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FEEDLOT ANALYSIS AND OUTLOOK OCTOBER 2018

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TABLE OF CONTENTS

1. Introduction 3
2. Pricing mechanism 3
3. Price trends 7
4. Financial viability and sensitivity analysis 11
5. Conclusion 16

LIST OF TABLES

Table 1: Margin factors 4
Table 2: Critical issues for success 7
Table 3: Benchmarking ranges 7
Table 4: Nominal and real price changes 9
Table 5: Year-on-year weaner price changes (%) 10
Table 6: Year-on-year A2/A3 carcass price changes (%) 10
Table 7: Year-on-year yellow maize price changes (%) 11
Table 8: Assumptions for viability and sensitivity analysis and results 12
Table 9: Scenario 1 12
Table 10: Scenario 2 13
Table 11: Scenario 3 13
Table 12: Scenario 4 14
Table 13: Scenario 5 14
Table 15: Summary of scenarios 15

LIST OF FIGURES

Figure 1: Monthly profit/loss, price margins and feed margins from January 2015 to June 2017. 5

Figure 2: Weaner: A2/A3 carcass price ratio from January 1996 to September 2017. 6

Figure 3: A2/A3 beef carcass: yellow maize price ratio prices from Nov 1997 to September 2017..... 6

Figure 4: Nominal weaner- A2/A3 beef carcass prices from January 2002 to September 2017. 8

Figure 5: Real weaner- A2/A3 beef carcass and yellow maize prices from January 2002 to September 2017. (Deflated by the CPI 2016 base)..... 8

Figure 6: National animal numbers from August 1996 to February 2017 9

1. Introduction

The South African feedlot industry has not changed significantly over the past year; neither in terms of regulatory nor production practises. The industry saw some challenges from the end of 2016 with weaner prices increasing with approximately 59% from November 2016 to July 2017, during the same time, the A2/A3 carcass price only increase 26%. This scenario was combined with high increases in the price of feed with yellow maize averaging almost R3 400/tonne during 2016. This combination of shrinking margins in beef prices and high feed costs had negative effects on feedlot profitability for 2016. Declining maize prices from late 2016 resulted in an increase in the feed margin and consequently profits up until mid-2017.

Factors affecting feedlot profitability can be classified as those connected to economic factors and those connected to management factors. Economic factors relate to factors beyond the control of feeders and include purchase and sale prices as well as feed prices (usually a function of maize prices). Unlike as in the case of the economic factors, producers are, to a large extent, in control of management factors which influence average daily gain (ADG) and feed conversion and efficiency, aforementioned largely depend on the type of animal introduced into the feedlot in terms of breed (genetics), weight, nutritional background (conditioning or backgrounding) of the animal, nutritional management and the overall health of the animal. It is therefore important to integrate these economic and management factors to make informed decisions that will enhance the profit potential of a feedlot system.

The South African feedlot industry collectively markets close to 80% of total beef production in South Africa. During December 2015 there were 531 662 animals on feed while the highest number recorded was 668 082 during Feb 2015 (SAFA, 2017). This implies that South Africa has a one-time standing capacity of approximately 670 thousand animals. Depending on economic and management practises the South African feedlot industry can deliver a total of 1.7 million animals annually (given an average feeding time of 140 days at full capacity).

Feedlots in South Africa differ in size from a small number of animals to more than 160 000 animals and consists of three different categories namely; farmer feeders, seasonal feeders and commercial feeders. Commercial feeders are usually also integrated in the downstream segments of the value chain in the form of abattoirs, deboning facilities, packing, the retail sector and in some cases also the tannery industry.

This document firstly provides an overview of the pricing mechanism secondly it highlights the latest price trends; thirdly it analyses the financial viability and sensitivity to input and output variables and finally ends with a conclusion.

2. Pricing mechanism

A common characteristic of the feedlot industry is negative buying/price margins and positive feeding margins. The concept of a negative buying/price margin can be explained by the following example (See Table 1: 2017): Suppose a feedlot purchases a weaner of 230 kg at a price of R 28.83/kg. If a dressing percentage[1] of 58% is assumed, it would mean that the feedlot is actually paying R 49.70/kg carcass whilst the market price per kilogram carcass (A2/A3) at that stage ranged between R 45/kg and R 46/kg. Hence, a negative buying/price margin.

However when comparing the same scenario as above for 2016, where the average weaner price for May was R 18.92/kg and the A2/A3 carcass price for May was R 38.27/kg the inverse is true resulting in a positive price margin i.e. the actual purchase price was R 32.62/kg (see also Figures 3 and 4).

[1] This percentage refers to weight of the carcass after the animal has been slaughtered, i.e. an animal with a live weight of 445 kg will have a carcass weight of 258 kg.

Table 1 further illustrates the sensitivity of the feedlot industry's total margin to the variability in the input prices, mainly weaner and feed prices. For this comparison over time it is assumed that the feedlot purchase a weaner calf in May at a beginning weight of 230 kg, the calf is then fed for approximately 144 days with an ADG of 1.6 kg/day, after which it is marketed in early September at an average live weight of 460 kg, yielding a carcass of 267 kg at a 58% dressing percentage.

By comparing the above scenario for the past five years it is evident that the relatively low yellow maize price during 2014 and 2017 led to high positive feeding margins that resulted in profits of R 2 313 and R 2 453 per head respectively. The high weaner: carcass price ratio during 2017 resulted in negative price margins which reflected negatively on profit. The lower weaner: carcass price ratio during 2013, 2014, 2015 and 2016 led to positive price margins.

