by province and on aggregate, based on the data derived in step 3 and the decline in the occupancy rates at guest farms and guest houses for the country as a whole between January to November 2019 and January to November 2020. (This decline has been as a direct result of the Covid-19 pandemic).
5. The total loss to agri-tourism thus determined amounts to R11.3 billion

5.3 Food and beverage industry

Agriculture has felt the knock-on effects of a combination of the initial lockdown measures that restricted the movement of people and subsequent bans on the sale and distribution of alcoholic beverages. The lockdown regulations were particularly harsh on restaurants and businesses specialising in the food and beverages industry.

According to data compiled by the National Agricultural Marketing Council (NAMC) and the Agricultural Research Council (ARC), as quoted in Mkhabela (2020:2), most South African beer manufacturers source their agricultural products from more than 1,200 farmers, of which more than 750 are smallholder farmers.

Furthermore, the country has more than 2,000 farmers producing wine grapes, comprising 533 cellars, producing 970 million litres of wine. An estimated 290,000 people are employed both directly and indirectly in the wine industry value chain and approximately 50 percent of South Africa's wine is consumed on the domestic market.

Despite the existence of excellent export marketing by the South African wine industry, Covid-19 has presented daunting challenges due to poorly functioning ports, mainly as a result of elaborate regulatory procedures surrounding health protocols and high levels of absenteeism. Stocks have also built up considerably, which have resulted in additional costs and losses, particularly of beer, which has a limited shelf-life.

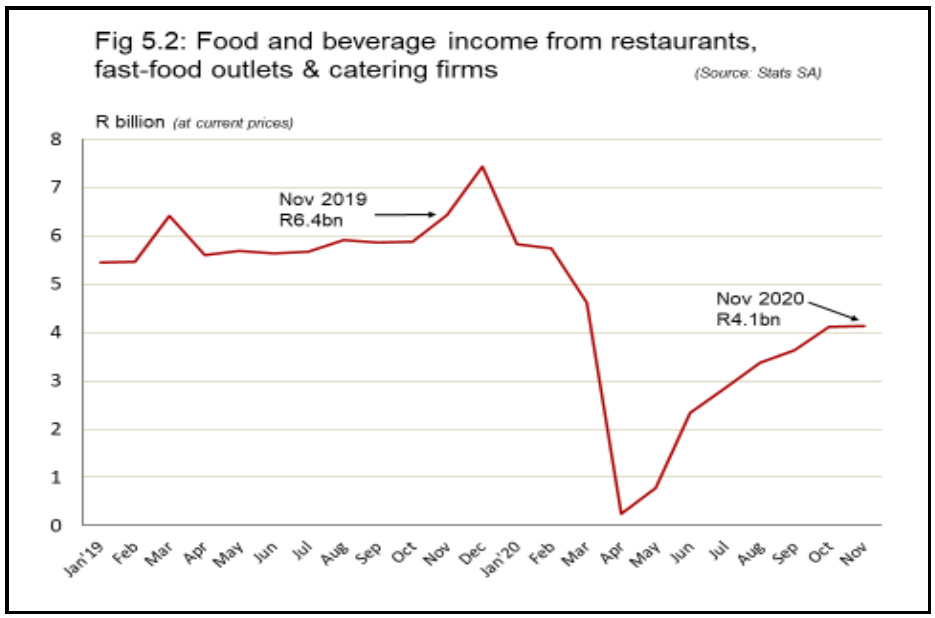


Figure 5.2 confirms the extent to which the income from the food and beverages industry declined during the lockdown periods, with a virtual decimation of this industry having occurred in April 2020. Although a welcome degree of recovery has since taken place, this sector of economic activity is destined to take longer to post a full recovery than the economy as a whole. In November 2020, sales were still 36% lower than in November 2019, representing a difference of R2.3-billion.

Table 5.4 depicts the loss suffered by agriculture as a result of the declines in the revenues of the food and beverages industry due to the Covid-19 pandemic, indicating a loss of R1.39-billion. The figures are stated at current prices, with the loss calculated under the assumption of zero year-on-year growth.

Table 5.4: Negative impact on agriculture emanating from the decline in the income of the food & beverage industry due to Covid-19

	Income (R billion)			Agriculture
	2019	2020	Loss	impact (R million)
Quarter 1	6.4	4.6	-1.8	-92.2
Quarter 2	16.9	3.4	-13.6	-697.2
Quarter 3	17.4	9.9	-7.6	-389.0
Quarter 4	12.3	8.2	-4.1	-209.1
Totals	53.1	26.1	-27.0	-1,387.5

Notes:

1. The impact on agriculture has been calculated via the input/output ratios for direct intermediate inputs from agriculture into the catering sector and agriculture's share of the inputs from the food & beverages sector

2. Quarter 1 only includes March; Quarter 4 only includes October and November

Income from the sales of food & beverages by the hotel industry is not included in the above data and also needs to be taken into consideration. Table 5.5 depicts the loss suffered by agriculture as a result of the declines in these revenues due to the Covid-19 pandemic, indicating a loss of R224.8-million. The figures are also stated at current prices, with the loss calculated under the assumption of zero year-on-year growth

Table 5.5: Negative impact on agriculture emanating from the decline in the income of hotel sales of food & beverages due to Covid-19

	Income (R million)			Agriculture
	2019	2020	Loss	impact (R million)
Quarter 1	682.6	433.2	-249.4	-12.8
Quarter 2	1733.2	43.5	-1689.7	-86.9
Quarter 3	1890.7	356.6	-1534.1	-78.9
Quarter 4	1446.8	546.3	-900.5	-46.3
Totals	5753.3	1379.6	-4373.7	-224.8

Notes:

1. The impact on agriculture has been calculated via the input/output ratios for direct intermediate inputs from agriculture into the catering sector and agriculture's share of the inputs from the food & beverages sector

2. Quarter 1 only includes March; Quarter 4 only includes October and November

5.4 Private consumption expenditure on food & beverages

Despite agriculture and food processing activities having largely been exempted from the lockdown regulations, the disruption of supply chains linked to agriculture, especially with regard to textiles, restaurants and hotels, and the restrictions on the movement of people have led to a significant decline in non-durable consumption, including expenditure on food and beverages.

