

The impact of the Namibian Small Stock Marketing Scheme on South Africa

By

Part I of III – Economic impact

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Part III of III – Recommendations

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National Agricultural
Marketing Council

Strategic positioning of South African Agriculture
in dynamic global markets

EXECUTIVE SUMMARY

In 2004 the Namibian Government decided to impose quantitative export restrictions on exports of live sheep from Namibia to South Africa. The main rationale behind the Small Stock Marketing Scheme (SSMS) was to stimulate value addition in Namibia based on the strategies of the Vision 2030 (PWC, 2007), which should ultimately lead to employment creation, capacity utilisation, income generation as well as foreign exchange earnings. In an investigation requested by the Namibian Meat Board and conducted by PriceWaterhouseCoopers (2007), it was found that the Namibian SSMS “didn’t have the desired effects and results originally intended.” Despite the fact that the principals of the scheme intended “minimum interference and disturbance in the market channel” and were “playing fields to be levelled between abattoirs and exporters,” the Namibian sheep producers currently find themselves almost entirely dependent on the four Namibian export abattoirs, i.e. where farmers previously marketed sheep to the South African market they are now forced to sell the majority of the marketing off-take to these abattoirs. According to PWC (2007), “no conclusive evidence was found that indicated that the SSMS achieved the goals set out originally, apart from benefiting a selected few”.

In light of the aforementioned the Red Meat Producer Organisation (RPO) in South Africa requested the National Agricultural Marketing Council (NAMC) during 2007 to investigate the impact of the SSMS on the South African sheep industry. The primary objective of this investigation was to provide an approximation of the socio-economic impact of the SSMS on the South African sheep sub-sector, by more specifically, focusing on the Northern Cape Province (NCP) sheep sub-sector. In order to reach this overall objective, the following sub-objectives were investigated:

- Analysing the micro- and macro-economic impact on South Africa, more specifically the NCP;
- Assessing the past and most likely future impact of the SSMS on the South African sheep value chain;
- Identifying the main beneficiaries of the scheme on the South African side of the border;
- Investigate the status and acceptability of the SSMS in terms of WTO rules, the SADC Protocol on Trade as well as the SACU Agreement; and
- Make specific recommendations about the SSMS for future action in South Africa.

The report was divided into three Parts. In Part I the economic impacts of the SSMS is discussed. Part II of the report addresses the trade law aspects associated with the SSMS and Part III provides recommendations.

➤ PART I: ECONOMIC IMPACT

Background

Since the introduction of the SSMS in mid-2004, and through its various stages, exports of live sheep declined dramatically, i.e. the decline from July 2004 to May 2008 was 84 %. Over the same timeframe slaughtering at the export abattoirs increased substantially. Prior to the introduction of the SSMS Namibian A2 carcasses frequently (60% or 25 out of the 42 months between January 2001 and June 2004) received prices higher than the prices paid for similar graded carcasses in South Africa. After the introduction of the SSMS, the price per kilogram of Namibian A2 carcasses dropped significantly and was constantly below the price paid for similar graded carcasses in South Africa (see period 1 July 2004 to April 2008).

The quota ratio (i.e. 6:1 - for every one lamb/sheep to be exported to South Africa by the producer, the sheep producer is required to slaughter six sheep at one of the designated abattoirs in Namibia) was supposed to expire on 30 June 2008, but continued due to the fact that no new quota ratio was agreed upon between different stakeholders by the time this report was completed.

Theoretical considerations

Houck (2003) uses a partial equilibrium framework to analyse and illustrate the likely gains and losses for the domestic economy implementing an export restriction. Based on Houck's theoretical framework the following must be considered in terms of the SSMS:

- Theoretically an export restriction should lead to increased consumer welfare in the country since export control measures typically place an economic wedge between international and domestic prices, and domestic prices are pushed below international prices. Hence, one would expect Namibian consumers to benefit from the SSMS, but due to the existence of market power in the abattoir sector in Namibia, as well as the scope and nature of the SSMS, there is serious doubt whether lower prices paid to lamb producers in Namibia is transmitted to consumers in Namibia.
- Export restrictions can be imposed through a tax or by restricting the actual quantity that are exported. When governments impose export taxes they gain through the collection of such taxes. During the period 15 May 2007 to 14 June 2007 a 20 % levy was applicable which should have benefited the Namibian government. This period is however very short relative to the overall period that the SSMS has been operational. In the case of the quantitative quota or restriction that was applied for most of the period since inception on the 1st of July 2004, one can safely postulate that the main beneficiaries were the Namibian export abattoir sector that have the sole right to export mutton and lamb [i.e. due to the high level of market power, while the Namibian government should accrue indirect benefits through taxes levied on the income of abattoirs.
- Export restrictions also results in a net loss to society as a whole due to a reduction in supply that could have been sold at international prices. Cognisance should also be taken of Namibia's agro-ecological conditions since it does not allow for immediate production adjustments (i.e. switching to alternative enterprises), which actually compounds the negative impact on farmers. There is however anecdotal evidence that farmers are slowly moving to diversify to cattle and game farming. This does not necessarily constitute the most effective use of resources, otherwise such structural changes would have taken place already. In addition, a reduction in lamb production will also harm the abattoir sector in the medium to long run, and hence be counter-productive to the original intentions of the SSMS.
- As explained earlier, export control measures typically place an economic wedge between international and domestic prices, and domestic prices are pushed below international prices. This translates into a decline in producer surplus (welfare) due to lower domestic prices. This was also confirmed by the PWC (2007) study.

Micro-economic impact

The micro-economic impacts for the purpose of this study can be summarised as follows:

- Creating situations of artificial surpluses and price discounts

During interviews with stakeholders in South Africa it was indicated that lamb imports from Namibia frequently causes artificial short run surpluses in certain South African markets. For example, it was stated that Namibian lamb arriving in the Gauteng market (often numbers range between 2000 to 3000 carcasses) are re-routed to the Western Cape market due to the Gauteng market being saturated at the specific time. Over and above

the short term surplus that this situation creates in the Western Cape market, with the resultant price shock, the additional time that the consignment spent on the road also has a significant impact on the shelf-life of this lamb. Due to the shortened shelf-life it was reported that the selling price could drop further, by another R2 to R4/kg. Overall, the discounted price is then transmitted to the Western Cape lamb price in the following week, irrespective of the quality aspect of the “cheaper lambs” from Namibia. The overall impact is increased localised price volatility in the market where the surplus was artificially created that can result in significant losses to South African farmers marketing their animals during such periods.

- Under utilisation of domestic slaughter capacity

The reduction in live sheep exports from Namibia significantly reduced the availability of animals for local slaughter; the impact is mainly felt at the Northern Cape, Western Cape, as well as selected Gauteng abattoirs. Throughput at abattoirs is generally accepted to have an enormous impact on the profitability of an abattoir, and therefore also influences the per unit slaughtering cost. For example, an abattoir operating at 60 % capacity has a higher unit cost and is therefore unable to offer the same “buying price” to farmers, as these higher costs should be recovered from the fifth quarter to generally remunerate the slaughtering process. Moreover, under utilisation of slaughter capacity impedes on competitiveness and results in additional costs that must be absorbed by different stakeholders, including the ability of abattoirs to make further investments and create additional or even maintain jobs.

Micro-economic impact

The macro-economic impacts for the purpose of this study can be summarised as follows:

- Price volatility

The volatility levels referred to represent only the unknown (or uncertain) component in the price of lamb. The level of volatility in the real price of lamb in Namibia remained constant over the whole period under consideration, which implies that Namibian lamb producers are exposed to a lower level of uncertainty. The level of volatility in South Africa was found to vary substantially, indicating that lamb producers in South Africa are exposed to higher levels of uncertainty. The question to be answered is whether the SSMS increased or lowered the price volatility in the South African market. This was tested statistically and the results show that the introduction of the SSMS did cause a change in the level of the price volatility of South African lamb. The results further show that the level of price volatility after the introduction of the SSMS is lower than prior to its introduction. Cognisance should however be taken that the level of volatility still varies substantially after the SSMS was introduced and hence it can be concluded that the level of volatility decreased only marginally (the statistical results confirm this); one would have expected that the price volatility should be substantially lower after the SSMS.

- Price transmission

PWC (2007:28) states that, from their analysis, “it is evident that the Namibian Producer prices had a downward effect on the overall publicised RSA prices during the period of the SSMS.” They also stated that “it supports the statement that Namibian abattoirs do, on average, pay lower producer prices than their RSA counterparts.” If this is the case, and there are strong price transmission effects between the two countries, then the impact on either market could be significant and even distorting. The analysis on price transmission yielded the following results:

- Transaction cost between the two markets does matter. It implies that there is an incentive for trade between the two markets, as long as the price difference between the two markets is in absolute terms and is greater than the transaction costs.
- Prices in the two markets have to be at least 1.5 % different for profitable trade to take place.
- The two markets are integrated (i.e. the law of one price holds)
- Shocks to Namibian lamb prices have a significant impact on South African lamb prices, whereas this is not true the other way round.
- Lamb prices in South Africa responds differently to positive and negative Namibian price shocks, i.e. price responses are asymmetric. Asymmetric price responses could be caused by asymmetric information that traders have and market imperfection such as concentration.
- The South African and Namibian lamb markets are relatively more integrated since the introduction of the SSMS. This is to be expected due to the higher carcass export volumes from Namibia to South Africa. The implication, however, is that the impact that Namibian lamb prices have on South African lamb prices is amplified due to the fact that shocks to Namibian lamb prices have a significant impact on South African lamb prices, whereas this is not true the other way round.

Moreover, the results show that the two markets are integrated and that shocks (like the SSMS) to Namibian lamb prices have a significant impact on South African lamb prices, whereas this is not true the other way round.

- Abattoir and marketing concentration

Earlier reference was made that the asymmetric price responses, and the negative consequences thereof, could be due to concentration (market power) in the lamb export chain. This study found that from a market concentration point of view, the Namibian export abattoir industry is highly concentrated. Namibian lamb carcasses are marketed in South Africa by only three companies because of their right and/or ownership of the four export abattoirs in Namibia. They have the power to exclude other role-players from entering the Namibian market due to the fact that, in order to export lamb or mutton from Namibia, it has to be slaughtered at one of these abattoirs and the SSMS further limits the exports of live sheep.

- Socio-economic impact

The Namibian SSMS will likely cause 975 full-time job opportunities to be lost.

➤ PART II: TRADE LAW ISSUES

The investigation into the status and acceptability of the SSMS, as well as a proposed export levy on weaners, in terms of WTO rules, the SADC Protocol on Trade and the SACU Agreement yielded the following results:

WTO compatibility

The analysis pertaining to the measures imposed by Namibia on the export of sheep and cattle in light of the relevant provisions of the WTO and more specifically the GATT show that:

- the export duty levied on cattle (and possibly weaners) is compliant with the provisions of the GATT;
- the quantitative export restriction imposed on sheep is *prima facie* a violation of Article XI and in our view, based on the information provided, is not justified by Articles XI or XX of GATT; and

- the export license scheme for sheep and cattle constitutes a “*prohibition or restriction other than duties, taxes or other charges*” prohibited by Article XI and based on the information provided, is not justified by Articles XI or XX of GATT.

SADC compatibility

The analysis pertaining to the measures imposed by Namibia on the export of sheep and cattle in light of the provisions of the SADC Protocol on Trade show that:

- the imposition of an export duty on small livestock (once the suspension has been lifted) and bovine animals within SADC is contrary to provisions of Article 5(1) of the Trade Protocol and is not justified by other provisions of that Protocol;
- the imposition of quantitative export restrictions (whether in the form of an export quota or discretionary export license) on small livestock and bovine animals within SADC is contrary to provisions of Article 8(1) of the Trade Protocol and is not justified by other provisions of that Protocol.

SACU compatibility

The analysis pertaining to the measures imposed by Namibia on the export of sheep and cattle in light of the provisions of the SACU Agreement show that:

- Namibia is acting contrary to the provisions of Article 18 of the SACU Agreement by imposing an export restriction on sheep and cattle in the form of export duties, quotas and/or permits.

➤ PART III: RECOMMENDATIONS

Institutional and regulatory interventions

- Better management and control can be exercised and enforced in terms of existing import regulations and standards at border posts and inspection points.
- Improve control and monitoring over the quantities of sheep and lamb imports. This implies the following:
 - Institute an efficient data capturing and handling system to ensure timely dissemination of data to relevant institutions.
 - Improvement of inspection and communication procedures at border posts and inspection points.

Establish a Section 7 Committee within the ambit of the Marketing of Agricultural Products Act to facilitate the implementation and/or amendment of the following:

- The current import permit system should be amended to effectively monitor each live or carcass consignment. In other words, importers/business should apply for an import permit for each consignment entering South Africa.
- Information applicable to the current statutory measure for the collection of levies on imports should be used more effectively for the generation of information regarding quantities entering the South African market. Much closer collaboration will be required

between the Red Meat Industry Forum (RMIF), the National Agricultural Marketing Council (NAMC), the South African Revenue Service (SARS) and the National Department of Agriculture, Forestry and Fisheries (DAFF). The reason for including the latter organization is that DAFF is responsible for point i above and ways should be investigated to align the permit and the statutory levy system better with each other.

- iii. Investigate the feasibility to introduce a monitoring unit in consultation with the mentioned organizations to assist with monitoring of compliance with points i and ii above.

Competition Commission issues

Request the Competition Commission to investigate the conduct of stakeholders involved in the SSMS. The investigation should focus on, but should not necessarily be limited to:

- i. Market conduct in Namibia and the impact on the South African small stock sector.
- ii. The nature of conduct in terms of vertical and horizontal integration in the small stock sector in and between South Africa and Namibia.