Table 1: Margin factors

Item	2013	2014	2015	2016	2017
Beginning weight	230	230	230	230	230
ADG (kg/day)	1.6	1.6	1.6	1.6	1.6
Days on feed	144	144	144	144	144
Dressing percentage	58	58	58	58	58
End weight	460	460	460	460	460
Carcass weight	267	267	267	267	267
A2/A3 carcass price (Aug-Sep)	R 28.76	R 34.18	R 34.14	R 37.96	R 46.32
Weaner price (May)	R 15.30	R 16.14	R 18.61	R 18.92	R 28.83
Price ratio	0.53	0.47	0.55	0.50	0.62
Yellow maize price (May-Sep)	R 2 175	R 1 868	R 2 642	R 3 340	R 1 927
Price margin	R 318	R 847	R 274	R 712	-R 452
Feed margin	R 292	R 1 466	R 291	-R 240	R 2 905
Total margin (profit/head)	R 610	R 2 313	R 565	R 472	R 2 453

It is important to note that Table 1 only represents a snapshot comparison over time, in reality are dynamic and varies on a daily basis. Figure 1 depicts the same scenario as in Table 1 on a monthly basis from January 2014 to June 2017. It is clear from Figure 1 that the declining trend in the price margin from December 2016 was offset by the increasing feed margin, due to the declining yellow maize price from November 2016; aforementioned resulted in an increase in the profit/head until February 2017 after which a negative trend is visible.

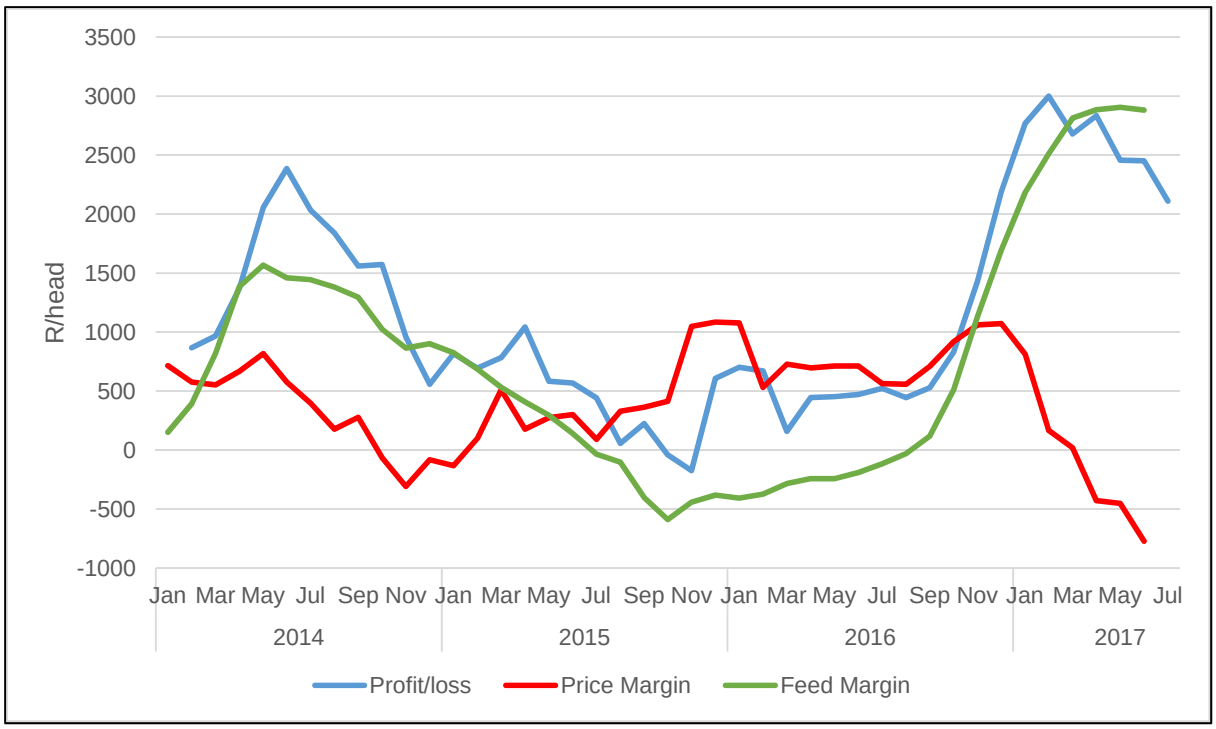

Figure 1: Monthly profit/loss, price margins and feed margins from January 2015 to June 2017.

Figure 2 shows the relationship or price ratio between the weaner- and the A2/A3 carcass price and can be defined by equation 1.

$$r = p^1 / p^2 \quad (1)$$

where:

- r is the weaner:A2/A3 price ratio
- p^1 is the weaner price and
- p^2 is the A2/A3 carcass price

This ratio is one of the most important aspects when considering the profitability of the feedlot industry as the weaner calf is the largest component (63%) on the input side of the feedlot model. The smaller the ratio the higher the price margin between input and output prices (favouring feedlot operations) and *vice versa.* In Figure 2 the ratio varied between a minimum of 0.48 (May 2014) and a maximum of 0.76 (November 2006), the ratio has a long term average of 0.60 for the period January 1996 to September 2017. The weaner: A2/A3 carcass price ratio has remained below the long term average (0.60) from March 2015 until February 2017. However, from March 2017 to September 2017 the ratio has been above average, which led to declining price margins i.e. the weaner price became expensive in comparison to the A2/A3 carcass prices.