The latter represents the single largest component of non-durable expenditure (64%), whilst non-durable expenditure by households represents 41% of total private consumption expenditure (PCE). This key macro-economic indicator amounted to more than R3-trillion in 2019, representing 60% of South Africa's GDP (South African Reserve Bank - SARB 2020).

Table 5.6 contains the calculation of the loss suffered by the agriculture sector as a result of the substantial decline in actual PCE on food and beverages versus a realistic scenario in the absence of the Covid-19 pandemic. The result is a loss of R6.3-billion.

Table 5.6: Calculation of loss of agriculture output as a result of the Covid-induced decline in consumption expenditure on food & beverages in Q2, 2020

Steps		**%**
1	Determination of ratio between expenditure on food & beverages and total non-durable private consumption expenditure (PCE)	64.09
2	Determination of the average annual growth rate of non-durable consumption expenditure between 2016 and 2019	5.93
3	Ratio of intermediate agriculture input into food & beverages sector	17.77
		R billion
4	Determination of the potential expenditure on non-durables in the 2nd quarter of 2020, based on step 2	316.7
5	Actual non-durable expenditure in Q2, 2020	261.7
6	Loss due to Covid-19	55
7	Loss of food & beverages component	35.2
8	Loss of agriculture component	6.3

Sources: *Stats SA; SARB; Quantec Data*

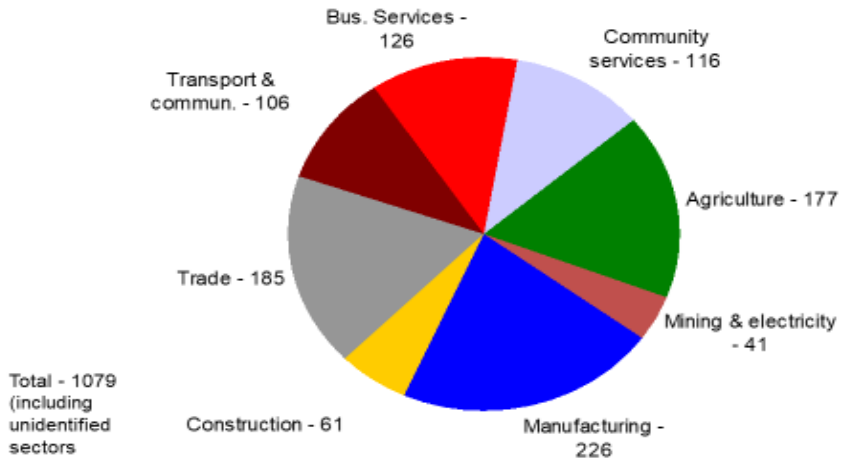
5.5 Business impact survey on Covid-19 by Statistics SA

In realising the widespread disruption to the economy caused by the Covid-19 pandemic, Statistics SA conducted three surveys on the impact of the pandemic on South African businesses. The first two of these surveys survey covered the period 30 March to 30 April 2020, whilst the third one was conducted for the period 1 to 30 May 2020.

The third survey contains additional variables or questions related to research and development that provide further insight into the impact of the Covid-19 pandemic. The findings contained in the third survey cover the level 4 lockdown period.

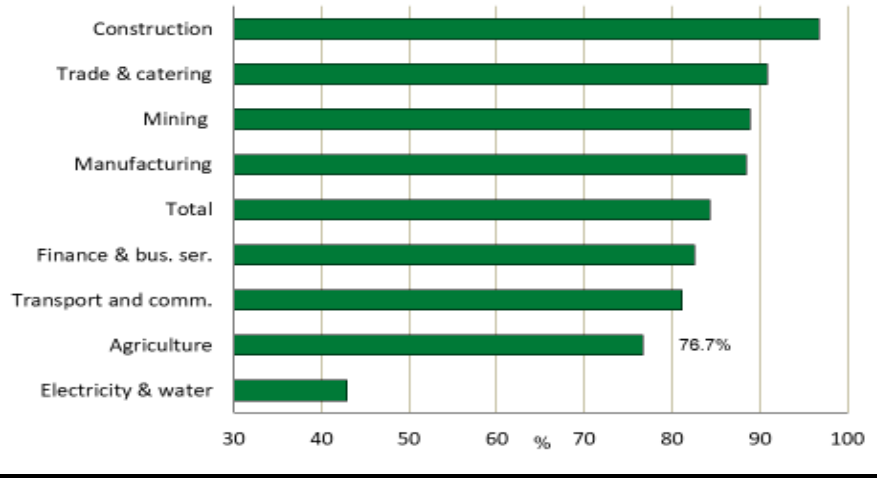
The purpose of these surveys was to assemble experimental statistics aimed at providing an early indicator of the business impact resulting from Covid-19. The sample group for the surveys were selected businesses operating within various industries in South Africa that are registered for value added tax (VAT) and the third survey had a total of 1,079 respondents (see figure 5.3).