Trade Law issues

- i. To address the issue of export restrictions imposed by Namibia within SACU is probably the correct way of resolving the matter. SACU constitutes the deepest level of trade integration between South Africa and Namibia. This may include clarifying and cleaning up the text of the SACU Agreement dealing with import and export restrictions. This is however more of a systemic nature.
- ii. Where the text of the SACU Agreement moves beyond clear exceptions to the prohibition on the use of export duties and quantitative restrictions it is often open to the Member States to agree to the application of these restrictions for specific purposes. South Africa could use this decision-making mechanism as an opportunity to strengthen the general prohibition against the use of these measures within SACU.
- iii. South Africa can continue to pursue a bilateral settlement with Namibia in an attempt to resolve this impasse in accordance with Article 15 of the Agreement.
- iv. The SACU Council can refer the issue to the Tribunal, once it is established, for a recommendation in accordance with Article 13(4).
- v. South Africa can approach the Tribunal, once it is established, to resolve the matter through judicial means.
- vi. Attempt to find a solution to the current state of affairs through political considerations at the highest level.

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Part I of III – Economic impact

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1.1 Introduction and background

Despite numerous arguments in favour of free trade, many countries often protect local industries in one way or another. According to Houck (2003), the main reasons for protecting a specific sector or industry, or even part thereof, include: i) new industries; ii) national security; iii) national health; iv) unfair foreign trade policy; v) domestic programmes; vi) local balance of payments; vii) improving international trading terms; viii) providing revenue, and ix) protection against painful economic adjustment. In 2004 the Namibian Government decided to impose quantitative export restrictions on exports of live sheep from Namibia to South Africa. The principle motivation for this restriction was to force exporters to rather slaughter lambs in Namibia, thereby adding value to it, and then export the carcasses. It was at the time believed that this intervention will be to the benefit of the Namibia livestock industry and the Namibia economy as a whole. This study will reflect briefly on the impact in Namibia of the export restrictions mentioned, but the main focus of this study is to investigate the impact of the mentioned quantitative export restrictions on the South African sheep/lamb industry.

South Africa is a net importer of sheep meat (see

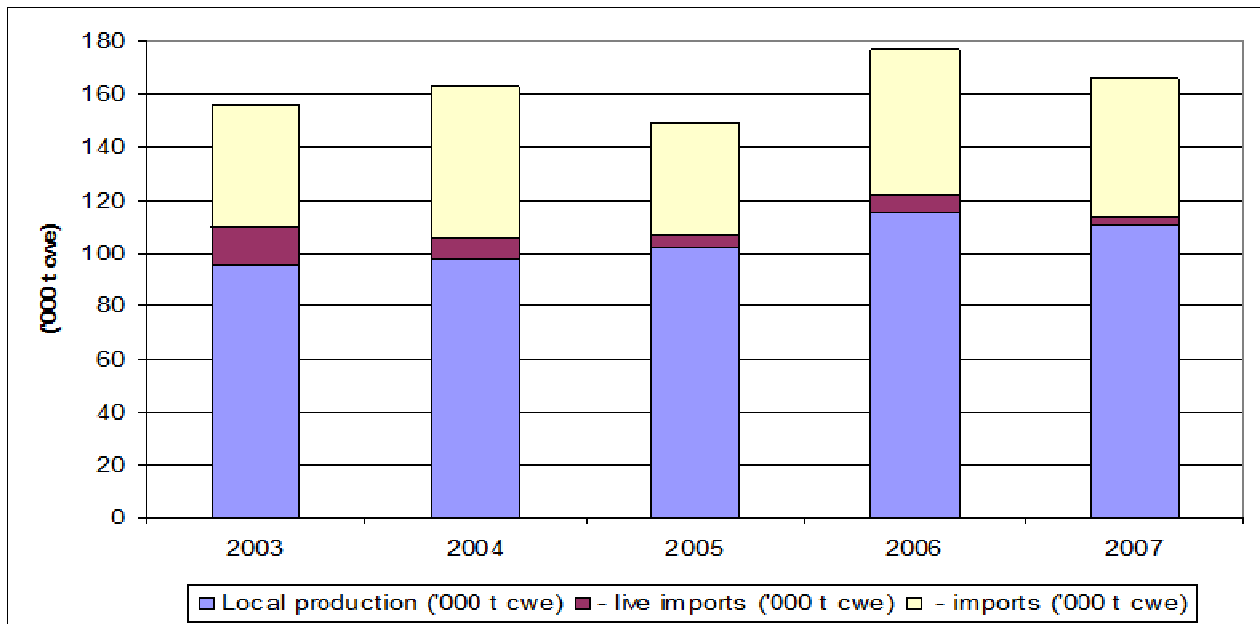


Figure 1), producing approximately 65 % for local consumption. Namibia, on the other hand, is a surplus producer of mutton and lamb, and has been exporting live sheep and sheep meat (i.e. mutton and lamb) long before Namibia became independent from South Africa. Within the ambit of the South African Customs Union (SACU) trade agreement, as well as the locality of Namibia, South Africa was, is and will likely stay a preferential export market for Namibian sheep and sheep meat (mutton and lamb).

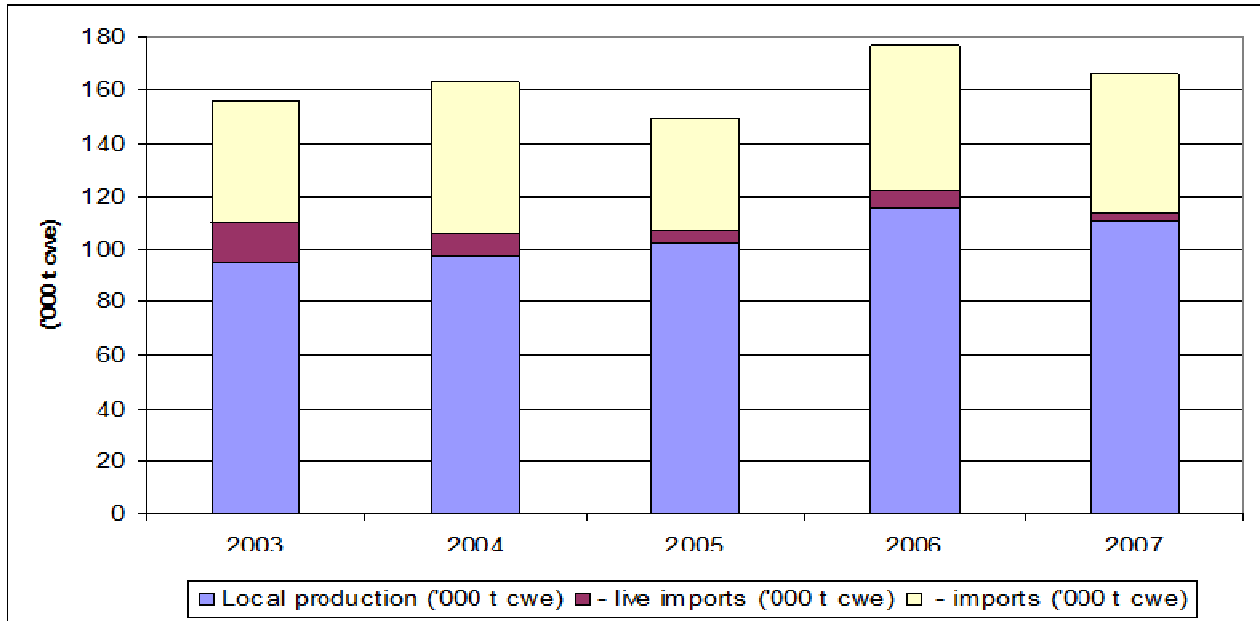


Figure 1: SA imports of sheep meat vs. national flock

Source: Jooste and Ford (2008)

In 2003, Namibia introduced the so-called “Small Stock Marketing Scheme” (SSMS otherwise referred to as “the scheme”) as an alternative to the proposed 15 % levy on the export of live sheep (PWC, 2007). The main rationale behind the scheme was to stimulate value addition in Namibia based on the strategies of the Vision 2030 (PWC, 2007), which should ultimately lead to employment creation, capacity utilisation, income generation as well as foreign exchange earnings. The Namibian Cabinet intended that their local abattoirs and tanneries should be utilised at full capacity within four years from 1 November 2003. In order to achieve this goal, the 15 % was replaced on 1 July 2004 with an export permit system, in which live sheep had varying permit ratios. (See Table 1 for a summary). Since the 16th of July 2007 the SSMS required that for every one lamb/sheep to be exported to South Africa by the producer, the sheep producer is required to slaughter six sheep at one of the designated abattoirs in Namibia for which the abattoir pay him a price, i.e. the farmer loses ownership of the animal. These abattoirs then export the carcasses to South Africa. Although the current quota ratio (6:1) was supposed to end on the 30th of June 2008 no alternative system has been put in place, and hence the SSMS as promulgated on the 16th of July 2007 still operated at the time this report was completed.

Table 1: SSMS implementation periods, permit ratios and build-up periods

Start date	Ending date	Quota ratio	Quota build-up period
1 July 2004	28 February 2005	1:1	n/a
1 March 2005	31 August 2006	2:1	n/a

1 September 2006	1 April 2007	6:1	90 day
2 April 2007	14 May 2007	3:1	Full period
15 May 2007	14 June 2007	20 %	12 months (1/5/06 – 13/4/07)
15 June 2007	15 July 2007	3:1	90 days
16 July 2007	30 June 2008	6:1	90 days

Source: PWC (2007) and Namibian Government Gazette (2004, 2005, 2006, 2007a and 2007b)

In an investigation requested by the Namibian Meat Board (PWC, 2007), it was found that the Namibian SSMS “didn’t have the desired effects and results originally intended.” Despite the fact that the principals of the scheme intended “minimum interference and disturbance in the market channel” and were “playing fields to be levelled between abattoirs and exporters,” the Namibian sheep producers currently find themselves almost entirely dependent on the four Namibian export abattoirs, i.e. where farmers previously marketed sheep to the South African market they are now forced to sell the majority of the marketing off-take to these abattoirs. The companies operating these abattoirs basically own the sole right to export lamb and mutton from Namibia; this constitutes excessive market power, but the purpose of this study was not to study the nature of such market power (some comments are nevertheless made with respect to the latter).

More specifically, the PWC (2007) study concluded that the discount paid to Namibian sheep producers increased as the scheme was implemented through its various quota phases to the detriment of Namibian sheep producers. According to PWC (2007), “no conclusive evidence was found that indicated that the SSMS achieved the goals set out originally, apart from benefiting a selected few”. The PWC (2007) report investigated three alternative options to the current SSMS, including: i) fully free trade; ii) amending export restrictions to have an enhanced monetary and penalty system, and iii) amending the export restriction ratio to a fixed levy per unit. The report finally recommended a fixed levy per unit (sheep exported), which was negotiated by Namibian industry role-players, who have not reached any agreement as yet. The PWC (2007) study did not consider the impact of the SSMS on the South African sheep and sheep meat industry.

1.2 Objectives

The primary objective of this study is to provide an approximation of the socio-economic impact of the SSMS on the South African sheep sub-sector, by more specifically, focusing on the Northern Cape Province (NCP) sheep sub-sector. In order to reach this overall objective, the following sub-objectives are investigated:

- Analysing the micro- and macro-economic impact on South Africa, more specifically the NCP;
- Assessing the past and most likely future impact of the SSMS on the South African sheep value chain;
- Identifying the main beneficiaries of the scheme on the South African side of the border; and
- Make specific recommendations about the SSMS for future action in South Africa.

1.3 Analytical framework for analysing export control

Houck (2003) explains that export trade policy is not always devoted to the expansion of international sales or the protection of local producers, but sometimes schemes restrict export marketing of particular commodities to protect domestic buyers and users and/or raise revenue for the national treasury. In addition, political reasons are often the motivation behind such control schemes. However, these control measures are seldom described in literature as being a means for authorities to promote local value addition.

Export control measures typically place an economic wedge between international and domestic prices, and domestic prices are pushed below international prices. This typically enables export controls to protect domestic consumers against eager foreign buyers, at the expense of local producers and possibly foreign buyers (Houck, 2003). The gainers are therefore the domestic buyers and the tax levying government. Houck (2003) also lists foreign sellers as possible beneficiaries of export control, but this obviously depends on the relative size of their market share (i.e. a small or large nation) in the exporting nation, and how the export control is implemented in terms of the international market.

Houck (2003) uses a partial equilibrium framework (see Figure 2) to analyse and illustrate the likely gains and losses for the domestic economy implementing the export restriction. A perspective on an exporting nation exporting specific goods is shown in Figure 2. It demonstrates the supply and demand curves with free trade (equilibrium) price assumed to be p_1 , exporting the quantity ad units. Domestic production is Od , whereas domestic consumption equals Oa . In a very simple case, the export restriction lowers the domestic price to p_2 , increasing domestic consumption to Ob , while domestic production decline to Oc , resulting in a decline of exports to bc . The abovementioned theoretical considerations have been confirmed by the PWC (2007) study where the export restriction on sheep resulted in lower prices being realised by sheep producers in Namibia. Due to the nature of sheep farming and taking into consideration agro-ecological considerations it is currently not possible to derive precisely the impact on production (which in the

long run will also affect the value adding sector) in Namibia, but anecdotal evidence suggest that changes are taking place, i.e. farmers moving into the cattle and game industries.