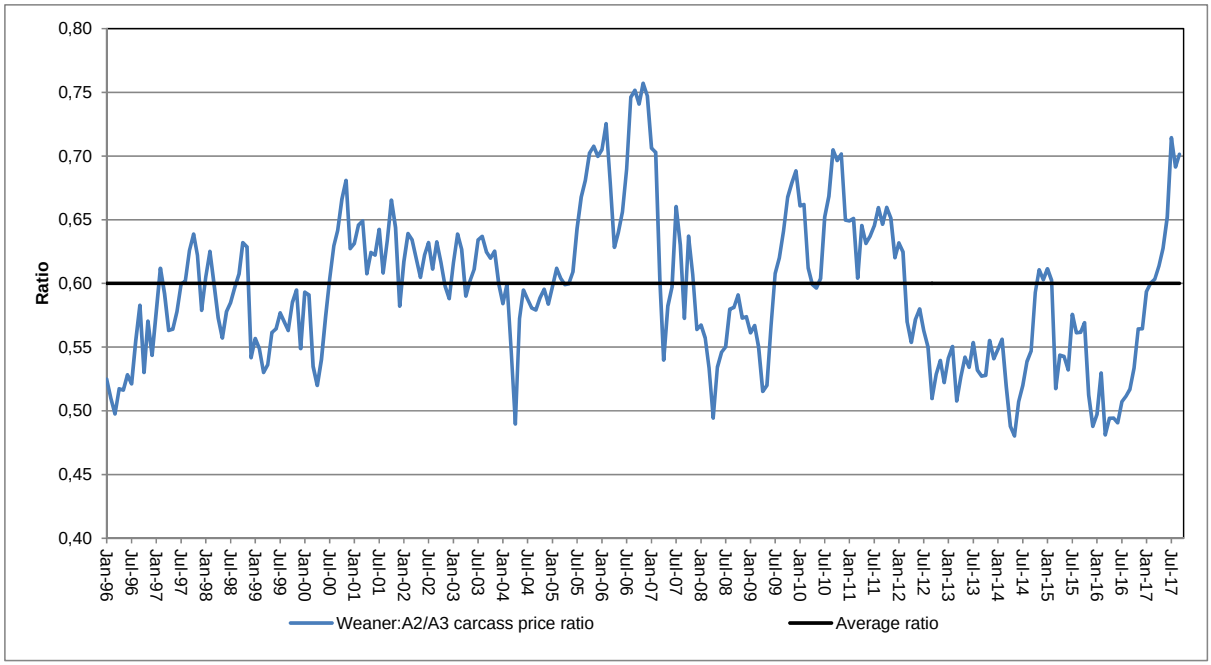

Figure 2: Weaner: A2/A3 carcass price ratio from January 1996 to September 2017.

The beef to grain price ratio can also be used as benchmark for the financial viability of the feeding process as feed cost is the second largest input after the actual calf. This ratio should be higher than 1 to 13. In other words, one kilogram of beef (carcass value) should be able to purchase at least (or) a minimum of 13 kilograms of maize. If this ratio is lower than 1:13 it indicates that feedlots may experience profitability problems. This also relates to the feed procurement strategies followed by feedlots in order to ensure that they have good quality feed available at low prices throughout the year. Figure 3 shows the A2/A3 carcass price: yellow maize price ratio trend, as well as the norm from November 1997 to September 2017, from Figure 3 it is evident that the industry has been operating below the 1:13 norm from July 2015 to January 2017. From January 2017 this ratio changed due to declining maize prices combined with the increasing A2/A3 carcass price which resulted in increasing feeding margins (also see Figure 1). It is important to note that the South African feedlot industry mainly uses grain by-products like hominy chop, bran, etc. in feeding rations.

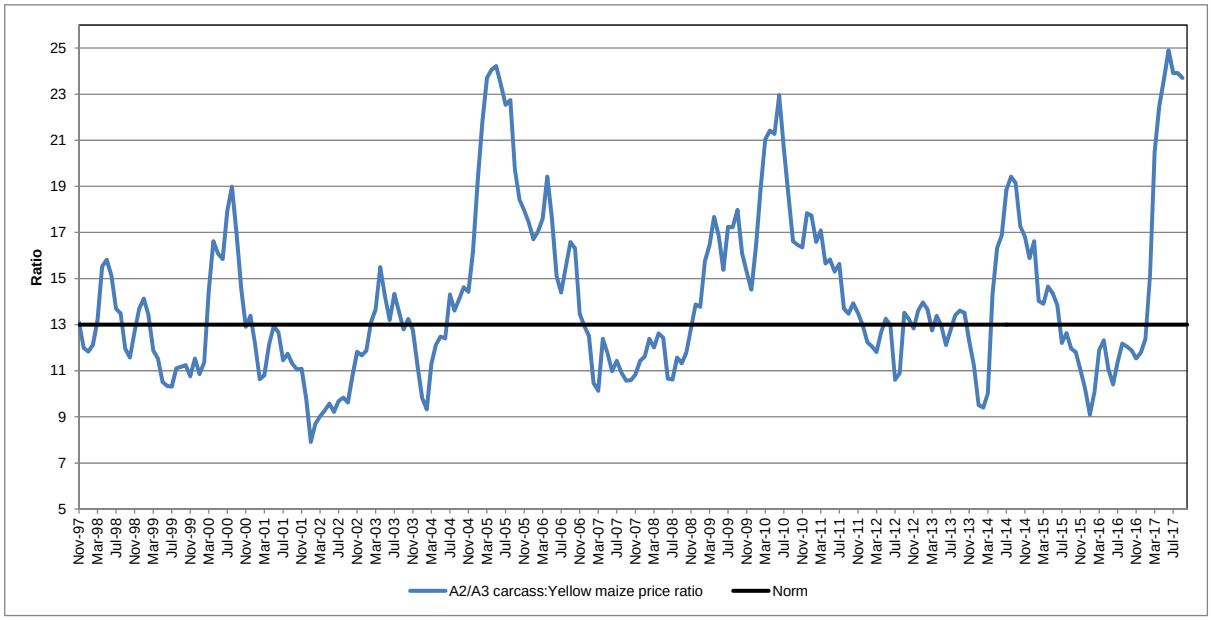

Figure 3: A2/A3 beef carcass: yellow maize price ratio prices from Nov 1997 to September 2017.
Source: Grain SA (2017) and own calculations

Table 2 summarises critical issues that relate to the success and viability of feedlots.