Fig 5.3: Composition of respondents for the third Statistics SA business impact survey of Covid-19

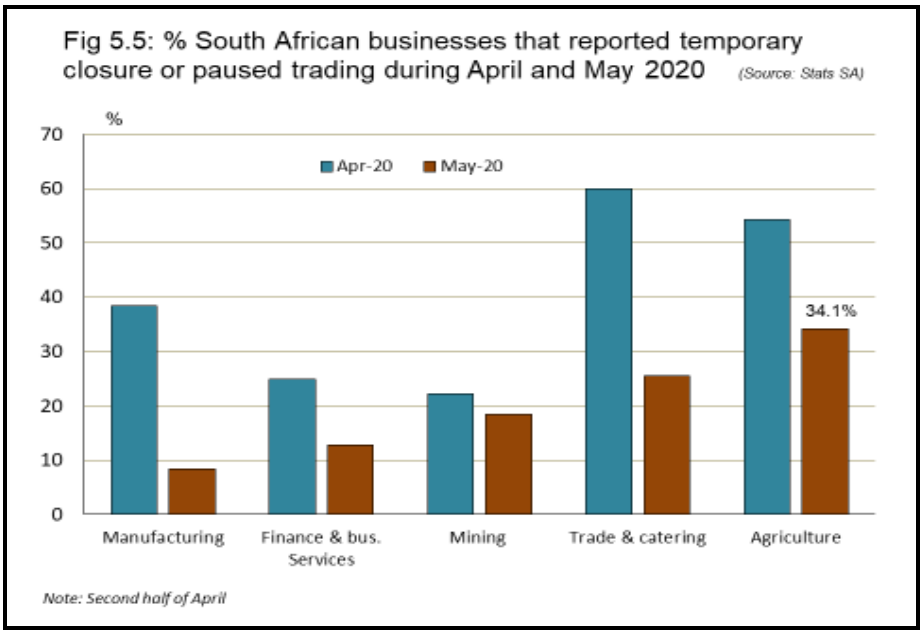


A total of 177 businesses in the agriculture sector were included in the third survey (the third highest sector representation) and the results provide a clear indication of the harm that was inflicted on farmers by the pandemic, as illustrated by figures 5.4 and 5.5.

Fig 5.4: % South African businesses that reported turnover below the normal range during May 2020 *(Source: Stats SA)*



Although agriculture had the second lowest sector ranking in terms of the percentage of businesses that experienced declines in turnover during the fourth level of lockdown regulations, more than three-quarters of agri-businesses surveyed reported declines.



A particular concern for the position of businesses in the agriculture sector is the finding in the Statistics SA surveys of a high level of temporary closures or cessation of trading. Although agri-businesses reported an improvement in the re-opening of businesses between April and May 2020, it had the highest closure ratio of all the sectors.

6 Quantifying the overall impact via input/output table analysis

6.1 Economic linkages create different impacts

The activities in an economy are linked. ales of produce by a farmer necessitate not only the coordination of production factors on that farm, but also the purchase of inputs such as seed, fertilizer, tractors, harvesters, electricity, banking and other services from "upstream" suppliers in other sectors of the economy.

The output of the farming activity may, in turn, be used to satisfy final demand – mainly from households – or constitute an intermediate input into another "downstream" production process such as food, beverage, textile or leather goods manufacture. Because of these linkages it is possible to discern a number of distinct effects that arise from a sales shock – whether positive or negative - in a particular sector, namely:

i) An ***initial impact*** that relates to the value creation process within the farm receiving the sales order; and

ii) A so-called ***first round effect*** that arises from the orders that the farm places with its suppliers in order to fulfil the sales order.
Together these two impacts constitute the ***direct impact*** of the sale.

iii) Those suppliers, in turn, place additional purchase orders with their upstream suppliers. This gives rise to an ***indirect impact*** of the initial sales stimulus.

iv) The incomes derived by the owners of the different factors of production (wages, interest, rent and profits) as a consequence of the different impacts described

above may then be either spent or saved. As a consequence, the sales in numerous other sectors of the economy will increase. This is regarded as the ***induced impact***.

6.2 The role of multipliers

These diverse impacts give rise to economic multipliers that illustrate the scale of linkages and interdependencies between different sectors. The sum of the direct, indirect and induced multipliers reflects the economy-wide impact of a particular development. Data permitting, these multipliers can be calculated and expressed in a relation to different variables, ranging from output, employment and even tax collections.

A direct output multiplier of 2 means that for every R1 of value added in a particular sector, producers in that sector need to purchase inputs valued at R1 from other sectors. In the event of a negative shock – such as that caused by the Covid 19 pandemic[1] – these multipliers work in the reverse. The fall in sales in one sector, such as food manufacture, is multiplied by consequential negative impacts on "upstream" suppliers to it (including agriculture). In turn, the negative impact on agricultural sales will flow through to its "upstream" suppliers.

Figure 6.1 below illustrates the various linkages that exist between the agriculture, forestry and fishing sector in South Africa and its various "upstream" suppliers and "downstream" customers (2019 data). This provides a baseline for assessing the impacts of the pandemic on the sector, and for assessing how these impacts will – in turn – affect "upstream" supplier sectors.

The figure indicates that the sector produced output valued at more than R216bn in 2019. This comprised R112bn of intermediate inputs purchased from suppliers and a further R104bn of value added by the production activities within the sector and pricing adjustments brought about due to the imposition of indirect taxes (such as excise duties, skills levies and VAT) and subsidies.