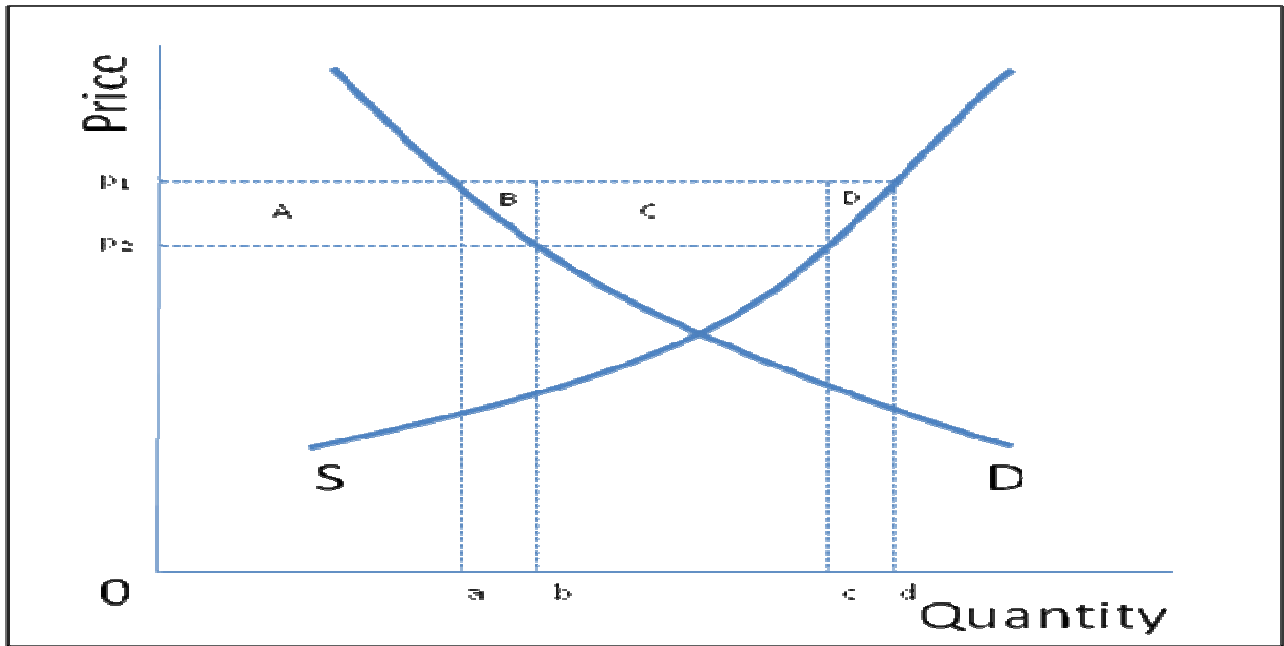


Figure 2: Welfare gains and losses from export control

Source: Houck (2003)

Houck (2003) further explains that such an export restriction can be seen to impact on various stages throughout the economy. Firstly, producer surplus (i.e. the welfare of producers) is reduced by area $A + B + C + D$ and variable input use move to other uses (sectors), for example, game production in the case of the Namibian SSMS. Fixed inputs, on the other hand, earn lower rewards than with free trade i.e. it results in a loss of producer surplus. This loss in producer surplus is believed to be distributed as follows:

- **Area A** – increase in consumer surplus as the price drops from p_1 to p_2 . (I.e. one would expect Namibian consumers to benefit from the SSMS, but due to the existence of market power in the abattoir sector in Namibia, as well as the scope and nature of the SSMS, there is serious doubt whether lower prices paid to lamb producers in Namibia is transmitted to consumers in Namibia).
- **Area B** represents a decline in a portion of the producer surplus due to quantity ab being sold to domestic buyers at price p_2 instead of to foreign buyers at price p_1 .
- **Area C** – Government revenue from taxing exports bc (in the case of export taxes). (I.e. the 20 % levy during the period 15 May 2007 to 14 June 2007 benefited the Namibian government. In the case of the quantitative quota or restriction that was applied for most of the period since inception on the 1st of July 2004, one can safely

postulate that the main beneficiaries were the Namibian export abattoir sector that have the sole right to export mutton and lamb [i.e. due to the high level of market power, while the Namibian government should accrue indirect benefits through taxes levied on the income of abattoirs).

- **Areas D** – is a net loss resulting from cd units that could be sold at p_1 that are not produced after the tax or restriction is imposed. As far as Area D is concerned the agro-ecological conditions does not allow for immediate production adjustments (i.e. switching to alternative enterprises), which actually compounds the negative impact on farmers. There is however anecdotal evidence that farmers are slowly moving to diversify to cattle and game farming. This does not necessarily constitute the most effective use of resources, otherwise such structural changes would have taken place already. In addition, and as mentioned already, a reduction in lamb production will also harm the abattoir sector in the medium to long run, and hence be counter-productive to the original intentions of the SSMS).

1.4 Background information on Namibian exports and prices of live sheep, mutton and lamb carcasses

The importation of sheep carcasses into South Africa must, according to the Meat Safety Act (Act 40 of 2000), be obtained from an establishment in Namibia which is approved by the Director of Animal Health of South Africa. Currently there are four such abattoir facilities in Namibia, which are listed in Table 2, and have a total sheep slaughtering capacity of 5400 sheep per day. In addition, the ownership and operating rights of these abattoirs is also shown. At the time of completion of this study, the Namibian authorities were unable to confirm any changes regarding these abattoirs' operation rights.

Figure 3 shows the location of these abattoirs in the four Namibian towns mentioned.

Table 2: Approved Namibian export abattoirs

Location	Daily capacity (sheep)	Owned by	Operated by (according to latest information available)
Windhoek	1300	Meat Corporation of Namibia	Just Lamb (Pty) Ltd
Mariental	1300	Farmers' Meat Market	Farmers' Meat Market
Aranos	1300	Natural Namibian Meat Producers	Natural Namibian Meat Producers
Keetmanshoop	1500	Karas Abattoir and Tannery (Pty) Ltd	Karas Abattoir and Tannery (Pty) Ltd

Source: PWC (2007)



Figure 3: Map of Namibia
 Source: www.namibia-travel.com.na

Figure 4 shows the slaughtering and live exports of Namibian sheep. It is clear that since the introduction of the scheme in mid-2004, and through its various stages, exports of live sheep declined dramatically, i.e. the decline from July 2004 to May 2008 was 84 %. Note that over the same timeframe slaughtering at the export abattoirs increased substantially. It is important to remember that, due to the extensive nature and therefore important seasonal fluctuations, these figures should be interpreted and analysed within context, but the trend for live exports are down, while the opposite is true for slaughtering at export abattoirs.

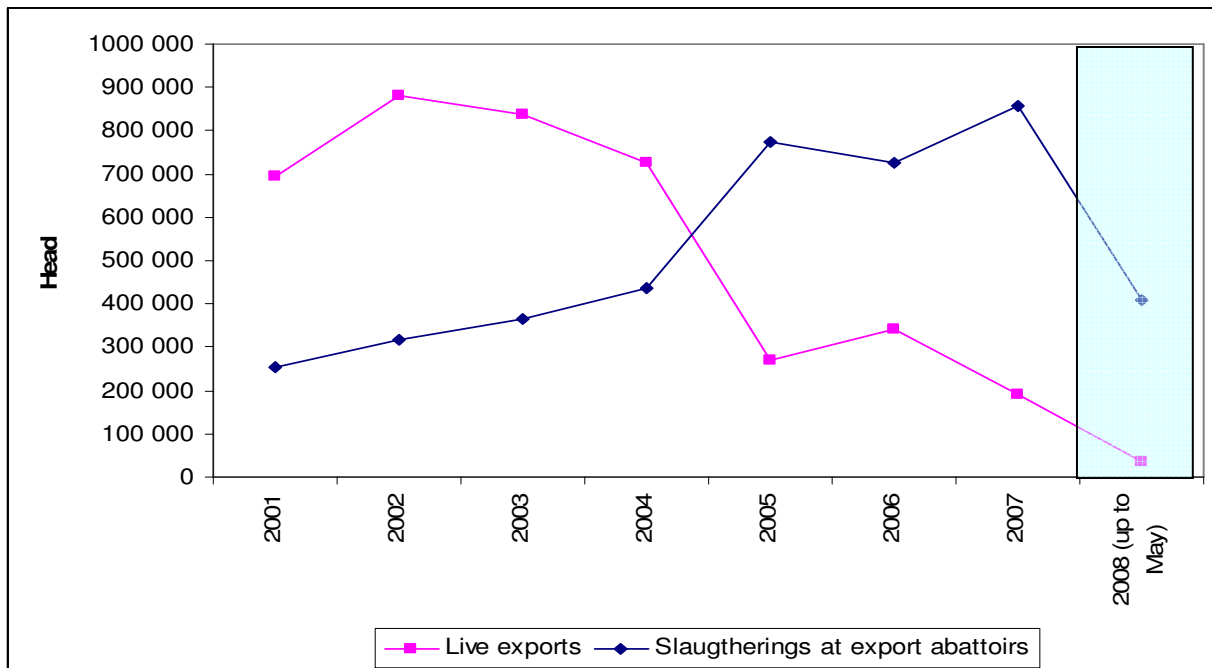


Figure 4: Namibian slaughtering at export abattoirs and live lamb exports
 Source: Namibian Meat Board (2008)

Figure 5 shows the monthly exports of live Namibian sheep and small stock meat to South Africa from January 2001 to May 2008. Cognisance should be taken that the marketing of live Namibian sheep and small stock meat is highly seasonal. The main marketing of Namibian lamb usually starts in January, where after it usually reaches a peak during the months of April to June. Figure 6 clearly shows that since the introduction of the SSMS live exports of sheep declined significantly, even though there are seasonal peaks. The exports of small stock meat (lamb carcasses) increased significantly from, on average, below 500 thousand tons (for the period January 2001 to June 2004) to, on average, between 1000 to 1500 thousand tons after the introduction of the SSMS (in some months exports was even more than a 1500 thousand tons). It should also be noted that exports of meat was also significantly more variable after the introduction of the SSMS.

Figure 6 compares the South African and Namibian prices for lamb (grade A2) through the different stages of the SSMS, since January 2004. Despite the impact of seasonality as well as other general supply and demand drivers on the price, it is clear that the spread between the South African and Namibian lamb prices widened over time. More detail is provided in the next section. In 2007, PWC (2007) estimated that the per unit transportation cost amounted to R0.02 per running kilometre. Based on a distance of 1000 km and an average carcass weight of 20 kg, the transportation cost amounted to R1/kg. PWC (2007) also estimated that the transport weight loss amounted to 3 %, which roughly amounted to another R1/kg based on a carcass price of R32/kg.

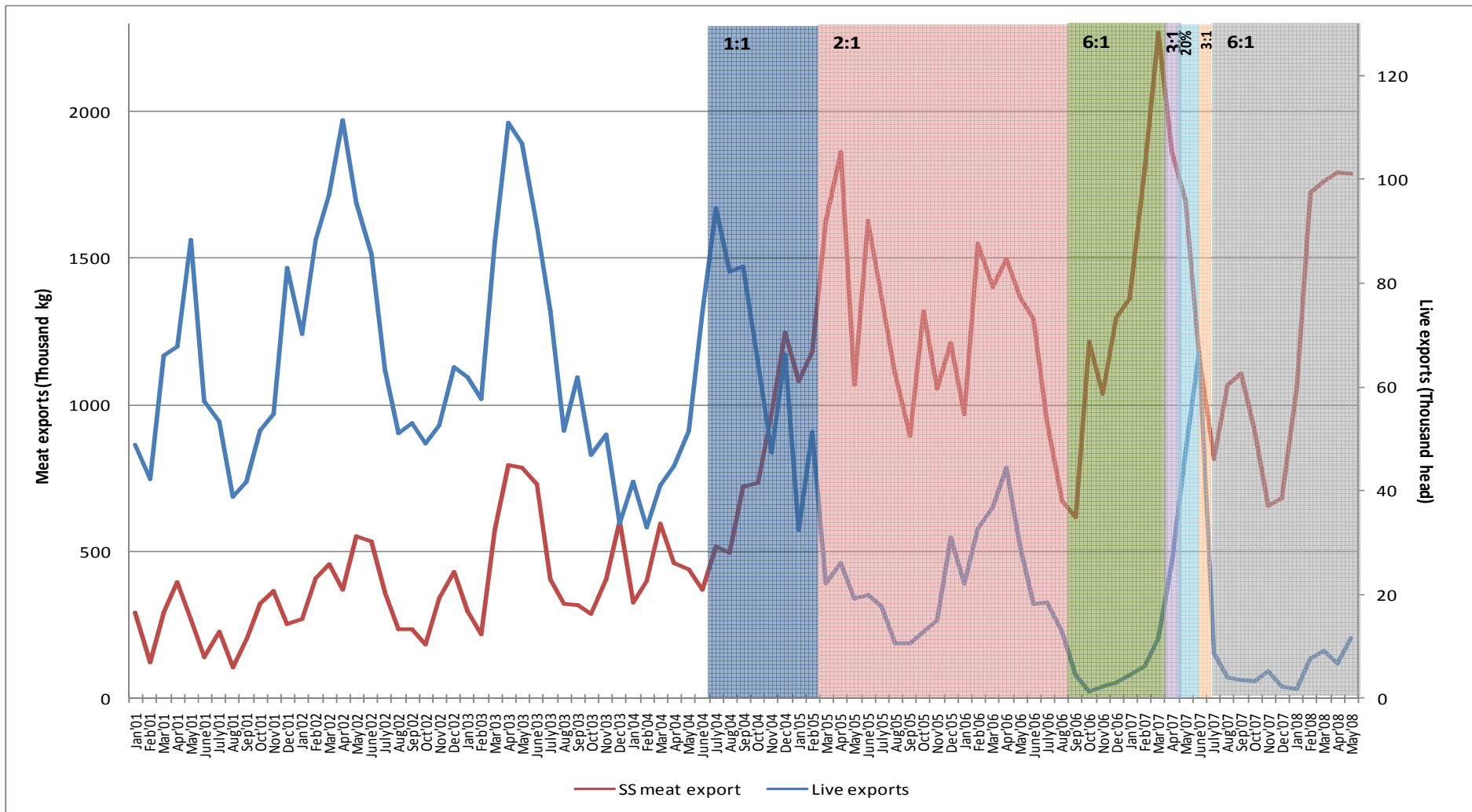


Figure 5: Monthly exports of live Namibian sheep and small stock meat to South Africa (Jan 2001 to May 2008)

Source: Namibian Meat Board (2008)