Table 2: Critical issues for success

General issues	Production issues
Location in or near to grain/feed products	Must have a positive feeding margin
Have a dependable creditworthy market for all carcass products (beef, hide and offal) forward integration	Calves must be able to produce at least 210 to 250 kg A2/A3 carcass after at least 100 days in the feedlot
Have experienced calf buyers of high integrity in calf producing areas	Strive for a mortality rate lower than 1%, preferably lower than 0,8% annually
Mix own feed, preferably producing either own grain or roughage	Beef to grain ratio greater than 1:13
Procure calves with good genetic properties that fit the goals of the feedlot	ADG of 1,5 to 2 kg optimal, especially if the price gap between weaner and carcass realisation prices decrease

Table 3 shows the benchmarking ranges for different variables that will have an impact on the profitability of feedlots and will be discussed in section 4.

Table 3: Benchmarking ranges

Item	Range	
Dress Percentage	52%	62%
Average Daily Gain (ADG)	1.3 kg/day	2 kg/day
Growth Hormones and Stimulants (percentage growth improvement)	8%	10%
Mortality	1%	5%
Morbidity	1%	5%
Feeding days	90 days	150 days

3. Price trends

Figure 4 shows the variability in the nominal weaner- and the A2/A3 carcass price from January 2002 to September 2017. Feedlots will typically buy weaners at current market prices and sell them at the A2/A3 price in approximately 110 to 150 (depending on the ADG) days' time. For example; a feedlot buying weaners in May will realise the A2/A3 carcass price in August/September.

From Figure 4 it is clear that the nominal weaner price reached an all-time maximum of R 33.20 during July 2017. Weaner prices showed a sharp increase from June 2016 to July 2017 after which a slight decline has been visible in the price trend. This increase in the price was mainly brought about by a strong demand for weaner calves brought about by the first good rain in the majority of the production area after 3-4 consecutive dry seasons. The lack of supply, mainly due to animal losses and producers thinning herds due to the past dry seasons, resulted in the smallest national herd since 1996 (Figure 6). This decline in animal numbers lead to increases in the price of live as well as carcass prices.

The A2/A3 carcass price has a predominantly increasing trend from July 2013, however, a slight decline is visible from April 2016 to November 2016. Also visible from Figure 4 is the fact that the A2/A3 carcass price is more volatile during the short term than the weaner price. Both the weaner and the A2/A3 carcass has been moving sideways during August and September. These variability in the input (weaner) and output (A2/A3 carcass) prices complicates the decision making process in the feedlot industry and adds uncertainty and risk.

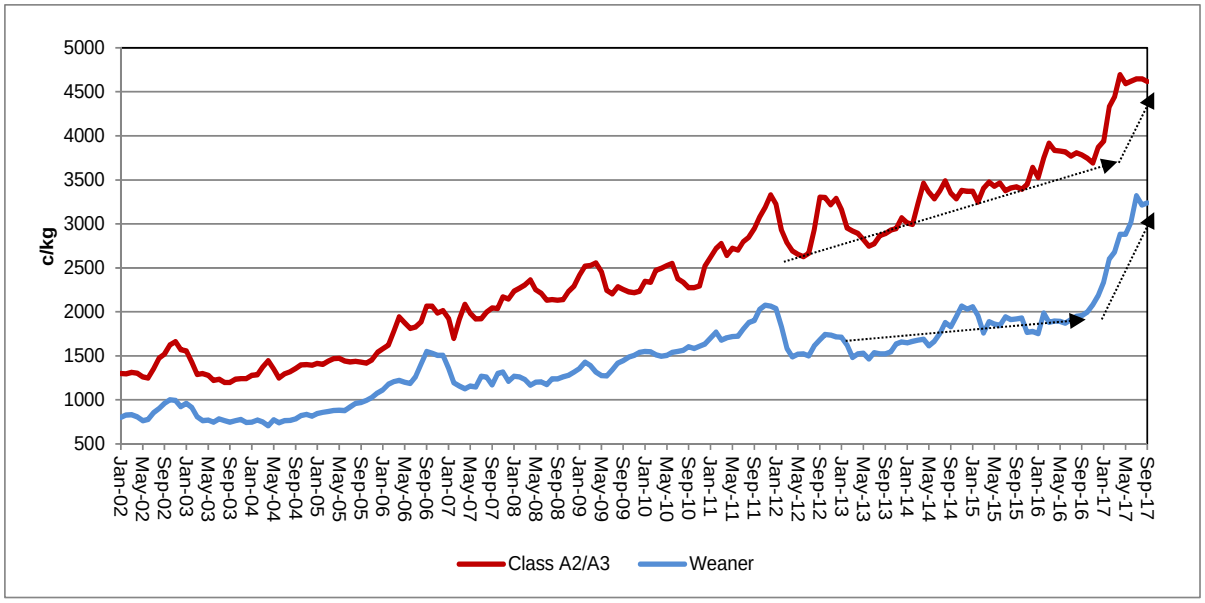

Figure 4: Nominal weaner- A2/A3 beef carcass prices from January 2002 to September 2017.

Figure 5 shows the same price trend as in Figure 4 in real terms (adjusted for inflation) including the real yellow maize price trend. Real A2/A3 carcass price as well as real weaner prices reached a high point during April and July 2017 respectively. The real yellow maize price reached a high during January 2016 but started a fast declining trend from December 2016 and are currently trading at the lowest level since the end of 2014.