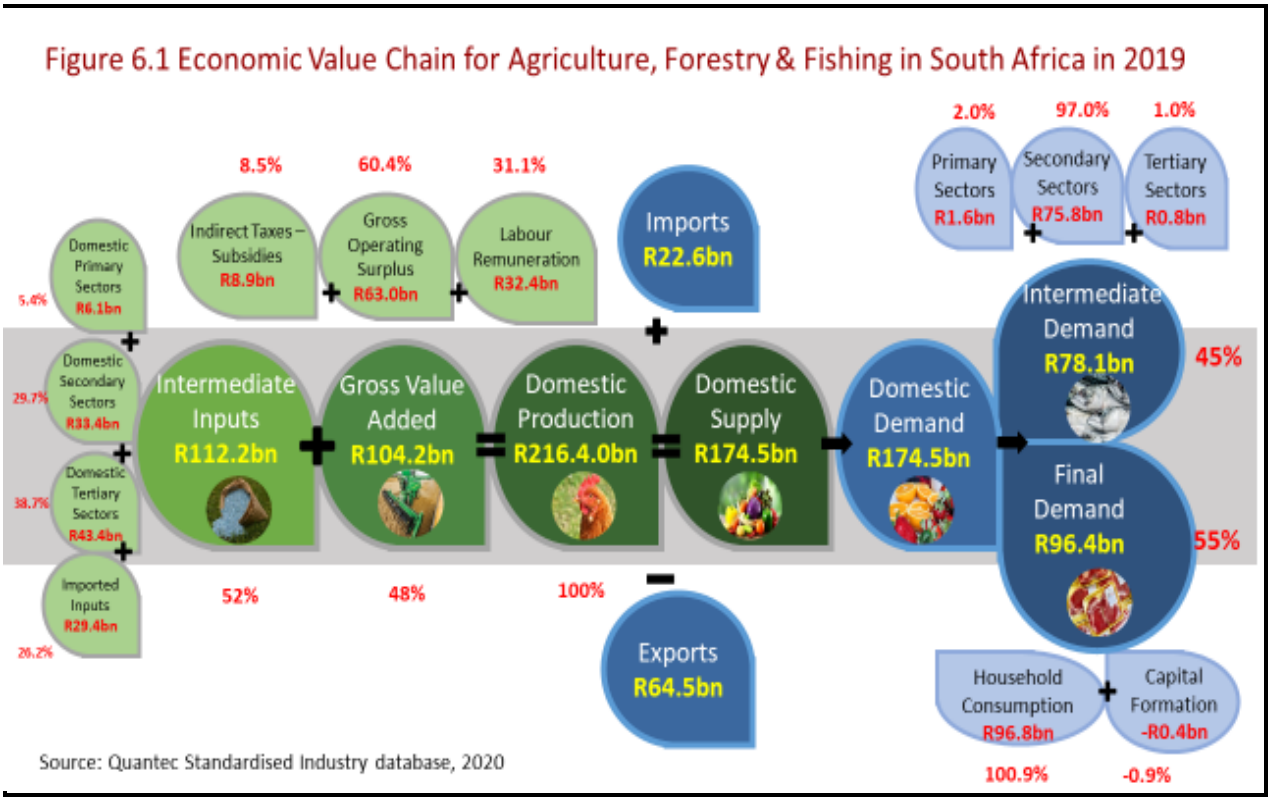
This implies a direct output multiplier of 2.08. This domestic production was supplemented by imports of close to R23bn and reduced by exports of about R65bn, leaving around R175bn to satisfy domestic demand. Forty-five percent of this demand arose from other sectors of the economy that required intermediate agriculture, forestry and fishing inputs into their production processes, while the remaining 55% was final demand from households.

To accommodate final demand that was effectively higher than could be supplied there was a small (R0.4bn) reduction in the value of inventories of products accumulated from prior years.

It is noteworthy that 97% of the intermediate demand for the output of the agriculture, forestry and fishing sector came from secondary sectors (mainly food, beverage, tobacco, wood product and textile manufacture). A small proportion (1%) of intermediate demand went directly to tertiary sectors such as catering and accommodation[2].

[1] Note that the Covid 19 pandemic and any policy and administrative responses to it are treated collectively.

[2] Most of the agriculture, forestry and fishing inputs into a sector such as catering and accommodation would be processed and transformed by other sectors.



6.3 Quantifying the impact of Covid-19 on the demand for agriculture

Unpacking the composition of intermediate and final demand and assessing the impacts of Covid-19 on each component makes it possible to estimate the immediate effect of the pandemic on the domestic demand for the output of the agriculture, forestry and fishing sector.

Table 6.1 reflects the value of intermediate demand for domestically-produced inputs in 2019 from each of the 10 major sectors of the economy. This is regarded as the pre-Covid baseline. It also shows the average annual change in production volumes experienced in the first three quarters of 2020 (assumed to reflect the Covid-19 impact) and applies these changes to the baseline figures to estimate what the direct impact of the pandemic was on the intermediate demand for the output of the agriculture, forestry and fishing sector.

It is noteworthy that the pandemic has impacted the production activities of the various sectors of the economy in very different ways – ranging from a contraction in the real value added of the construction sector of 20%, to an increase in the value added of general government of 0.8% and a rise in the value added by agriculture, forestry and fishing of 11.3%.

The data shows that on a weighted basis, intermediate demand would have been 14.2% lower than in the baseline. This translates into a reduction in intermediate demand of more than R9.8bn.

Unsurprisingly, the sector that experienced the most significant drop in the value of its demand for intermediate inputs from agriculture, forestry and fishing was manufacturing. This declined by almost R10bn, or 14.9%.