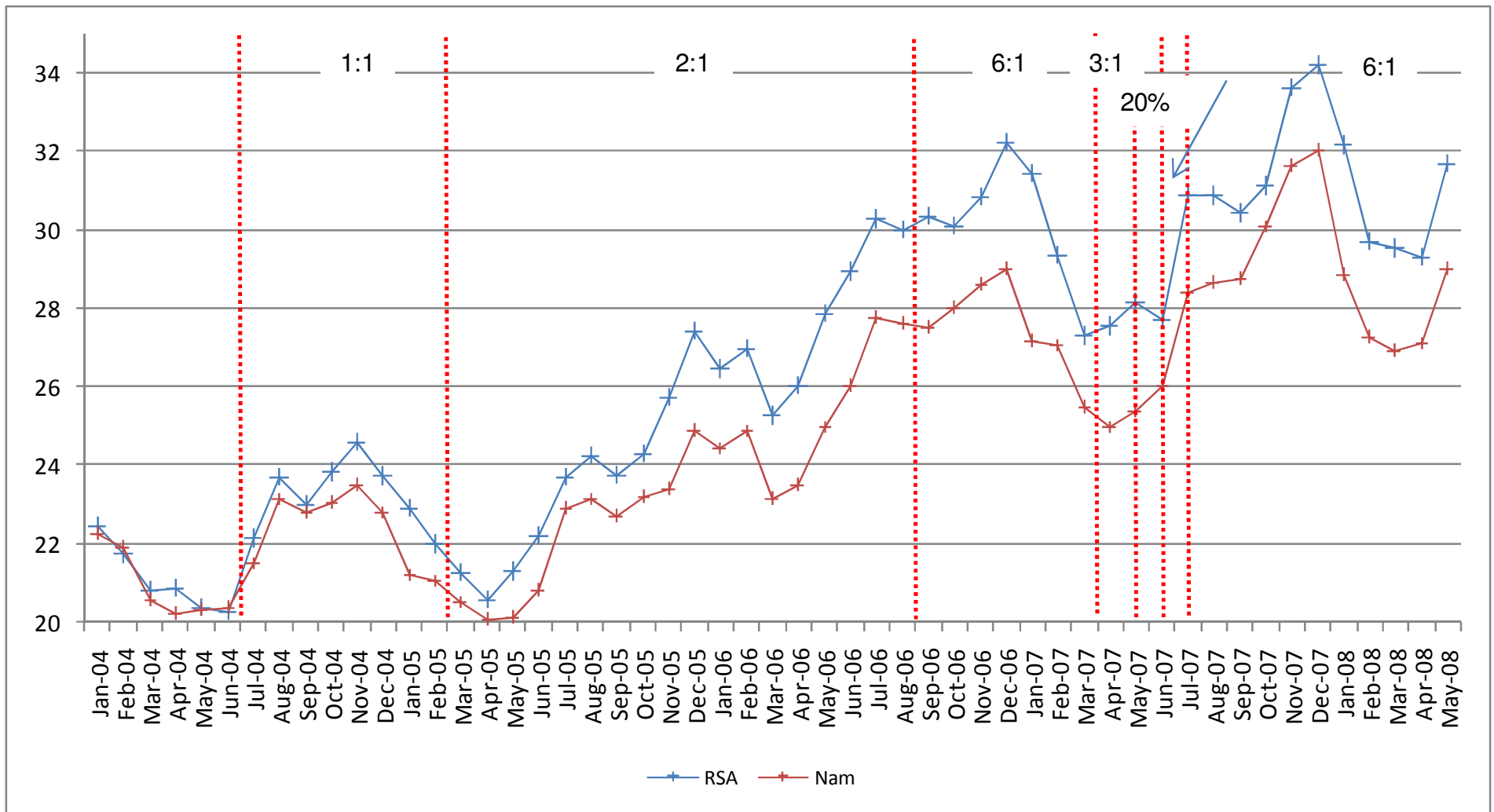


Figure 6: Comparison of RSA and Nam lamb (A2) prices (Jan 2004 to May 2008)

Source: RMAA (2008) and Namibian Meat Board (2008)

The post-2004 monthly price spread (RSA cents per kg) between South African and Namibian lamb (A2) carcasses is shown in Figure 7, and is calculated as the difference between the RSA and Namibian price (i.e. price/kg in RSA minus price/kg in Namibia). Prior to the introduction of the SSMS Namibian A2 carcasses frequently (60% or 25 out of the 42 months between January 2001 and June 2004) received prices higher than the prices paid for similar graded carcasses in South Africa (see period 1 January 2001 to June 2004). After the introduction of the SSMS, the price per kilogram of Namibian A2 lamb carcasses dropped significantly and were constantly below the price paid for similar graded carcasses in South Africa (see period 1 July 2004 to April 2008).

The impact of this on a Namibian sheep farmer can be illustrated with the following example. Assume a farmer markets 50 sheep in Namibia at a discount of R1.50/kg to the South African price. If the average carcass weight per animal was 20 kilogram, then the farmer will receive R 30 less per animal, or R 1 500 less for the whole batch marketed, compared to his counterpart in South Africa. This is an oversimplification of the impact of the SSMS on a Namibian sheep farmer and the reader is referred to the PWC (2007) study for more detail, but the example serves the purpose to illustrate that the impact is significant.

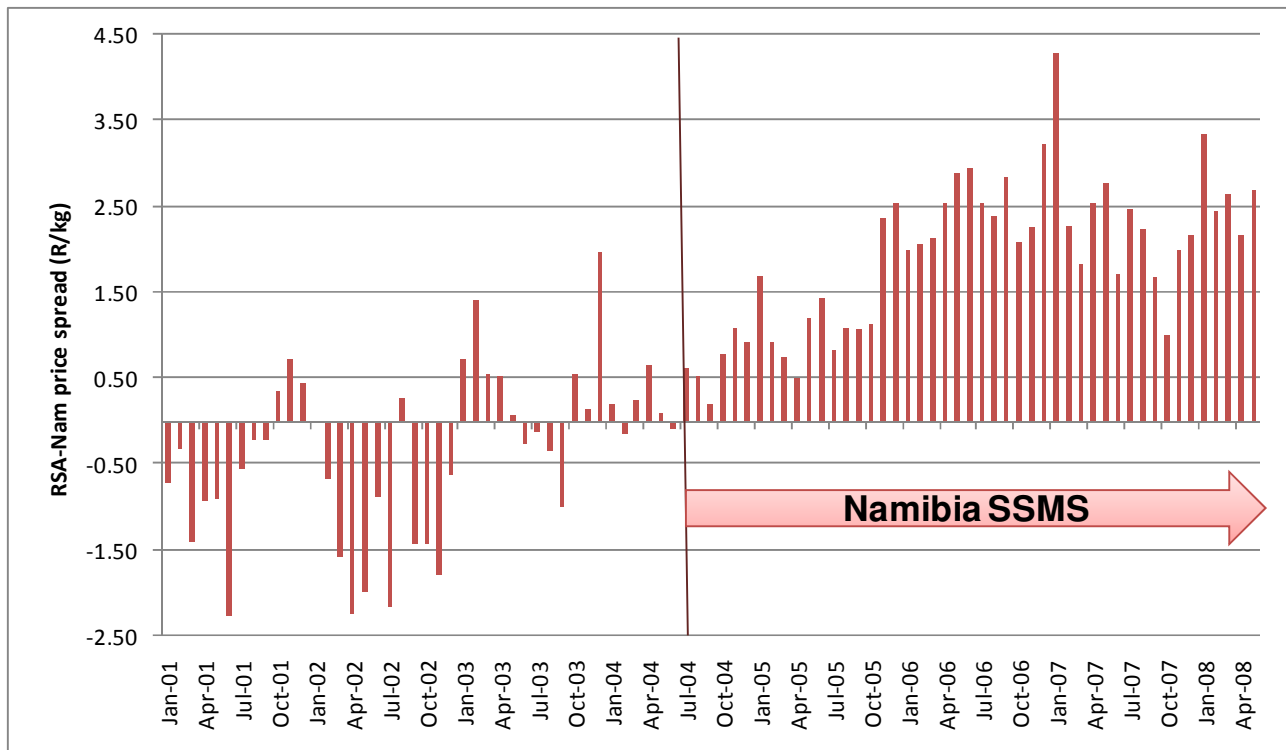


Figure 7: Monthly RSA and Nam lamb (A2) price spread (Jan 2001 to May 2008)

Source: RMAA (2008) and Namibian Meat Board (2008)

As shown in Table 1 the current quota ratio (i.e. 6:1) was supposed to expire on 30 June 2008, but continued due to the fact that no new quota ratio was agreed upon between different stakeholders. The Namibian Meat Board recommended that a R19/head levy be introduced on exported live sheep, based on the findings of the PWC (2007) report. The operators and owners of the four

abattoirs opposed this and suggested approximately R70/head, at which point the negotiations ended.

1.5 Impact on South Africa

The basic regulations for importing meat into South Africa are specified in the “Meat Safety Act”, i.e. Act no. 40 of 2000. It requires that the importer must obtain an import permit from the Veterinary Division of the South African National Department of Agriculture (DoA). In addition to the approval of the International abattoir and/or cutting plant, the importer is also responsible for obtaining a pre- and post slaughter animal health certificate from the Veterinary Department in the country of origin, i.e. Namibia in this case. More specifically, Article 22(1)(h) from Act 40 specifies the general and veterinary procedures for the importation of meat.

Namibian sheep exports consist mostly of lamb. In the meat trade, “lamb” generally refers to an A2 carcass classification ranging between 16 and 24 kg. Other grades are therefore specified when referred to. Generally differing from beef, lamb is not matured before it becomes available to retailers and is therefore mostly sold as fresh meat. The “shelf-life” is therefore of critical importance to retailers in order to provide them the opportunity to sell it fresh. If the shelf-life is too short, retailers have to add further value (i.e. in the form of adding spices or producing “sosaties” or sausages, for example) to save the product from turning bad, increasing their costs. The general shelf-life of lamb, provided it is kept in a well-maintained cold chain, ranges from between 5 to 7 days.

Lamb slaughtered in Namibia is more disadvantaged than South African slaughtered lamb, in that it generally takes a minimum of 3 days to reach retail stores in the RSA. In situations where specific orders lean lambs (A0 and A1) destined for the Western Cape Province (WCP), **for example**, it might take two or more days at the abattoirs to fill such an order before the truck can be loaded, which shortens the shelf-life even further. A second disadvantage when compared to lamb carcasses that go directly from local South African abattoirs to retail stores, is that the cold chain generally has to be broken at least one additional time - all meat imports should first go to one of the four designated inspection sites where seals are broken by a state veterinarian or representative for inspection of the load (i.e. carcasses in this case). Upon approval by the state veterinarian from the South African Department of Agriculture, the consignment is released. Thereafter, carcasses are treated as a South African product and lose its identity (i.e. country of origin status).

The meat, and more specifically the lamb and mutton value chain, increasingly relies on customer relations and trust, therefore a very integrated and complex approach must be followed. Despite the fact that the price of the product plays an important role, the availability of the desired quantity

and quality of a product at any given time is the key, especially in the case of such a perishable (limited shelf-life) product such as lamb.

1.5.1 Micro-economic impact

NCP abattoirs and even some of the WCP abattoirs were built knowing that Namibian sheep are slaughtered at different times of the year (due to seasonal differences) compared to the local market. Although the South African abattoirs did provide the offset for Namibian lamb, new abattoirs were built and upgraded in Namibia with the aim to rather slaughter within Namibia, thereby hoping to add more value to their own produce.

- Creating situations of artificial surpluses and price discounts

During interviews with stakeholders in South Africa it was indicated that lamb imports from Namibia frequently causes artificial short run surpluses in certain South African markets. For example, it was stated that Namibian lamb arriving in the Gauteng market (often numbers range between 2000 to 3000 carcasses) are re-routed to the Western Cape market due to the Gauteng market being saturated at the specific time. Over and above the short term surplus that this situation creates in the Western Cape market, with the resultant price shock, the additional time that the consignment spent on the road also has a significant impact on the shelf-life of this lamb (refer to the earlier discussion on the short shelf-life of lamb as discussed in the previous section). Due to the shortened shelf-life it was reported that the selling price could drop further, by another R2 to R4/kg. Overall, the discounted price is then transmitted to the Western Cape lamb price in the following week, irrespective of the quality aspect of the “cheaper lambs” from Namibia. It is important to stress that it is not the initial quality of the Namibian lambs when slaughtered in Namibia that results in the quality problem, but rather the handling in the cold chain before it arrives at the retailers, that lowers the quality and therefore the price. The overall impact is increased localised price volatility in the market where the surplus was artificially created that can result in significant losses to South African farmers marketing their animals during such periods (note that farmers schedule their marketing well ahead of time and therefore it is not easy to reschedule marketing activities).

- Under utilisation of domestic slaughter capacity

A second impact resulting from the SSMS, relates to the impact on local slaughter capacity utilisation. Figure 6 shows that the exports of live sheep from Namibia to South Africa declined from nearly 693 653 heads (i.e. 57 804 per month) during 2001 to 189 901 (15 825 per month) during 2007, whereas the monthly average during the first five months of 2008 amounted to 7408. It is therefore clear that the reduction in live sheep exports from Namibia significantly reduced the availability of animals for local slaughter; the impact is mainly felt at the Northern Cape, Western

Cape, as well as selected Gauteng abattoirs. Throughput at abattoirs is generally accepted to have an enormous impact on the profitability of an abattoir, and therefore also influences the per unit slaughtering cost. For example, an abattoir operating at 60 % capacity has a higher unit cost and is therefore unable to offer the same “buying price” to farmers, as these higher costs should be recovered from the fifth quarter to generally remunerate the slaughtering process. Moreover, under utilisation of slaughter capacity impedes on competitiveness and results in additional costs that must be absorbed by different stakeholders, including the ability of abattoirs to make further investments and create additional or even maintain jobs.