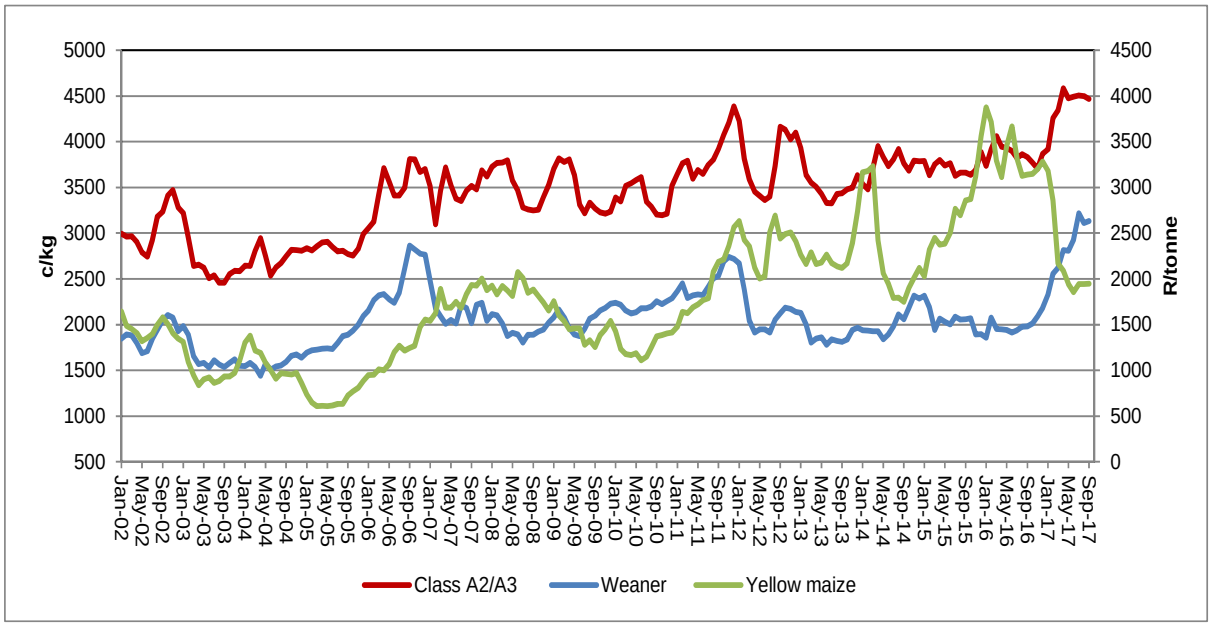

Figure 5: Real weaner- A2/A3 beef carcass and yellow maize prices from January 2002 to September 2017. (Deflated by the CPI 2016 base)

Source: Grain SA 2017 and own calculations

From Figure 6 the decline in the national herd is evident, this decline was mainly due to unfavourable conditions within the main production areas in the country.

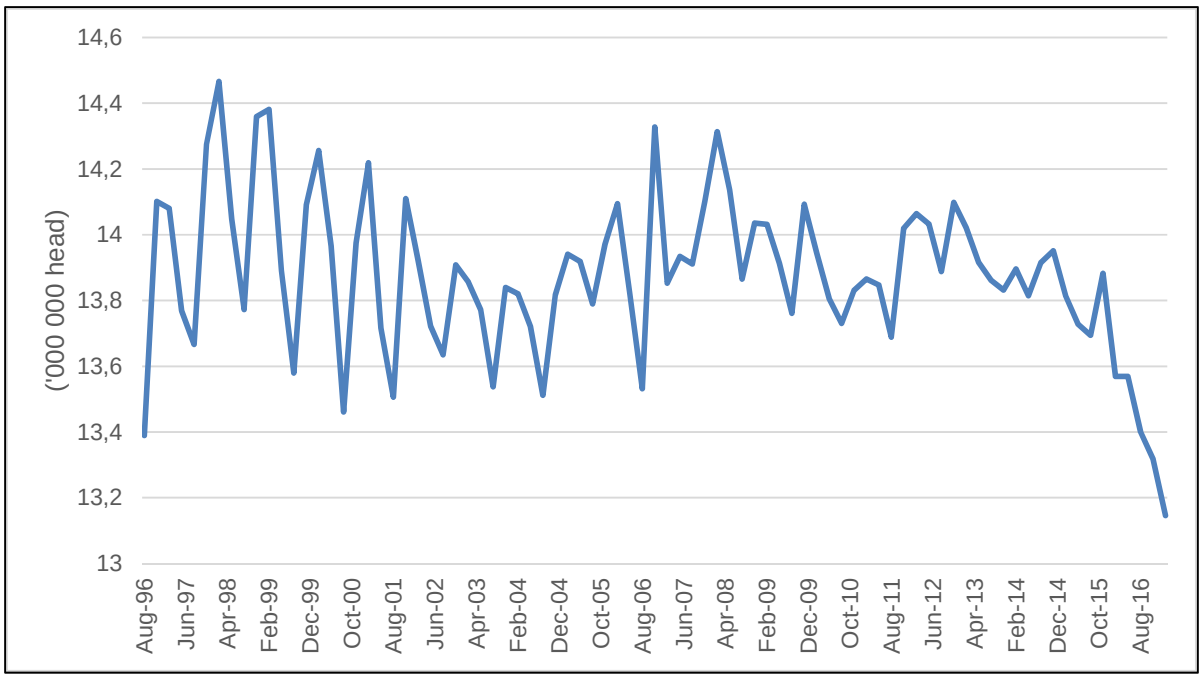

Figure 6: National animal numbers from August 1996 to February 2017

Source: DAFF 2017

Table 4 shows the changes in the prices of the different carcass classes, weaners and for yellow maize from January 2017 to September 2017 as well as the year-on-year September price change. When comparing the nominal price trends from January to September all carcass prices showed an increase with an average of 22.5% while the yellow maize price showed a decrease of 38.8% during the same time. The nominal and real weaner price increased by 65.6% and 58.2% year-on-year respectively while the A2/A3 carcass price increased by 22% and 16.6% in real and nominal terms during the same time. Yellow maize prices