Table 6.1: Estimated impact of Covid 19 on the intermediate demand for the domestically-produced output of the agriculture, forestry & fishing sector in 2020

Sector	Baseline Value of Intermediate Demand for Output of Agriculture in 2019 (at 2019 Prices) - Rm	Annual % Change in Production: First Three Quarters of 2020	Implied Value of Intermediate Demand for Output of Agriculture, in 2020 (at 2019 Prices)- Rm	Change in Intermediate Demand Due to Covid-19 (at 2019 Prices) - Rm
Agriculture, forestry and fishing	1,389	11.3%	1,546	157
Mining and quarrying	-	-13.8%	-	0
Manufacturing	67,072	-14.9%	57,105	-9,967
Electricity, gas and water	-	-6.5%	-	0
Construction	2	-20.0%	2	0
Wholesale and retail trade, catering and accommodation	237	-10.7%	212	-25
Transport, storage & communication	2	-15.6%	2	0
Finance, insurance, real estate and business services	62	-3.4%	60	-2
General government	126	0.8%	127	1
Community & personal services	252	-3.4%	243	-9
Total Intermediate Demand*	**69,142**	**-14.2%**	**59,296**	**-9,846**

**Note: This figure differs from the value shown in Figure 1 because it does not include imports that were used to satisfy intermediate demand.*
***Sources:** Statistics South Africa P0441, Quantec Standardised Industry Database.*

As shown in Figure 6.1, intermediate demand only constitutes 45% of total domestic demand for agriculture. The remaining 55% consists of final demand from households. In 2019, the final demand by households for products from the agriculture, forestry and fishing sector reflected in Figure 6.1 comprised 27% of total household expenditure in that year.

Table 6.2: Estimated impact of Covid 19 on the final demand for the domestically-produced output of the agriculture, forestry & fishing sector in 2020

Components of Household Consumption Expenditure	Baseline Value of Final Demand for the Output of Agriculture in 2019 (at 2019 Prices)- Rm	Annual % Change in Spending in First Three Quarters of 2020	Implied Final Demand for Agriculture output in 2020 (at 2019 Prices) Rm	Change in Final Demand Due to Covid-19 (at 2019 Prices) Rm
Durable goods	-	-	-	-
Semi-durable goods	246	-7.8%	227	-19
Non-durable goods	82,868	-4.4%	79,219	-3,649
Services	-	-	-	-
Total Final Demand by Households*	**83,114**	**-4.4%**	**79,446**	**-3,668**

**Note: This figure differs from the value shown in Figure 1 because it does not include imports that were used to satisfy final demand.*

***Sources**: Statistics South Africa P0441, Quantec Standardised Industry Database.*

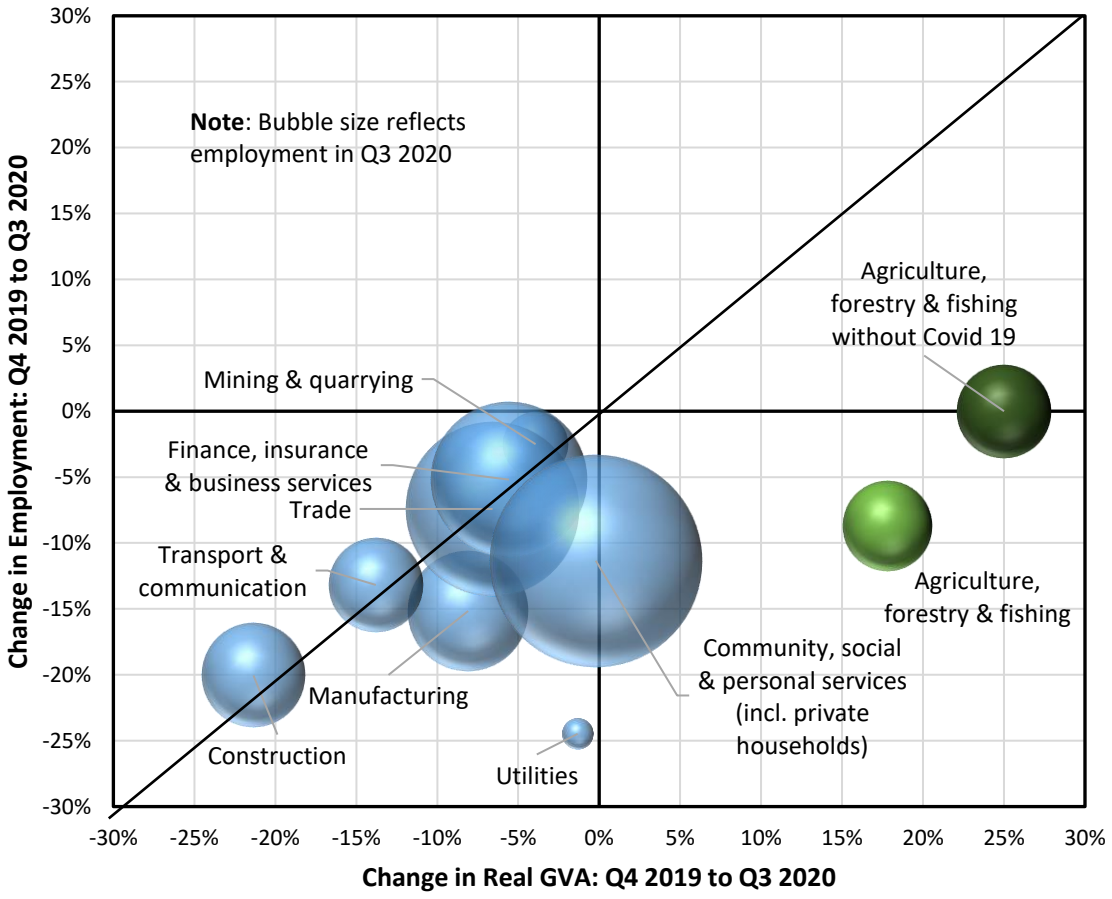
In the first three quarters of 2020, real household spending on food and beverages declined by 4.4%, and on non-food items it dropped by 7.8%. Overall, total household consumption spending fell by 7%. Table 6.2 reflects the estimated impact of the pandemic on the final demand for the output of the agriculture, forestry and fishing sector. It estimates that final demand dropped by 4.4% or R3.7bn relative to the 2019 baseline.

When these estimates are combined, in means that, relative to the 2019 baseline, the domestic demand for the output of the agriculture, forestry and fishing sector in 2020 declined by R13.5bn or 7.8%. While this decline was partially offset by an increase in export earnings, this occurred at unit export prices that were 4.5% lower than a year earlier.