1.5.2 Macro-economic impact

The likely macro impacts are analysed from four angles. Firstly, price volatility is analysed to determine whether a change in price uncertainty was experienced by either South African or Namibian producers since the introduction of the SSMS. Secondly, the price transmission effects are studied in order to determine the level of price symmetry in the sheep value chain. In the third instance, the level of concentration in the Namibian sheep export abattoirs is measured, and the effect on the per unit slaughtering cost resulting from lower throughputs in South African abattoirs is shown.

1.5.2.1 Price volatility

The aim of this section is to quantify and compare price volatility levels for lamb from South African perspective prior and after the introduction of the SSMS. The reason for analyzing price volatility is that the introduction of the SSMS have most probably caused structural changes in the South African sheep sub-sector fuelled by changes in the supply of live animals and carcasses as well as relative price relations. Cognisance should be taken that the analysis only consider price volatility on aggregate due to a paucity in data on a regional level.

Over the years, a number of different methods have been used to quantify volatility¹. Most of these approaches are based on the assumption that volatility levels remain constant over the whole period under consideration. Just and Pope (2002) cite Campbell *et al* (1997), who argue that it is inconsistent and statistically inefficient to use volatility measures that are based on such an assumption when the resulting series actually changes over time. Another limitation of these constant volatility methods is that they do not distinguish between the known and unknown components of the price. Amongst others, information on inflation and seasonal behaviour influencing the price are considered to be known. Moledina *et al* (2003) argue that one can

¹ Amongst others, these methods include the standard deviation, coefficient of variation, Black-Scholes-Merton, Coppock index, etc.

reasonably expect producers to recognise such regular features (or risks) in the price process, and to use such knowledge in their decision-making process. By implication, they are exposed only to the unpredictable (uncertainty) component in the price. Thus, the inclusion of predictable components when quantifying price volatility, is likely to lead to the over-estimation of the actual **price volatility** faced by producers. It is therefore clear that the appropriate approach to be used to quantify price volatility should distinguish between the predictable and the unpredictable components in the price process, and should also allow volatility to change over time.

The Autoregressive Conditional Heteroscedasticity / Generalised Autoregressive Conditional Heteroscedasticity (ARCH/GARCH) approach does meet the above two requirements and is used in this study to quantify the volatility in the price of South African and Namibian lamb. At this stage, it is important to note that the respective prices are converted to natural logarithms in order to eliminate the units. Doing this allows for the direct comparison of the results of the quantified volatility levels. The effect of inflation has been eliminated by converting the nominal prices to real prices. In addition, the effect of seasonality in the respective lamb prices has been eliminated by using seasonal dummy variables. The results from the regressions used to eliminate seasonality from the prices are shown in [Appendix A](#). In both cases, December's price was used as the base category. Both the South African and Namibian prices from March through June are significantly lower than that of December, which is to be expected, since December prices of especially meat tends to increase as a result in increased demand during the festive season.

The remainder of the procedures behind the ARCH/GARCH approach to quantify volatility are discussed in more detail in [Appendix B](#). Once the volatility levels have been quantified and discussed, using linear regression, the next step is to determine whether or not the Namibian SSMS had an impact on the respective volatility levels.

The ARCH/GARCH approach to quantify the level of volatility in the price of lamb allows new information to influence volatility levels from one period to the next. Thus, by implication, volatility levels are allowed to vary over time instead of erroneously assuming that volatility remains constant. Further, recall that the influence of inflation and seasonal behaviour on the prices is not included, since both are considered to be known to participants in the lamb industry. The volatility levels presented in this section thus represent only the unknown (or uncertain) component in the price of lamb.

Figure 8 represents, amongst others, the levels of volatility in de-seasonalised real prices of lamb both in South Africa and in Namibia. From Figure 8 one can see that the level of volatility in the real price of lamb in Namibia remained constant over the whole period under consideration (see the straight line – SE_ARIMA_Nam), which implies that Namibian lamb producers are exposed to a lower level of uncertainty. The level of volatility in South Africa was found to vary substantially

(see line – CSD_SA). Note that the volatility level in the South African lamb price is characterised by a number of up- and downward spikes. While the upward spikes refer to periods in which the change in price from one month to the next is relatively large, downward spikes in turn imply that prices remained relatively constant (unchanged). Moreover, the level of volatility thus varies from one period to the next indicating that lamb producers in South Africa are exposed to higher levels of uncertainty.

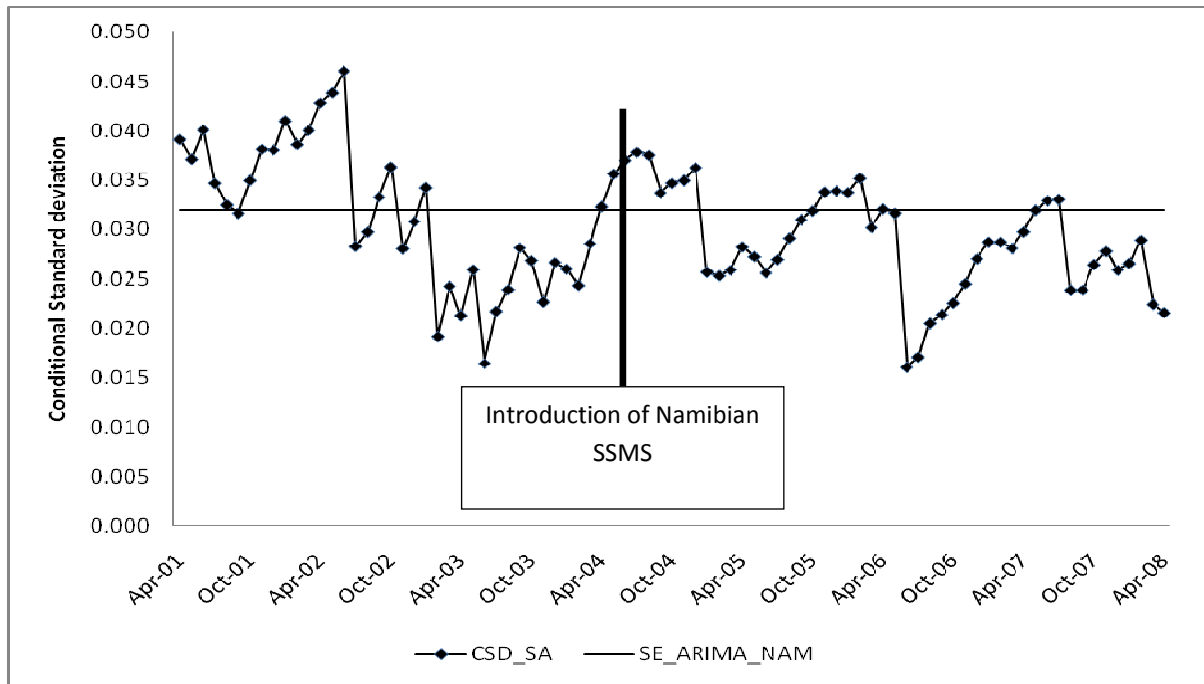


Figure 8: Volatility levels in the real prices of South African and Namibian lamb

In order to determine whether the SSMS had an impact on the volatility of lamb prices in South Africa a variable has been included in the analysis as a variance regressor to test statistically whether or not the introduction of the SSMS caused any significant change in the level of volatility in the South African lamb price. A dummy variable (NAMSCHEME) was used scoring a value of one for each of the periods after the introduction of the SSMS (June 2004), and a value of zero for each of the periods before the SSMS was introduced.

Results from the statistical test whether or not the introduction of the SSMS caused a change in the level of volatility in the South African lamb price are shown in Table 3. Note that a significant coefficient would imply that the introduction of the SSMS had an impact on the level of price volatility in South Africa.

First of all when assessing the explanatory power of the estimated GARCH equation, results in Table 1 shows that the estimated model is a good fit. The adjusted R-squared value of 0.9074 suggests that the model explains about 91% of the variation in the variance of the lamb price in South Africa. In addition to the high adjusted R-square, the probability of the F-statistic indicates

that the model overall is significant in explaining the variation in the variance of the South African lamb price. Finally, since the Durbin-Watson statistic is close to two there is no evidence of first order autocorrelation in the estimated model. One thus can conclude that the estimated model has sufficient explanatory power.

Table 3: Regression results to test whether or not the Namibian meat scheme influenced the level of volatility in South African lamb prices

	Coefficient	Std. Error	z-Statistic	Prob.
AR(1) ^{***}	0.5695	0.0629	9.0607	0.0000
AR(2) ^{***}	-0.4886	0.0833	-5.8633	0.0000
AR(3) ^{***}	0.8270	0.0687	12.0447	0.0000
MA(1) ^{***}	0.4636	0.0813	5.7002	0.0000
MA(2) ^{***}	0.8273	0.0722	11.4555	0.0000
Variance Equation				
C	0.0002	0.0001	2.2086	0.0272
ARCH(1) ^{**}	-0.1842	0.0716	-2.5734	0.0101
GARCH(1) ^{***}	1.0142	0.0746	13.5996	0.0000
NAMSCHEME*	-0.0001	0.0000	-1.9135	0.0557
R-squared	0.9163		F-statistic	103.9517
Adjusted R-squared	0.9074		Prob(F-stat)	0.0000
Durbin-Watson stat	1.9537			

Note: *, **, *** indicates statistical significance at 10%, 5% and 1% levels of significance respectively.

Table 3 shows that the coefficient of the dummy variable (NAMSCHEME) is statistically significant at a 10% level of significance, indicating that the introduction of the SSMS did cause a change in the level of the price volatility of South African lamb. The negative sign, of the NAMSCHEME coefficient, implies that the level of price volatility after the introduction of the SSMS is lower than prior to its introduction. Despite the decrease in the level of volatility after the introduction of the scheme the results in Figure 8 suggest that the level of volatility still varies substantially after the SSMS was introduced. **The small value of the coefficient of NAMSCHEME in Table 3 suggests that the level of volatility decreased only marginally.**

1.5.2.2 Price transmission effects

In this section the price transmission effects between South African and Namibian lamb prices are investigated. This is important since it will indicate whether there are any economic grounds for trade and how one market will influence the other, and vice versa.

PWC (2007:28) states that, from their analysis, “it is evident that the Namibian Producer prices had a downward effect on the overall publicised RSA prices during the period of the SSMS.” They also stated that “it supports the statement that Namibian abattoirs do, on average, pay lower producer prices than their RSA counterparts.” If this is the case, and there are strong price transmission

effects between the two countries, then the impact on either market could be significant and even distorting. The following sub-sections provide the methodological approach followed to investigate the nature of price volatility and the results obtained.

1.5.2.2.1 Method

Let x_t be a two dimensional I (1) time series variable $x_t = (P_t, A_t)'$, $\hat{x}_t = (P_t, A_t, W_t)'$. Where P_t is producer price of lamb at time t, A_t is auction price of lamb at time t, and W_t is world price of lamb at time t. The linear form of vector autoregressive (TVAR1) model is given by:

$$x_t = \lambda_0 + \lambda_1 \hat{x}_{t-1} + \lambda_2 \hat{x}_{t-2} + \dots + \lambda_k \hat{x}_{t-k} + \varepsilon_t, \quad [1]$$

Where, $t=1, 2, 3 \dots T$, k is the lag length and is assumed as being unknown. It is determined using available lag length selection criteria. Vector Error Correction representation of [1], in other words $TVECM_1$ is given by:

$$\Delta x_t = \lambda_0 + \hat{\Pi} \hat{x}_{t-1} + \sum_{i=1}^{k-1} \rho_i \Delta \hat{x}_{t-i} + v_t^{(j)} \quad [2]$$

Where: $\hat{\Pi} = \sum_{i=1}^k \lambda_i - I_2 = \nabla \beta' = \begin{pmatrix} \nabla_1 \\ \nabla_2 \end{pmatrix} (1, \alpha_1, \alpha_2)$, $\nabla = \begin{pmatrix} \nabla_1 \\ \nabla_2 \end{pmatrix}$ is a co-integrating vector, $v_t^{(j)}$ is a vector of

adjustment coefficients, and $\rho_i = -\sum_{l=i+1}^k \lambda_l$.

The Three-regime Threshold Vector Autoregressive representation of [1] i.e. $TVAR_3$, may be given by:

$$x_t = \vartheta_0^j + \vartheta_1^j \hat{x}_{t-1} + \vartheta_2^j \hat{x}_{t-2} + \dots + \vartheta_k^j \hat{x}_{t-k} + \varepsilon_t^j, \quad \text{for } \gamma_{(j-1)} \leq z_{t-d} \leq \gamma_{(j)} \quad [3]$$

Where t is defined as before; $j=1, 2, 3$; $-\infty = \gamma_{(0)} < \gamma_{(1)} < \gamma_{(2)} < \gamma_{(3)} = \infty$; $\varepsilon_t^j \sim \text{IIN}(0, \Sigma^j)$, for a three regime $\gamma = (\gamma_1, \gamma_2)$ is the threshold value; z_{t-d} is the threshold variable and ' d ' is a delay parameter. The threshold variable is assumed as being known but the threshold values $\gamma = (\gamma_1, \gamma_2)$, the delay parameter ' d ' and the lag length ' k ', are assumed as being unknown.

The general form of threshold vector error correction representation of [3] $TVECM_3$ is given by:

$$\Delta x_t = \vartheta_0^j + \Pi^j \hat{x}_{t-1} + \sum_{i=1}^{k-1} \theta_i^{(j)} \Delta \hat{x}_{t-i} + \varepsilon_t^{(j)} \quad \text{for } \gamma_{(j-1)} \leq z_{t-d} \leq \gamma_{(j)} \quad [4]$$

Where

$$\Pi^j = \sum_{i=1}^k \lambda_i^j - I_2 = \nabla^j \beta' = \begin{pmatrix} \nabla_1^j \\ \nabla_2^j \end{pmatrix} (1, \alpha_1, \alpha_2) \quad \text{and } \theta_i^j = - \sum_{l=i+1}^k \vartheta_l^{(j)}, \text{ 'j' is defined as before.}$$

From [4], a Two-regime Threshold Vector Error Correction Model $TVECM_2$ could be defined by allowing 'j' to take values j=1, 2 and making $\gamma_{(2)} = \infty$.