Table 4: Nominal and real price changes

Class	Nominal		Real	
	Jan 17 to Sep 17	Sep 17 to Sep 17	Jan 17 to Sep 17	Sep 17 to Sep 17
A2/A3	17,2%	22,0%	14,0%	16,6%
AB2/AB3	20,6%	24,7%	17,3%	19,1%
B2/B3	18,5%	25,8%	15,3%	20,2%
C2/C3	17,7%	25,8%	14,5%	20,2%
Weaner	**38,4%**	**65,6%**	**34,6%**	**58,2%**
Average	22,5%	32,8%	19,2%	26,9%
Yellow maize	-38,8%	-37,9%	-40,5%	-40,7%

Tables 5 and 6 show the historical year-on-year price changes on a monthly basis from 2009-2010 to September 2016-2017 for live weaner calves and A2/A3 carcass prices respectively. Important to note is the average price increases in weaner prices (52.8%) for 2016-2017 compared to the increase of only 19.9% in the A2/A3 carcass price. This scenario implies a decrease in the price margin in the feedlot industry.

Table 5: Year-on-year weaner price changes (%)

Month	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Jan	14.29	9.66	19.74	-16.00	-3.62	24.84	-14.86	33.43
Feb	8.26	14.48	3.22	-11.05	2.34	17.60	1.49	30.90
Mar	8.92	10.83	-5.48	-6.49	9.10	8.90	6.91	42.23
Apr	13.43	14.11	-12.67	2.22	10.90	11.92	0.25	52.05
May	18.18	13.97	-11.63	0.75	5.49	15.29	1.67	52.40
Jun	20.99	11.88	-11.51	-3.72	13.57	10.73	1.56	60.85
Jul	15.76	16.41	-16.83	2.29	14.40	10.70	-1.64	73.65
Aug	10.23	20.15	-14.03	-5.61	23.23	1.86	1.88	64.87
Sep	10.93	18.70	-11.61	-9.57	20.30	4.93	1.80	65.56
Oct	6.66	27.99	-14.09	-11.30	25.89	-0.85	3.48	
Nov	6.98	28.94	-16.38	-5.76	26.20	-14.44	17.86	
Dec	6.30	26.22	-16.85	-3.26	22.33	-12.58	22.90	
Average	11.74	13.94	-9.01	-5.62	14.18	6.58	-0.20	52.88

Table 6: Year-on-year A2/A3 carcass price changes (%)

Month	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Jan	-2.94	11.67	23.00	-1.95	-4.81	11.92	4.69	11,72
Feb	-7.26	16.43	7.53	0.96	1.29	8.59	15.39	15,51
Mar	-2.14	12.29	0.25	4.89	10.86	5.18	15.00	13,43
Apr	-2.46	5.93	1.82	7.47	19.71	0.40	10.32	22,42
May	3.02	7.67	-2.44	6.28	19.06	2.04	11.64	20,02
Jun	13.49	6.04	-2.79	4.50	19.63	5.52	10.14	21,03
Jul	7.90	17.68	-4.72	4.04	21.78	-0.02	11.65	23,30
Aug	2.23	21.81	2.97	-2.31	21.71	-2.27	11.76	22,01
Sep	0.89	29.44	12.05	-12.54	16.00	2.14	10.61	29.95
Oct	2.25	35.18	7.15	-11.19	12.14	3.29	10.39	
Nov	3.52	38.87	1.00	-8.48	14.77	1.97	7.03	
Dec	12.61	32.21	-1.26	-6.60	9.75	8.08	6.16	
Average	2.59	19.60	3.71	2.98	13.49	3.90	11.16	19.93

Table 7 show the historical year-on-year yellow maize price changes on a monthly basis from 2009-2010 to September 2016-2017. During 2009-2010 and 2012-2013 year-on year prices of yellow maize decreased. Maize prices showed on average Although the maize price showed a decreasing trend from January to April 2014-2014, it has a strong increasing trend from May 2014-2015 to November 2015-2016. During 2017 maize prices showed large declines compared to 2016.

Table 7: Year-on-year yellow maize price changes (%)

Month	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017
Jan	-18.65	3.51	78.05	-14.04	39.84	-35.96	91.24	-17,85
Feb	-22.81	32.79	48.09	-10.99	47.15	-27.14	60.42	-23,13
Mar	-23.49	38.26	45.06	-2.85	41.19	-24.27	34.34	-34,10
Apr	-19.50	44.91	25.76	1.77	12.05	-2.01	31.16	-32,90
May	-18.50	44.69	16.49	8.82	-5.57	15.94	44.82	-43,75
Jun	-23.98	59.07	14.66	11.88	-14.10	28.56	46.56	-49,38
Jul	-10.11	55.72	40.47	-13.59	-17.46	54.36	19.81	-41,36
Aug	-5.57	65.74	29.46	-20.60	-15.98	50.22	15.95	-37,86
Sep	9.16	59.59	11.73	-13.18	-17.56	63.50	9.83	-37.94
Oct	-0.08	59.71	12.67	-12.92	-12.28	51.07	9,59	
Nov	-3.20	68.22	6.19	-4.59	-15.95	55.38	2,41	
Dec	-8.30	81.65	-5.89	13.45	-22.56	67.96	-7,89	
Average	-12.09	51.16	26.89	-4.74	1.56	24.8	29.85	-35.36

Source: Grain SA (2017)

4. Financial viability and sensitivity analysis

In order to conduct a financial viability and sensitivity analysis, several scenarios are specified. As a first step, it is necessary to make certain assumptions regarding the base scenario. These assumptions are presented in Table 8:

From Table 8, the **base scenario**, it is evident that a feedlot will realise profit of R 2 453 per animal given the variables specified. With an average ADG of 1.6, the animals will remain on feed for 141 days to realise a live slaughter weight of 460 kg. A dressing percentage of 58% will yield a carcass of 267 kg. A feeding period of 141 days implies that the feedlot will have an annual turn-over rate of 2.53, meaning that a feedlot with a one-time standing capacity of 3 000 animals will have an annual throughput of approximately 7 617 animals at full capacity.