Using certain assumptions about reduced export volumes to offset this higher domestic demand (at higher prices), the potential impact on the growth in real GVA and total employment in the agriculture, forestry and fishing sector with and without the Covid 19 pandemic is shown in Figure 6.2.

This analysis does not include adjustments for all the other sectors of the economy. Under fairly conservative assumptions, growth increases to around 25% (from the actual 17%) and employment remains static, i.e. zero job losses (from an actual contraction of 8.7%).

Figure 6.2: The impact of Covid-19 on output and employment levels in different sectors and the estimated contribution agriculture could have made in the absence of Covid-19



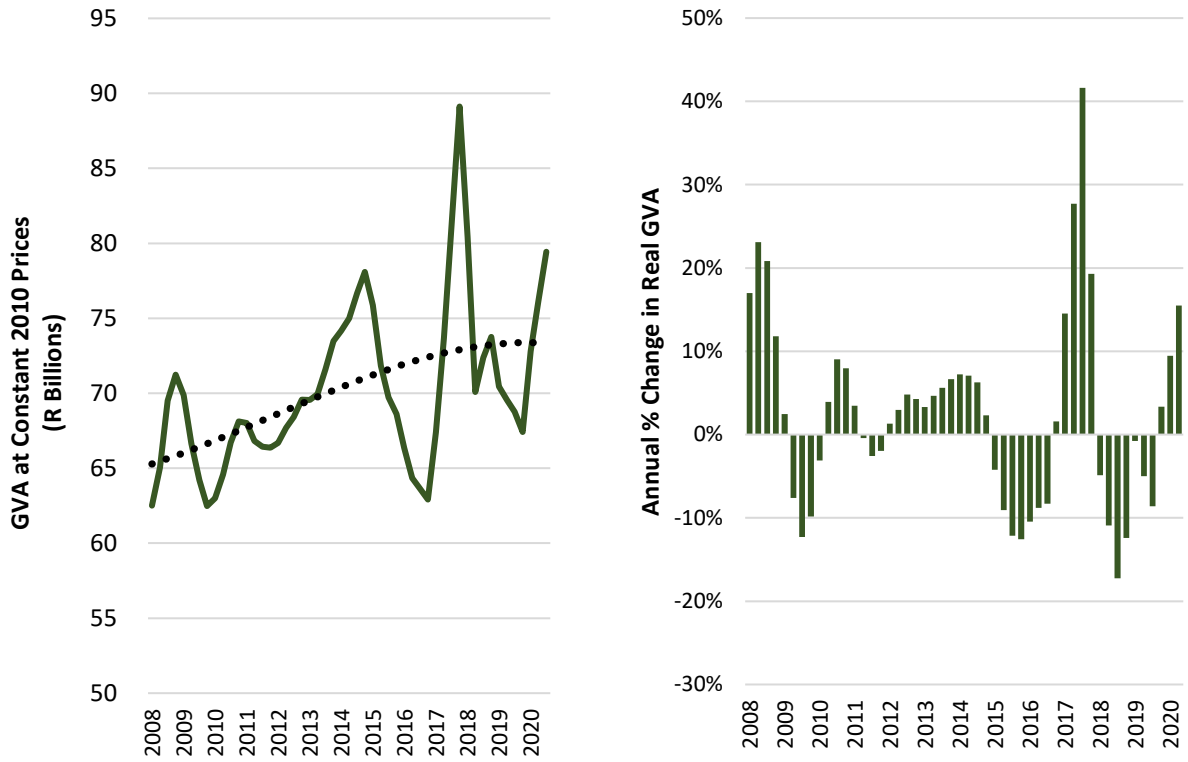
***Sources**: Statistics South Africa P0041 and QLFS, own estimates*

Addendum: Indicators of recent trends in the agriculture, forestry and fishing sector

1. Trends in gross value added

Figure 1 reflects trends in the real gross value added of the agriculture, forestry and fishing sector from the beginning of 2008 up to the third quarter of 2020. The left hand graph shows the value of GVA at constant 2010 prices while the right hand graph shows the annual percentage change in the values. Despite the fact that seasonally-adjusted, annualized figures were used the value added displays significant volatility. In some quarters year-on-year growth in excess of 40% was recorded, while in others there were contractions of up to 17%. It is worth noting that the real GVA of the sector declined by over 10% in 2016 – largely as a result of a severe drought – and in 2018 and 2019 it contracted by 4.8% and 6.9% respectively. The recovery in real GVA in 2020 needs to be viewed against this backdrop.

Figure 1: Trends in real gross value added by agriculture, forestry and fishing



***Source**: Statistics South Africa, P0441*

Also, unlike most other sectors of the economy, there are very long lead times associated with production in most agriculture and forestry activities. A maize crop planted in December is only harvested towards the middle of the following year, while the harvesting of timber from commercial forests may occur a decade or more after the initial planting. This means that production levels in these sectors are more likely to reflect decisions made before any exogenous shocks are experienced. The short-term impact of such shocks is therefore more likely to be reflected in changes in the price of commodities produced rather than in volume changes. Since quantification of the real GDP using the production method measures volume changes rather than price changes, there is a risk that short-term shifts in the output of the