The parameters $\vartheta_0^{(j)}$, ∇^j , and θ_i^j are estimated after a two-dimensional grid search is applied to determine γ by selecting those values of γ which minimise the log determinant of the variance covariance matrix of residuals $\hat{\Sigma}_m(\hat{\gamma}, \hat{d})$. The search was restricted to a minimum of 20 observations in each regime.

Next, an extension to Hansen's (1999) approach was applied to test for linearity, i.e. the null hypothesis of $TVECM_1$ against its alternative hypothesis of $TVECM_m$ for $m = 2, 3$. After threshold nonlinearity (implying that the transaction cost between the two markets does matter²) was confirmed, we determined the number of regimes by testing the null hypothesis of $TVECM_2$ against its alternative of $TVECM_3$. To do this, a non-standard test procedure was applied. See Hansen (1999) for detailed discussion within a threshold autoregressive (TAR) context. According to Hansen (1999), the sampling distribution of the simulated Sup-LR, i.e. LR_{im} in [5] depends on whether error variances in $TVECM_i$ are heteroscedastic. This was tested by the regression of squares of residuals from $TVECM_i$ on squares of the variables, and on the dummies identifying regimes and testing for the joint significance of the variables. Where heteroscedastic error variances were found, the necessary corrections were made. (See Hansen [1999] for the method).

$$LR_{im} = T * (\ln\left|\hat{\Sigma}_i\right| - \ln\left|\hat{\Sigma}_m(\hat{\gamma}, \hat{d})\right|) \quad \text{for } i = 1, 2 \text{ and } m = 2, 3 \quad [5]$$

² It implies that there is an incentive for trade between the two markets, as long as the price difference between the two markets is in absolute terms and is greater than the transaction costs.

Where LR_{im} represents the test statistics, $\hat{\Sigma}$ and $\hat{\Sigma}_m(\hat{\gamma}, \hat{d})$ respectively stand for variance covariance matrix of residuals obtained from $TVECM_i$ and $TVECM_m$.

1.5.2.2.2 Data analysis and results

The data analysis and results are discussed in the following six sub-sections. Firstly, the statistical properties of the data are analysed, followed by the tests for co-integration or the existence of a long-run relationship. In the third section, the statistical tests for the lag length are reported on, whereas the fourth section reports on the results for the Threshold Vector Error Correction Model (TVECM), followed by the results on the impulse response function and the regime switching in the fifth and final sections, respectively.

i. Statistical properties of the data

The logarithms of price variables were used in this study to decide on the statistical properties of variables. According to the results found, prices are non-stationary on levels. Differencing them only once was sufficient to make them stationary. This means that prices are integrated of order one, i.e. I (1). See the results in Table 4, where the probability values are zero, i.e. there is no probability for making an error when rejecting the null hypothesis of stationary.

Table 4: Statistical Property of Variables

Variables	Coefficient	Probability
Lnp	1.281292	0.9484
d(lnp)	-7.82865	0.0000
Lsp	1.552309	0.9697
d(lsp)	-7.29497	0.0000

lnp and lsp stand for logarithms of Namibian and South African prices.

d(lnp) and d(lsp) stand for Namibian and South African prices after differenced only once.

ii. Co-integration

We tested for co-integration or the presence of long-run relationships between the two price variables. This was done using residual-based and Johansen methods. Table 5 showed that the two price variables are co-integrated at 0.05 levels.

Table 5: Test for co-integration

Johansen Test		
Hypothesis	Trace Test	Max-Eigen value Test
None	0.0009	0.0044
At most 1	0.0598	0.0598
Residual-based Test		
Variable	Coefficient	Probability
Residual	0.092498	0.0000

iii. Lag length

After the statistical property of the price variables was checked and co-integration confirmed, we tested for lag length in the Vector Autoregressive Model (see Table 6). To do this, the following lag selection criteria were applied: LR, FPE, AIC, SC and HQ. Except for FPE and AIC, the rest (i.e. majority or 3 out of 5) selected a lag order of one. Therefore the value k in equation 1 is estimated to be 1, meaning that the current price is significantly influenced by the price in the previous month.

Table 6: Test for Lag Length

Lag length	LR	FPE	AIC	SC	HQ
0	NA	2.24E-06	-7.34	-7.27	-7.31
1	288*	6.16E-08	-10.93	-10.75*	-10.86*
2	6.85	6.22E-08	-10.92	-10.62	-10.80
3	7.87	6.18E-08	-10.93	-10.51	-10.76
4	7.89	6.12e-08*	-10.94*	-10.40	-10.72
5	2.27	6.54E-08	-10.87	-10.22	-10.61
6	5.51	6.68E-08	-10.85	-10.08	-10.54
7	7.88	6.56E-08	-10.87	-9.99	-10.52
8	1.31	7.12E-08	-10.79	-9.79	-10.39

* Lag length selection

iv. Threshold Vector Error Correction Model (TVECM)

A three regime TVECM given by equation 4 was estimated. The following steps led to the estimation of this equation: a grid search over the negative and positive threshold variables to determine the location of threshold values; a test for the null hypothesis of a one-regime against its alternative of a two-regime TVECM, and a test for the null hypothesis of a two-regime against its alternative of three-regime TVECM. The last two tests were conducted under the assumption of both homoscedastic and heteroscedastic error variances.

The following results were obtained. Threshold values of -0.014 and 0.016 were computed. Thresholds are used as measures of transaction cost. The estimates imply that prices in the two markets have to be at least 1.5 % different for profitable trade to take place.

To decide on the degree of integration, threshold values were further analysed. We found that the majority of deviations from equilibrium (i.e. about 65 %) fall in the neutral band or regime two. This indicates that the two markets are integrated (i.e. the law of one price holds).

In addition, a three-regime TVECM was fitted as opposed to a two-regime TVECM. This was arrived at under the assumption of heteroscedastic (p-value 0.001) and homoscedastic (p-value 0.046) residual variances. The TVECM estimated is given by:

$$\begin{bmatrix} \ln p \\ lsp \end{bmatrix}_{(2 \times 1)} = \begin{bmatrix} 0.32 \\ (0.32) \\ 0.57 \\ (0.32) \end{bmatrix}_{(2 \times 1)} * pdiff(-1) + \begin{bmatrix} -0.60 \\ (0.38) \\ -0.38 \\ (0.37) \end{bmatrix}_{(2 \times 1)} * d^{1st} * pdiff(-1) + \begin{bmatrix} -0.38 \\ (0.37) \\ -0.04 \\ (0.37) \end{bmatrix}_{(2 \times 1)} * d^{3rd} * pdiff(-1) + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix}_{(2 \times 1)}$$

* Numbers in parenthesis are standard errors.

Adjustment coefficients computed in South Africa's equation are significant, but this is not true in the Namibian equation. This may suggest two things. Firstly, that a weak dynamic relationship exists between South African and Namibian lamb prices. Secondly, that shocks to Namibian lamb prices have a significant impact on South African lamb prices, whereas this is not true the other way round. The implication of this is that shocks induced by for example policy measures in Namibia (like the SSMS) that affects Namibian lamb prices will also have an impact on South African lamb prices, while the opposite is not true.

v. Impulse response

In addition, we computed impulse response functions. This was to determine whether lamb prices in South Africa responds differently to positive and negative Namibian price shocks, i.e. whether responses are asymmetric or not. Responses are said to be asymmetric when negative and positive shocks in Namibia result in unequal responses in South Africa in absolute terms. Asymmetric price responses could be caused by asymmetric information that traders have and market imperfection such as concentration (the existence of concentration is discussed in Section 1.5.3.) Results show that responses are indeed asymmetric. This is visible from Figure 9, in which a one-standard deviation of positive and negative shocks in the Namibian price affects the South African price differently.

Figure 9 further shows that a shock causes permanent adjustments, in the sense that the effect does not die out completely. (This is, however, not that clear from Figure 9 due to the scale, but closer examination of the data confirms this).

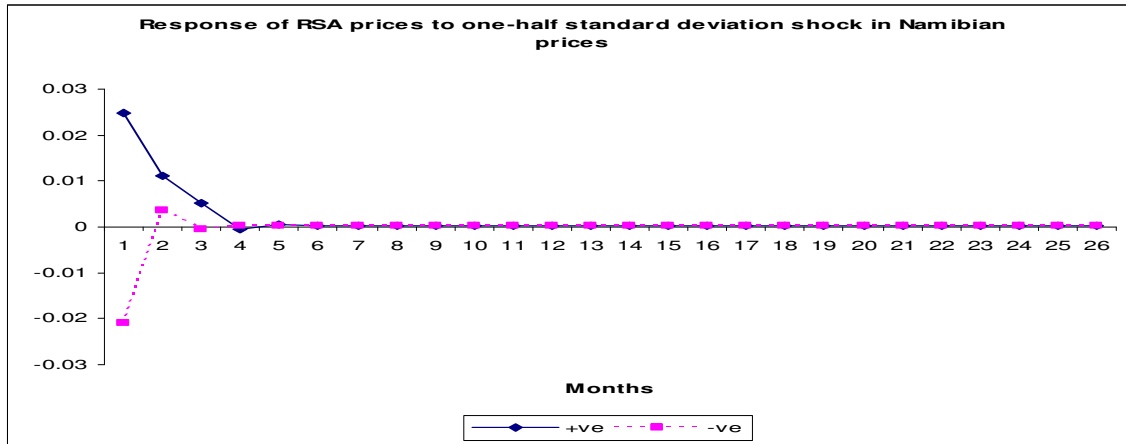


Figure 9: Impulse Response Functions

vi) Regime switching

The regime switching results support earlier findings that the two markets are integrated. The majority of the deviations from equilibrium fall in the neutral band or the second regime. It is the regime within which differences between the two prices are less than or equal to transaction cost. In Figure 10 two periods are visible, with the break falling somewhere in the early months of 2004, in which deviations from equilibrium fell persistently in the neutral band in the second period, i.e. after early 2004. This implies that the South African and Namibian lamb markets are relatively more integrated since the introduction of the SSMS. This is to be expected due to the higher carcass export volumes from Namibia to South Africa. The implication, however, is that the impact that Namibian lamb prices have on South African lamb prices is amplified due to the finding in subsection iv above, i.e. shocks to Namibian lamb prices have a significant impact on South African lamb prices, whereas this is not true the other way round.

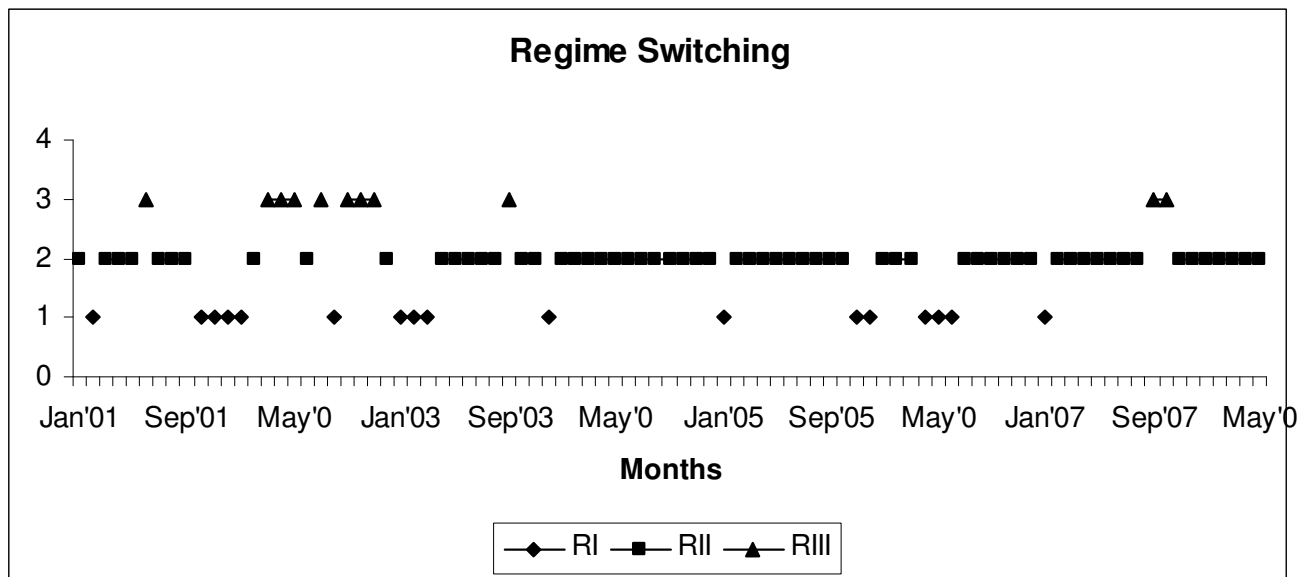


Figure 10: Regime Switching

1.5.3 Abattoir and marketing concentration

The US Department of Justice (DoJ) applies the Herfindahl-Hirschman Index (HHI) (Hirschman, 1964) to measure the market concentration. The HHI calculates the sum of the squared market shares of all firms in the market, and it ranges from zero for a perfectly competitive market, to 10 000 for a monopoly. This index is considered better than the CR4 as it incorporates more information about the size distribution of the firms in the market. The DoJ regards an HHI of 1000 as a breakpoint, with below 1000 indicating that the market is reasonably competitive and market power should not be a concern. When the HHI is between 1000 and 1800, the market is considered moderately concentrated; above 1800 indicates a highly concentrated market, which

can trigger further investigation to determine whether an unacceptable amount of anti-competitive behaviour exists (Chin, 2001).

The calculated HHI index for the four Namibian export abattoirs, based on their respective daily slaughtering capacity, is reported in Table 7. Although the calculations are based on the existing capacity, the companies that have the control over the abattoir are directly or indirectly in control of the marketing of export carcasses to South Africa. With a calculated HHI of 2510, it is clear that from a market concentration point of view, the Namibian export abattoir industry is highly concentrated.