Table 8: Assumptions for viability and sensitivity analysis and results

ADG (kg)	1.6		Item	R/head
Purchasing weight for weaner (kg)	230		Weaner	6 631
Slaughtering weight (kg)	460		Feed	2 867
Dressing percentage (%)	58		Morbidity	105
Weaner price (R/kg)	28.83		Mortality	105
A2/A3 carcass price (R/kg)	46.32		Overheads	197
Days on feed	144		Total Cost	9 905
Yellow maize price (R/tonne)	1 927		Income per animal	12 358
Overhead costs (% of total cost of weaner)	5		Price margin	-452
Morbidity (% of total cost of weaner)	1		Feed margin	2 905
Mortality (% of total cost of weaner)	1		Profit	2 453

Note: Weaner price as in May 2017, A2/A3 carcass price as the average August to Septmenber-2017 and the yellow maize price is an average May to September 2017 price.

Given the base scenario above, five scenarios are specified in order to conduct a sensitivity analysis; scenario 1 to 3 addresses the management factors while scenario 4 and 5 addresses the economic factors:

- **Scenario 1 –** The ADG increases with 200 g/day to 1.8.
- **Scenario 2 –** Weaners are bought in at a lighter weight of 200 kg instead of the 230 kg in the base scenario and fed to 420kg live weight.
- **Scenario 3 –** A combination of scenario 1 and 2, where genetically better animals are fed and entered into the feedlot at a lighter weight than the base scenario.
- **Scenario 4 –** The weaner: A2/A3 price ratio decrease from 0.62 to 0.50 i.e. the A2/A3 carcass price decrease to R 40/kg while the weaner price decrease to R 20/kg.
- **Scenario 5 –** The yellow maize price increases to R 3 800/tonne.

Table 9 shows the results from **scenario 1,** where the ADG increases from 1.6 to 1.8 kg/day. This entails a 16 day shorter standing period in the feedlot and in turn a decrease in total feeding cost of R 319 per animal from the base scenario.

Table 9: Scenario 1

ADG (kg)	1.8		Item	R/head
Purchasing weight for weaner (kg)	230		Weaner	6 631
Slaughtering weight (kg)	460		Feed	**2 548**
Dressing percentage (%)	58		Morbidity	105
Weaner price (R/kg)	28.83		Mortality	105
A2/A3 carcass price (R/kg)	46.32		Overheads	197
Days on feed	**128**		Total Cost	**9 565**
Yellow maize price (R/tonne)	1 927		Income per animal	12 358
Overhead costs (% of total cost of weaner)	5		Price margin	-452
Morbidity (% of total cost of weaner)	1		Feed margin	3 245
Mortality (% of total cost of weaner)	1		Profit	2 793

Scenario 1 emphasises the importance of a good ADG, which is affected by the quality of the feed ration, the quality of the animal**,** the weight at which the animals are bought and placed in the feedlot, the weather conditions during the feeding period, the stress levels of the animals in the feedlot, the extent to which diseases affect the animals in the feedlot and the length of the settlement period.

The shorter feeding period of 128 days implies that 8 570 animals can be finished annually at 100% capacity given a one-time standing capacity of 3 000 animals This is 952 animals more than in the base scenario, i.e. by just improving the ADG by 200 g/day the feedlot can increase the profit per head by R 340 or 13.8%. This increase is mainly due to the increase in the feed margin.

Table 10 presents **scenario 2** where the weaners are bought in at a lighter weight, calves are introduced into the feedlot at 200 kg instead of 225 kg and slaughtered at a live weight of 420 kg yielding a carcass of 243.6 kg.

Table 10: Scenario 2

ADG (kg)	**1.6**		**Item**	**R/head**
Purchasing weight for weaner (kg)	**200**		Weaner	**5 766**
Slaughtering weight (kg)	**420**		Feed	**2 464**
Dressing percentage (%)	58		Morbidity	92
Weaner price (R/kg)	28.83		Mortality	92
A2/3 carcass price (R/kg)	46.32		Overheads	188
Days on feed	**138**		Total Cost	8 602
Yellow maize price (R/tonne)	1 927		Income per animal	11 284
Overhead costs (% of total cost of weaner)	5		Price margin	-393
Morbidity (% of total cost of weaner)	1		Feed margin	**3 075**
Mortality (% of total cost of weaner)	1		Profit	2 682

Scenario 2 shows that by buying weaners in at a lighter weight it is possible to realise a profit of R 2 682/animal, this is an increase in profit of R 346/animal (9.35%) from the base scenario. Table 11 presents **scenario 3**, a combination of scenarios 1 and 2 where calves are entered into the feedlot at 200 kg, are fed for 122 days and slaughtered at 420 kg live weight given an ADG of 1.8 kg/day and a dressing percentage of 58%.