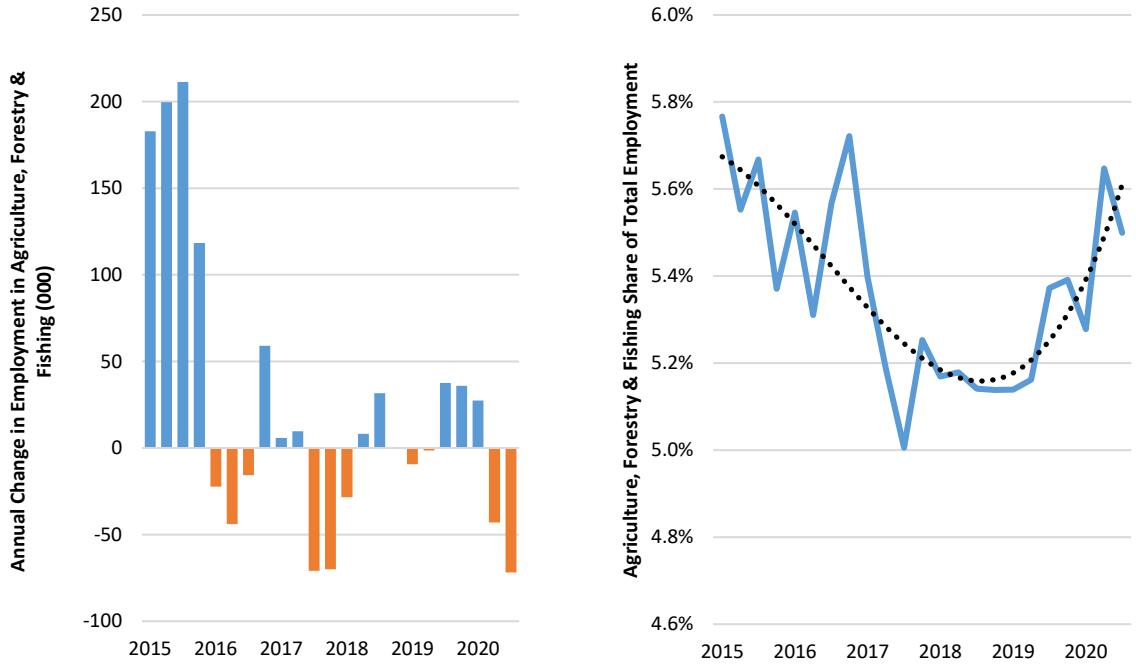
sector may be at odds with its fundamental health. To the extent that changes in the price of agricultural products impact the financial position of farmers and forest owners, exogenous shocks such as that brought about by the Covid 19 pandemic may only impact investment decisions and production levels in the sector in subsequent years.

Despite the recovery in the first three quarters of 2020 - following two successive years of contraction - the real value added by the sector was still substantially lower than the peak reached in the 4th quarter of 2017.

2. Trends in employment

Figure 2 shows changes in total employment in agriculture, forestry and fishing between Q1 of 2015 and Q3 of 2020 (left hand graph). Over this period the number of people employed declined by 84,000. An annual increase of 178,000 in 2015 was offset by subsequent contractions in 2016, 2017/18 and in the 2nd and 3rd quarters of 2020.

Figure 2: Changes in total employment in the agriculture, forestry and fishing sector and its share of total employment



***Source**: Statistics South Africa, Quarterly Labour Force Survey P0211*

Given that they occurred at the same time as the sector was experiencing increases in output (as shown in Figure 1), the latter declines may provide a more accurate reflection of the underlying health of the sector. The right hand graph reflects employment in the sector as a share of total employment in South Africa. This dropped from close to 5.8% at the start of 2015 to 5% in mid-2017, before recovering to almost 5.6% in the 2nd quarter of 2020.

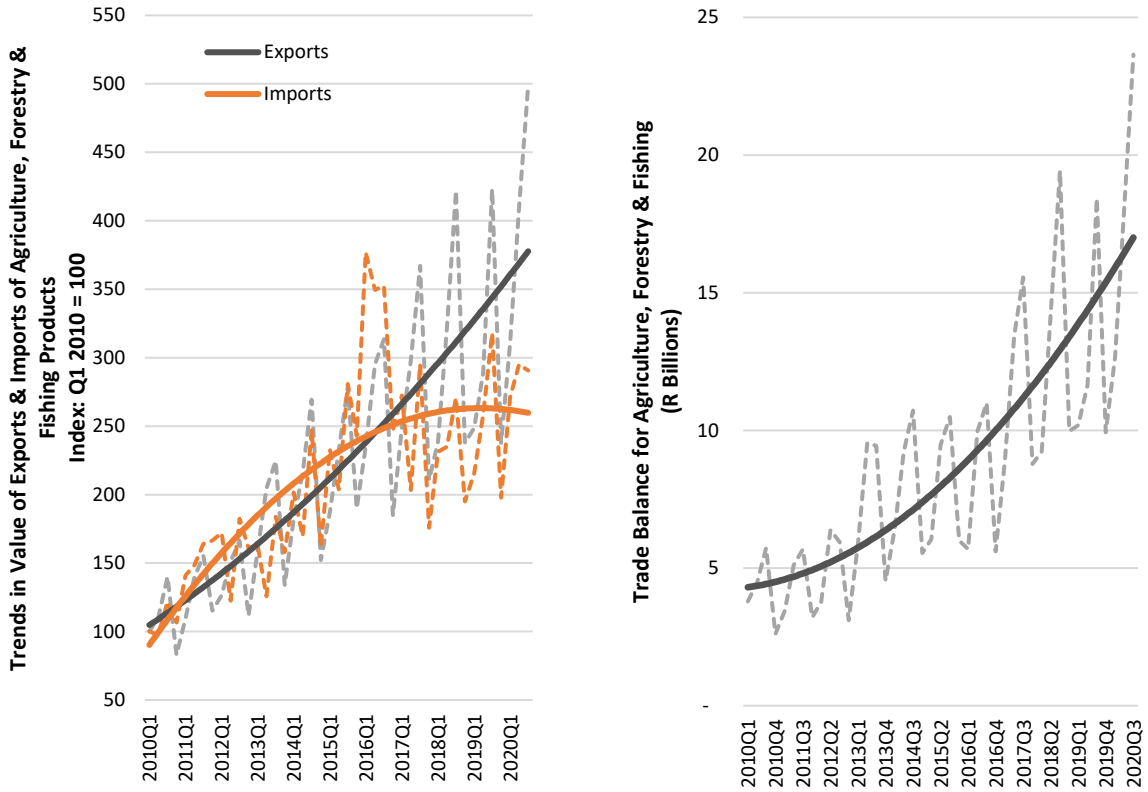
Given that total employment in agriculture, forestry and fishing contracted in 2020, the increase in its share of total employment is the result of more significant declines in other sectors of the economy as a consequence of the Covid 19 pandemic.