Table 7: HHI index for Namibian export abattoirs

Abattoir	Daily slaughtering capacity	Market share	Squared shares
Windhoek	1300	24 %	580
Mariental	1300	24 %	580
Aranos	1300	24 %	580
Keetmanshoop	1500	28 %	772
HHI (sum of squares)			2510

Namibian lamb carcasses are marketed in South Africa by only three companies because of their right and/or ownership of the four export abattoirs in Namibia. The three companies, as well as the location of the abattoirs where they slaughter, that were/are marketing Namibian lamb carcasses to South Africa at the time of writing this report, are shown in Table 8. They have the power to exclude other role-players from entering the Namibian market due to the fact that, in order to export lamb or mutton from Namibia, it has to be slaughtered at one of these abattoirs and the SSMS further limits the exports of live sheep.

Table 8: Namibian abattoirs and operating companies

Company	Ownership or majority shareholder	Abattoir location	Abattoir ownership
Just Lamb	Kabols le Rich	Windhoek	Meatco
Just Lamb	Kabols le Rich	Keetmanshoop	Kabols le Rich and Frans Indongo
Farmers Meat Market	Christo v Niekerk	Mariental	Christo v Niekerk and Namibian farmers
Blouberg Meat	Sarel Oberholzer	Aranos	Sarel Oberholzer

For example, despite the export ratio of 6:1, it does not necessarily imply that 16.66 % of each Namibian farmer's total off-take is exported alive. This is due to the fact that it is illegal to trade live export permits "or rights" and due to the long distances and time of slaughter, farmers often fill a full truckload or collectively fill a load with live animals in this ratio in order to make it financially feasible (i.e. to reach economies of scale). In addition, these export permits also expire after 3 months since Namibian farmers have slaughtered in Namibia.

1.5.4 Socio-economic impact

The socio-economic impact is generally understood as the effect on households and employment. The socio-economic impact of the Namibian SSMS is very difficult to estimate with any degree of accuracy due to the unavailability of reliable data. The most direct socio-economic impact resulting from the SSMS is on abattoir level in the RSA. Despite the fact that importing live sheep from Namibia decreased by 77 % from 836 179 head of sheep in 2003 to 189 901 head in 2007, employment levels at the large South African abattoirs was affected. For instance, an abattoir in Upington that used to slaughter on average 13 676 sheep per month, with an average of 66 employees, was forced to close down in the middle of 2008.

Based on monthly employment figures received from abattoirs since 2005, a weighted average "employment to sheep slaughter ratio" of 7.9 sheep per worker per business day was calculated. This is calculated based on an average of 21 business days (working or slaughtering) per month. This ratio implies that, on average, for every 166 sheep slaughtered per month, one full-time employee is needed. As mentioned above, between 2003 and 2007, live sheep imports from Namibia to South Africa decreased by 642 278 sheep, as a direct result of the SSMS. This implies that on average, 53 856 less sheep per month or 2564.5 per day based on average of 21 working days, have been available for slaughter in South Africa. Based on the "employment to sheep slaughter ratio" calculated above, this implies that 323 (or 2564 sheep divided by the 7.9 ratio calculated) full-time jobs were lost in South Africa due to the decrease in live sheep imports from Namibia.

When the assumption is made that this represents the direct job losses in the RSA abattoir industry, the indirect³ labour impacts are likely to be 78 % of the direct impacts or another 252 full-time jobs, whereas the induced⁴ impacts are likely to be 123 % or 400 full-time jobs (Taljaard,

³ **Indirect multipliers** measure the impact (backward linkage) that a particular sector will have on all other industries that supply inputs to that particular sector.

⁴ **Induced effects** measure the economic impact that will result from salaries and wages paid out to employees in both the particular or direct activity, as well as the input-supplying sectors. These additional salaries and wages lead to an increased demand for various consumable goods that need to be supplied by various economic activities throughout the broader economy.

2007). This implies that the Namibian SSMS will likely cause 975 (i.e. 323 + 252 + 400) full-time job opportunities to be lost.

Most of the bigger abattoirs that in the past focused on slaughtering Namibian sheep used these Namibian sheep to better utilise their slaughter capacity during low season, in their direct surrounding area, for example, the Namaqualand. These abattoirs, given their location, were therefore able to take advantage of the counter-seasonal aspect, because they were slaughtering Namibian lamb “on their way” to the market. The Namibian main season in which their lambs are marketed, is from February to June, normally reaching its peak in March (see Figure 6 above). This is in contrast to the peak marketing season of the winter rainfall areas in the Namaqualand, which typically market during October to December. It is furthermore important to note that their “peak” period obviously varies from one year to the next, depending on weather conditions in specific years and is therefore generalised to illustrate the point.

However, despite the fact that abattoirs are relatively unable to change employment levels, as a result of seasonality, the profitability of the abattoir depends heavily on the capacity utilisation or throughput. It is therefore hypothesised that an abattoir slaughtering at near full capacity year-round, will realise higher profits and may therefore be in a position to offer better prices to producers (or charge lower prices to retail), compared with abattoirs operating at lower capacity levels.

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Part II of III – Trade Law Issues

by

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Terms of Reference

The following represents the terms of reference for the opinion requested from the South African Agricultural Processors Association:

Theme: The status and acceptability of the Namibian Small Stock Marketing Scheme in terms of WTO rules, the SADC Protocol on Trade as well as the SACU Agreement: A Trade Law Perspective

With the above theme in mind, you are requested to provide answers to the following questions:

- Is the Namibian Small Stock Marketing Scheme in contravention of WTO rules;
- Is the Namibian Small Stock Marketing Scheme in contravention of the SADC Protocol on Trade;
- Is the Namibian Small Stock Marketing Scheme in contravention of the SACU Agreement;
- Recommendations.

In addition, the opinion should also, where possible, address the lawfulness of a proposed export levy on weaners under the various legal instruments referred to in the Terms of Reference.

2.1 Introduction

Namibia has put in place a so-called “Small Stock Marketing Scheme (hereinafter referred to as the “Scheme”). The object of the Scheme is to encourage local slaughtering of small stock in Namibia, through the imposition of restrictions on the export of live animals. The restrictions take the form of export duties, export quotas and export licences.

The purpose of this opinion is to establish whether these export restrictions are compatible with Namibia’s commitments under the World Trade Organisation (WTO), the Southern African Development Community (SADC) as well as the Southern African Customs Union (SACU). The emphasis of this opinion will focus on **export** prohibitions and restrictions which, as we understand our brief, are the main concerns behind the request for this opinion.

2.2 The export measures at issue

2.2.1 The quantitative restriction on the export of live sheep

A duty of 15% was charged on the export of live sheep from Namibia. However, levying of the duty has been suspended subject to the full utilization of existing local slaughtering capacity in Namibia within four (4) years from the date of the implementation of the levy and subject to review.¹

In order to bring about full utilization of “*existing slaughtering capacity*” the Minister of Agriculture, Water and Rural Development put in place an **export quota** mechanism through various Government Notices published from time to time.² Namibian exporters of livestock were restricted in the number of stock they were permitted to export in accordance with a fixed ratio between livestock being slaughtered in Namibia and livestock exported. For example, for every sheep slaughtered in Namibia, one live sheep could be exported, or for every six sheep slaughtered in Namibia, one live sheep could be exported etc. The ratio varied from time to time and was in certain instances subject to timeframes.

¹ See Ministry of Finance Notice No. 61 of 2004, dated 18 March 2004 published in Government Gazette No.3181 dated 1 April 2004. The date of implementation of the levy was to be 1 April 2004.

² See Notice No. 129 of 2004 published in Government Gazette No. 3214 of 1 June 2004; Notice No.1 of 2005 published in Government Gazette No. 3365 of 3 January 2005; Notice No. 94 of 2006, published in Government Gazette dated 20 June 2006; Notice No.73 of 2007, published in Government Gazette No. 3819 of 2 April 2007. The last notice being published in terms of Section 20 of the Meat Industry Act, 1981 (Act No. 12 of 1981) as amended, regarding the import or export of *inter alia* sheep and cattle was Notice No.94 of 2007, published in Government Gazette No 3841 of 15 May 2007, withdrew Notice No.73 of 2007 without providing for any extension of the export quota mechanism for sheep. As “*full utilisation*” was to be reached by 1 April 2008 (i.e. four years since the date of implementation of the levy in April 2004), it is unclear whether the quota mechanism has been extended, or if the suspended levy of 15% on the export of sheep has been reinstated.

2.2.2 The duty charged on the export of live cattle

The Minister of Finance imposed³ a duty of 30%, effective as from 1 April 2004 on the export of live bovine animals: slaughter-ready mature cattle - cattle that weigh in excess of 450kg. Exporters of weaners, i.e. cattle older than a calf and younger than a long-weaner that weigh from 110kg up to 300kg were exempted from payment of an export duty for a period of three (3) years from the date of implementation of the export duty (i.e. from 1 April 2004) and subject to review by the Minister of Finance. From the background information it is unclear whether the exemption of the export duty on weaners, as defined herein, has been extended. Be that as it may, the nature of the export restriction as it pertains to bovine animals is that of an **export duty**.

2.2.3 Permits regulating the importation and exportation of live sheep and cattle

In many instances, the Government Notices regulated imports and exports of both cattle and sheep by means of a discretionary permit system⁴. Both Notices published under Section 20 of the Meat Industry Act during 2007⁵ continued the practice of import and export permits, but omitted any reference to the discretionary powers of the Meat Board in granting the permits. We will address this in more detail elsewhere in this opinion.

We will now proceed with our analysis of the lawfulness of these measures under the WTO, the SADC Protocol on Trade and the SACU Agreement.

2.3 World Trade Organisation (WTO)

2.3.1 Relevant provisions under the General Agreement on Tariffs and Trade

2.3.1.1 General prohibition against quantitative export restrictions

The General Agreement on Tariffs and Trade, 1994 consists *inter alia* of the provisions of the General Agreement on Tariffs and Trade, 1947, including the Notes and Supplementary Provisions contained in Annex I to the latter agreement (hereinafter referred to as the “GATT”).

³ See Notice No, 61 of 2004, published in terms of Section 54(4) of the Customs and Excise Act, 1998 (Act No. 20 of 1998) in Government Gazette No.3181 of 1 April 2004.

⁴ See Notice No. 129 of 2004 published in Government Gazette No. 3214 of 1 June 2004; Notice No.1 of 2005 published in Government Gazette No. 3365 of 3 January 2005 and Notice No. 94 of 2006, published in Government Gazette dated 20 June 2006.

⁵ See Notices No.73 of 2007, published in Government Gazette No. 3819 of 2 April 2007 and No.94 of 2007, published in Government Gazette No 3841 of 15 May 2007.

The applicable provision dealing with the issue of import and export restrictions of a quantitative nature is Article XI.

2.3.1.2 Article XI (General Elimination of Quantitative Restrictions)

Paragraph 1 of Article XI provides for a **general elimination** of quantitative restrictions (QRs):

*“No prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licences or other measures, shall be instituted or maintained by any contracting party on the importation of any product of the territory of any other contracting party or on the **exportation** or sale for export of any product destined for the territory of any other contracting party.”*⁶[Emphasis added].

The following becomes clear from reading paragraph 1 –

- i. The obligation to eliminate prohibitions or restrictions does not extend to the use of export duties, taxes or other charges. The prohibition is aimed at eliminating restrictions made effective through the use of quotas and import/export permits. The prohibition is very broad in its scope and covers “*other measures*” having the effect of restricting exports or imports and not being in the nature of a duty, tax or charge⁷; and

⁶ A 1950 GATT Working Party Report of Quantitative Restrictions indicated that: “... *the Agreement does not permit the imposition of restrictions upon the export of a raw material in order to protect or promote a domestic industry, whether by affording a price advantage to that industry for the purchases of its materials, or by reducing the supply of such materials available to foreign competitors or by other means.*” See GATT/CP.4/33/Add.1, page 4.

⁷ According to Annex I “Notes and Supplementary Provisions” Ad Articles XI, XII, XIII and XVIII, the terms “import restrictions” or “export restrictions” include restrictions made effective through state trading operations”. Article XVII which deals with State Trading Enterprises, provides in paragraph 1(a) that any such enterprise shall “*in its purchases or sales involving either imports or exports act in a manner consistent with the general principles of non-discriminatory treatment prescribed in this Agreement for governmental measures affecting imports or exports by private traders*”. This is understood to mean that such an enterprise “*shall make such purchases or sales solely in accordance with commercial considerations, ..., and shall afford the enterprises of the other contracting parties adequate opportunity to compete for participation in such purchase or sales.*” - see para. 1(b). Our understanding of the Namibian Meat Board, after studying the Meat Industry Act, 1981 is that the Meat Board is not directly involved in the sale or purchase of live stock. It regulates rather the purchase and sale of live stock by private parties. In this regards, it is important to observe the note made with respect to Ad article XVII in Annex I where a distinction is made between Marketing Boards established by Members of the WTO, involved in the sale and purchase of products, and those not so involved. In the latter instance where such Boards “*lay down regulations covering private trade*” their activities will be governed by the relevant articles of the GATT. In this sense, we are of the view that the activities of the Meat Board relating to the imposition of import and export restrictions and prohibitions will be governed by inter alia Article XI of GATT.

- ii. The prohibition against the use of QRs applies to both imports and exports of products to or from the territory of any other contracting party (read Member of the WTO).

As Article XI does not prevent **Namibia** from imposing or maintaining an export duty, we will leave the issue of export duties, at least for the moment, while we discuss the provisions of Article XI.