Table 11: Scenario 3

ADG (kg)	**1.8**		**Item**	**R/head**
Purchasing weight for weaner (kg)	**200**		Weaner	5 766
Slaughtering weight (kg)	**420**		Feed	**2 190**
Dressing percentage (%)	58		Morbidity	92
Weaner price (R/kg)	28.83		Mortality	92
A2/A3 carcass price (R/kg)	46.32		Overheads	167
Days on feed	**128**		Total Cost	**8 307**
Yellow maize price (R/tonne)	1 927		Income per animal	11 284
Overhead costs (% of total cost of weaner)	5		Price margin	-393
Morbidity (% of total cost of weaner)	1		Feed margin	3 370
Mortality (% of total cost of weaner)	1		Profit	2 977

From **scenario 3** it is evident that good management practises can improve the feedlots' profitability by selecting/procuring good quality animals. A profit of R 2 977/head is realised which is R 524/head higher than the base scenario with all other factors held constant. The shorter feeding time will result in an annual turnover rate of 2.89 cycles/year.

Table 12 presents **scenario 4** where the weaner purchase price decrease by 28% to R 20.00/kg while the A2/3 carcass price decrease by 13.6% to R 40.00/kg i.e. the weaner: A2/A3 carcass price ratio decreased from 0.62 to 0.50.

Table 12: Scenario 4

ADG (kg)	**1.6**		**Item**	**R/head**
Purchasing weight for weaner (kg)	230		Weaner	4 600
Slaughtering weight (kg)	460		Feed	2 867
Dressing percentage (%)	58		Morbidity	73
Weaner price (R/kg)	**20**		Mortality	73
A2/A3 carcass price (R/kg)	**40**		Overheads	197
Days on feed	144		Total Cost	7 810
Yellow maize price (R/tonne)	1 927		Income per animal	10 672
Overhead costs (% of total cost of weaner)	5		Price margin	736
Morbidity (% of total cost of weaner)	1		Feed margin	2 126
Mortality (% of total cost of weaner)	1		Profit	2 862

Scenario 4 illustrates the sensitivity of the feedlot industry to the relationship or ratio between the weaner (buying) price and the A2/A3 carcass price (selling) price. In **scenario 4** a 0.12 point decrease in the weaner: A2/A3 carcass price ratio resulted in an R 409/head or 16.7% increase in the profit compared to the base scenario.

Weaner and carcass price movements are one of the biggest risks associated with the feedlot industry, weaners bought today are only going to enter the market 100+ days from day of purchase and it is very difficult to anticipate the future selling price (A2/A3 carcass price).

Table 13 presents **scenario 5** where the yellow maize price increases to early 2016 levels of R 3 800/tonne.

Table 13: Scenario 5

ADG (kg)	1.6		**Item**	**R/head**
Purchasing weight for weaner (kg)	230		Weaner	6 631
Slaughtering weight (kg)	460		Feed	5 354
Dressing percentage (%)	58		Morbidity	105
Weaner price (R/kg)	28.83		Mortality	105
A2/A3 carcass price (R/kg)	46.32		Overheads	197
Days on feed	144		Total Cost	12 692
Yellow maize price (R/tonne)	**3 800**		Income per animal	12 358
Overhead costs (% of total cost of weaner)	5		Price margin	-452
Morbidity (% of total cost of weaner)	1		Feed margin	118
Mortality (% of total cost of weaner)	1		Loss	-334

The increase in the maize price in **scenario 5** resulted in decline in the feed margin of R 2 787/head compared to the base scenario which lead to a decrease in profit/head of 113%.

Table 15 provides a comparison for scenario 1 to 5 highlighting the percentage change in the profitability per head given the variability in both management and economic factors.

Table 15: Summary of scenarios

		Management factors			Economic factors	
Item	**2016 Base**	**Scenario 1**	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**
Beginning weight	230	230	**200**	**200**	230	230
ADG (kg/day)	1,6	**1,8**	1,6	**1,8**	1,6	1,6
Days on feed	144	**128**	**138**	**128**	144	144
Dressing percentage	58	58	58	58	58	58
End weight	460	460	420	420	460	460
Carcass weight	267	267	232	232	267	267
Weaner Price (Apr)	28,83	28,83	28,83	28,83	20,00	28,83
A2/A3 carcass price (Jul-Aug)	46,32	46,32	46,32	46,32	40,00	46,32
Yellow maize price (Apr-Aug)	1 927	1 927	1 927	1 927	1 927	**3 800**
Price ratio	0,62	0,62	0,62	0,62	0,50	0,62
Price Margin	-452	-452	-393	-393	736	-452
Feed Margin	2 905	**3 245**	**3 075**	3 370	2 126	118
Total margin (profit/head)	2 453	2 793	2 682	2 977	2 862	-334
Change in profit from base (%)		14	-4	11	-4	-112

5. Conclusion

This report highlighted the sensitivity of economic and management factors on the profitability of the feedlot industry using several possible scenarios. Uncontrollable economic factors including the input (weaner and feed) prices and the output (A2/A3 carcass) price directly influences the profitability of the industry.

In nominal terms the live weaner price increased more rapidly than carcass prices due to lack of supply in the main production areas. This is the exact opposite of what happened during the 2015/2016 season. The weaner/A2/A3 carcass price ratio is currently (September 2017) at 0.70 which is 0.10 points above the long term average of 0.60; this implies that weaner prices are proportionally high compared to the A2/A3 carcass price. This scenario, of relatively high weaner prices in comparison with carcass prices, were last evident in 2010. Real (adjusted for inflation) weaner and carcass prices has reached a new high (the previous high was December 2011).

It is expected that weaner as well as carcass prices will remain high but will move sideways during the short-term due to still limited supply, there might be marginal increases in the carcass price towards the end of the year as the festive season approaches. The Southern and Western parts of the country is still effected by prevailing dry conditions which could lead to marginal increases in supply, however the affected areas are not the main cattle production regions. Producers are currently in a herd-building phase after the prolonged drought caused induced culling practises due to lack of grazing. This is the main driver of the current high demand for breeding animals. The effect of the drought will not be normalised in the short term and could take more than two production seasons.