3. Trends in exports and imports

Figure 3 indicates trends in South Africa's international trade in products that directly originate from the agriculture, forestry and fishing sector. Although the underlying quarterly data is highly volatile, the left hand graph indicates that between the beginning of 2010 and mid-2016 the value of imports increased at a faster rate than exports. However, since mid-2016, import values have levelled-off, while export earnings have continued to increase.

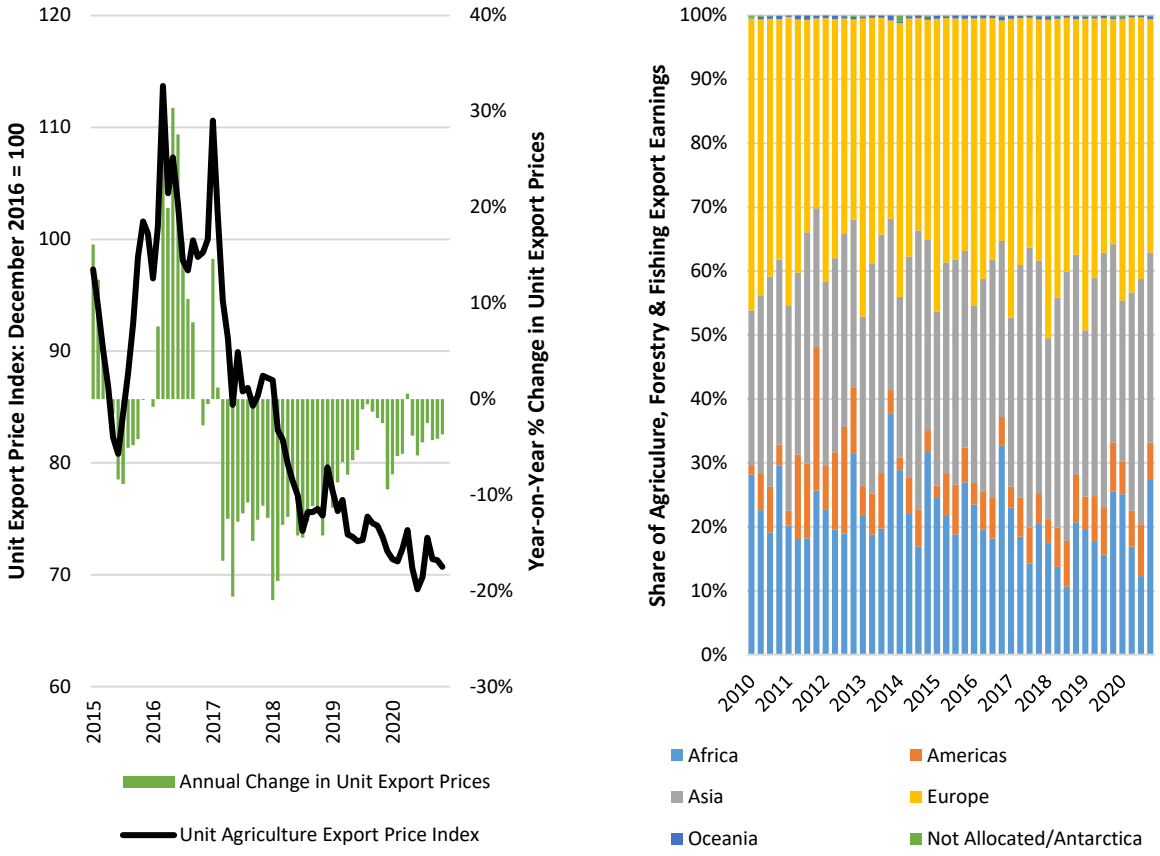
The rising gap between export and import values is reflected in the right hand graph, which shows the quarterly trade balance in agriculture, forestry and fishing products. In nominal terms this has increased from around R5bn in 2010 an average of over R17bn in the first three quarters of 2020.

Figure 3: Trends in the value of exports and imports of agriculture, forestry and fishing products



***Source**: SARS*

Figure 4: Trends in the price of agriculture exports per unit (left hand graph) and regional market share (right hand graph)



***Sources**: Statistics South Africa P0142.7, Quantec*

Figure 4 shows the trend in the price received per unit of agricultural exports on the left hand side and the share of each major global region of South Africa's agriculture, forestry and fishing exports (right hand side). After something of a commodity price "boom" in 2016, when unit export prices increased by over 10% in some months, the price trend has generally been negative. Between January 2017 and November 2020, the unit price of agricultural exports declined by 36%. On average unit export prices dropped by 4.5% in the first 11 months of 2020.

The fact that this declined occurred while aggregate earnings from the export of agriculture, forestry and fishing products were increasing (as reflected in Figure 3) points to a dramatic increase in the volume of exports. It remains to be seen whether these increases can be sustained in the years ahead – given the disruption caused to the global economy by the Covid 19 pandemic.

Europe is the dominant market for South African exports of agriculture, forestry and fishing products accounting for over 41% in 2020. Africa's share has trended lower: from an average of over 25% in 2013 to below 20% in 2020. At the same time Asia's share has risen from under 30% in 2010 to over 32% in 2019.

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