As was also noted, the exportation (as well as importation⁸) of live sheep and cattle is subject to the granting by the Namibian Meat Board of a permit. Apart from the last two Notices published under Section 20 of the Meat Industry Act, 1981 (Act No 12 of 1981), provided to us as part of the background documentation, all the Notices provided for a non-automatic or discretionary permit allowing for the exports of both live cattle and sheep. With respect to non-automatic permits, the Panel in the *India – Quantitative Restrictions* case found that –

“These reports are consistent with the ordinary meaning noted above, as discretionary or non-automatic licensing systems by their very nature operate as limitations on action since certain imports may not be permitted. Thus, in light of the terms of Article XI:1 and these adopted panel reports, we conclude that a discretionary or non-automatic import licensing requirement is a restriction prohibited by Article XI:1.”⁹

Hence, it appears as if two types of export restrictions are applicable with respect to sheep (i.e. restrictions made effective through quotas as well as through discretionary export permits)¹⁰, whereas the export of live cattle is only subject to one export restriction (i.e. a restriction made effective through discretionary export permits¹¹). This being the case it will be necessary to establish whether these export restrictions, which *prima facie* appear to be in contravention of Article XI:1 can be justified under any other relevant WTO legal provision.

⁸ Any import licensing procedure will be governed by the provisions of both Article XIII of GATT, as well as the provisions of the WTO Agreement on Import Licensing Procedures. For example, Namibia is obliged to “*inform the Committee [on Import Licensing] of any changes in its laws and regulations relevant to this Agreement and in the administration of such laws and regulations*” (Article 8:2(a)). The Agreement distinguishes between automatic (where approval of an application is granted in all cases) and non-automatic licensing, which shall “*correspond in scope and duration to the measures they are used to implement*” (Article 3:2).

⁹ See Panel Report on India - Quantitative Restrictions on Imports of Agricultural, Textile and Industrial Products, (WT/DS90/R dated 6 April 1999) at Para. 5.129.

¹⁰ Whether the use of discretionary permits in conjunction with an export quota, as in this case, will necessarily provide for an additional level of restriction over and above the restriction imposed by the quota, will depend on the manner in which the discretionary permit system is being operated – See in this regard the Panel Report on Korea – Measures Affecting Imports of Fresh, Chilled and Frozen Beef, (WT/DS161/R; WT/DS169/R) at Para. 782.

¹¹ This is not taking count of export duties, which are compatible with Article XI.

2.3.2 Exceptions to the general prohibition contained in Article XI:1 of GATT

2.3.2.1 Article XI: 2(a) and (b) of GATT

Paragraphs 2 (a) and (b) of Article XI provide that the general prohibition contained in paragraph 1 of that Article shall not apply to –

*“Export prohibitions or restrictions **temporarily** applied to prevent or relieve **critical shortages** of foodstuffs or other products essential to the exporting contracting party [Emphasis added];*

*“...export prohibitions or restrictions necessary to **the application of standards or regulations** for the classification, grading or marketing of commodities in international trade”[Emphasis added].*

It is necessary therefore to determine the reason(s) for the imposition by Namibia of export restrictions made effective through quotas and/or export permits.

Both the Namibian White Paper on Industrial Development, dated August 1992 as well as an Export Development Strategy for Namibia, dated March 1998 and prepared by the EU Transitional Trade and Investment Development Programme, emphasized the need for Namibia to increase its industrial capacity. The latter document mentioned that a shortcoming of the Namibian economy is that *“too much reliance is placed on a small number of unprocessed primary commodities”*. It recommended a diversification of export products and markets which could be attained by increasing the level of domestic value addition in each of the exported products.

It will be recalled that export restrictions on sheep, as well as goats, were imposed in order to encourage domestic slaughtering by local abattoirs in Namibia. This is in line with the overall strategy to increase beneficiation of primary products in Namibia.

We did not find any basis in the background documentation which suggests that the export restrictions were imposed for any of the reasons provided for under paragraphs 2(a) or (b). **Hence we are of the view that neither of these subparagraphs justifies the imposition and/or maintenance of export quotas and/or export permits in violation with Article XI¹².**

2.3.2.2 Article XII (Restrictions to Safeguard the Balance of Payments)

Article XII constitutes another exception to the general prohibition against the use of border restrictions other than in the form of duties, taxes and similar charges¹³. It allows a WTO Member,

¹² For the same reason we are of the view that Article 12 of the Agreement on Agriculture, which incorporates through reference paragraph 2(a) of Article XI of GATT is not applicable.

¹³ The provisions of Article XIV *“Exceptions to the rule of non-discrimination”* as well as Article XV *“Exchange Arrangements”* need to be read in conjunction with Article XII as well as Article XVIII, Section B. All these provisions deal with import restrictions for purposes of safeguarding external financial positions and to ensure adequate levels of reserves when facing balance of payments difficulties.

under certain defined conditions, to impose restrictions on **imports** of products in order to “safeguard its external financial position and its balance of payments”¹⁴. As the main concern of the South African meat industry is rather the export restrictions put in place by Namibia with respect to live sheep and cattle, Article XII is not relevant in this context as it exclusively deals with import restrictions¹⁵.

2.3.2.3 Article XVIII (Governmental Assistance to Economic Development)

Article XVIII of GATT allows for WTO Members the economies of which can only support low standards of living and are in the early stages of development¹⁶ to temporarily deviate from the provisions of the other Articles of the GATT. However, the wording of this Article suggests that the measures anticipated in this Article relate to measures imposed on **imports** of products and **not exports**. It allows for a flexible tariff structure in order to grant protection for the establishment of a particular industry or for the imposition of quantitative restrictions on imports to ensure sufficient levels of monetary reserves. As a result, this exception does not apply to export measures of the nature under consideration in this opinion.

2.3.2.4 Article XX (General Exceptions)

Article XX provides grounds for justification of a measure, which in the absence of a justification will amount to a violation of WTO law. Apart from the requirements contained in the chapeau of Article XX namely that such a measure is not applied in “*a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade*”, Article XX lists a number of specific grounds of justification.

Paragraph (i) of Article XX is of particular importance for the purposes of this opinion. It reads as follows –

“... nothing in this Agreement [read GATT] shall be construed to prevent the adoption or enforcement by any contracting party [read WTO Member] of measures –

¹⁴ See Paragraph 1 of Article XII:1.

¹⁵ However, we recall that both the import and export of cattle and sheep are being regulated by permits issued by the Namibian Meat Board. In this sense, Article XII is not altogether irrelevant either. It appears from the background documentation provided to us that the purpose of the import restrictions has more to do with sustainable economic growth, job creation and the alleviation of poverty through a program of beneficiation of unprocessed products rather than the reasons stated in paragraph 1 of this Article.

¹⁶ According to GATT, 1947 Annex I “Notes and supplementary provisions” *Ad Article XVIII*, para. 2 “*The phrase ‘in the early stages of development’ is not meant to apply only to contracting parties which have just started their economic development, but also to contracting parties [read Members] the economies of which are undergoing a process of industrialisation to correct an excessive dependence on primary production*”.

- (i) *Involving restrictions on exports of domestic materials necessary to ensure essential quantities of such materials to a domestic processing industry during periods when the domestic price of such materials is held below the world price as part of a government stabilization plan; Provided that such restrictions shall not operate to increase the exports of or the protection afforded to such domestic industry, and shall not depart from the provisions of this Agreement relating to non-discrimination”.*

There are a number of important conditions in paragraph (i) that need to be met before it can be relied upon to justify a prohibited export restriction in terms of Article XI. These are (in addition to the conditions listed in the chapeau):

- The export restriction applied, must be **necessary**¹⁷ to ensure **essential** quantities of such materials to a domestic processing industry;
- The export measure must be imposed as part of a **governmental stabilization** plan to ensure that the domestic price of such restricted material is held below the world price;
- The export measure shall not operate to **increase the exports** of the particular processing industry;
- The export measure shall not operate to **increase the protection** afforded to the particular domestic industry; and
- The export measure shall not be applied in a **discriminatory** manner.

In the event that Namibia claims that the export restrictions provided for under the Scheme are being justified through reliance on paragraph (i) of Article XX, it will carry the burden of proof to show that its measures fall within the scope of this paragraph. We were unable to assess from the background documentation provided to us whether these measures are imposed by Namibia as part of a governmental stabilization plan. Further research may need to be done regarding the possible justification of the export restrictions under the Scheme in terms of this paragraph.

However, in view of the meaning ascribed by the Appellate Body to the term “necessary” in the *EC-Asbestos* dispute (see footnote below), a strong argument can be made out that Namibia has an alternative measure available in the form of an **export duty** which is in conformity with the provisions of Article XI, instead of resorting to export quotas and export permits, which as we have indicated, are not in conformity with the provisions of that Article. As such, it could be argued that

¹⁷ The Appellate Body has on occasion confirmed that a measure is “necessary”, at least within the context of Article XX(b), “if an alternative measure which [a Member] could reasonably be expected to employ and which is not inconsistent with other GATT provisions is [not] available to it.”. (See Report of the Appellate Body on European Communities – Measures affecting Asbestos and Asbestos-containing products, WT/DS135/AB/R dated 12 March 2001) at Paras. 170 – 171.

these measures are not “*necessary*” to ensure essential quantities of sheep and cattle for purposes of the domestic slaughtering industry and that paragraph (i) of Article XX does not provide justification for Namibia’s use of export quotas and export permits with respect to livestock.

2.3.3 Conclusion

Based on our analyses of the measures imposed by Namibia on the export of sheep and cattle in light of the relevant provisions of the WTO and more specifically the GATT, we conclude that -

- the export duty levied on cattle (and possibly weaners) is compliant with the provisions of the GATT;
- the quantitative export restriction imposed on sheep is *prima facie* a violation of Article XI and in our view, based on the information provided, is not justified by Articles XI or XX of GATT; and
- the export license scheme for sheep and cattle constitutes a “*prohibition or restriction other than duties, taxes or other charges*” prohibited by Article XI and based on the information provided, is not justified by Articles XI or XX of GATT.

2.4 SADC

2.4.1 The relevant provisions of the SADC Protocol on Trade

2.4.1.1 Objectives of the Protocol on Trade

Namibia is a Member State of the SADC. It is also a party to the SADC Protocol on Trade (hereinafter referred to as “the Protocol”). One of the objects of the Protocol is to liberalise intra-regional trade in goods on the basis of fair, mutually equitable and beneficial trade arrangements¹⁸. It also has as an objective the establishment of a free trade area in the SADC Region¹⁹.

2.4.1.2 General obligations on Member States

Member States are obliged to take *inter alia* the following measures –

- i. to ensure the effective and harmonious application of the provisions of the Protocol²⁰;
- ii. to prohibit unfair business practices²¹;
- iii. to promote competition within the Community²²;

¹⁸ See Article 2.1 of the Protocol.

¹⁹ See Article 2.5 of the Protocol.

²⁰ See Article 13 of the Protocol.

²¹ Ibid

- iv. to promote trade development within the Community²³; and
- v. to ensure the carrying out of obligations under the Protocol²⁴.

These and other general obligations establish the framework and spirit within which Member States undertake to regulate trade within the free trade area.

2.4.1.3 Restrictions on intra-SADC trade

The Protocol requires the elimination of both tariff and non-tariff barriers. Member States through the Trade Negotiating Forum shall negotiate the process and method for the elimination of existing barriers to intra-SADC trade²⁵. However it shall be up to the Committee of Ministers (CMT) to **determine** the process and modalities for the **phased** elimination of both tariffs and non-tariff barriers (NTBs)²⁶.

2.4.1.3.1 Tariff restrictions

2.4.1.3.1.1 Article 3 (Elimination of Barriers to Intra-SADC Trade)

Article 3 of the Protocol provides for a period of eight (8) years from the entry into force of the Protocol in which **existing** barriers to trade (including tariff barriers and NTBs) must be phased out. However, if a Member State is of the opinion that it may be or has been adversely affected by the removal of tariffs and NTBs to trade, then such a Member State can apply to the CMT to be allowed additional time (so called “grace-period”) within which to eliminate these barriers. The CMT is supposed to develop and apply appropriate criteria for considering such applications. According to this provision all tariff and NTBs need to **be phased out** within SADC towards the end of 2008, unless application was made to the CMT for a grace period in the manner described.

2.4.1.3.1.2 Article 5 (Elimination of Export Duties)²⁷

Article 5 reads –

“ELIMINATION OF EXPORT DUTIES

1. *Member States shall not apply any export duties on goods for export to other Member States.*
2. *This Article shall not prevent any Member State from applying export duties necessary to prevent erosion of any prohibitions or restrictions which apply to exports outside the*

²² See Article 25 of the Protocol.

²³ See Article 26 of the Protocol.

²⁴ See Article 33(1) of the Protocol.

²⁵ See Article 3.1(e).

²⁶ See Article 3.1 Chapeau.

²⁷ Article 4 of the Protocol provides for the elimination of import duties on intra-SADC trade.

Community, provided that no less favourable treatment is granted to Member States than to third countries”.

Paragraph 1 of Article 5 is clear in its **prohibition** against the use of export duties. It appears as if paragraph 1 does not even allow for the phased elimination of export duties as opposed to Article 4.1 which allows for the *phased* elimination of *import* duties in accordance with Article 3. However, in our view, an interpretation to the effect that Article 3 informs Article 5.1 is more plausible. If Article 3 was not intended to cover also the phased elimination of export duties, it would have stated so.

According to this reading of Article 5(1) **Namibia** will have until the end of 2008 to abolish any form of export duties on intra-SADC trade that existed at the time of the entry into force of the Protocol, unless (i) it has applied for a “grace period”; or (ii) it can justify the continuation of the application of export duties by reliance on Article 5(2).

What is clear from the reading of paragraph (1) is that there is no legal basis for Namibia to introduce new duties on exports of intra-SADC trade, unless it can avail itself of paragraph (2) of Article 5.

The second paragraph of Article 5 of the Protocol provides for an **exception** to the prohibition contained in paragraph 1. However, “*any prohibitions or restrictions which apply to exports outside the Community*” referred to in paragraph 2 will have to comply with the provisions of GATT regulating the use of export restrictions and prohibitions, especially Article XI read with the exceptions to that article. We are of the view that paragraph 2 does not authorize a SADC Member State to prevent the erosion of WTO inconsistent prohibitions or restriction applied by such Member State to exports outside the Community. Moreover, any application of export duties needs to meet the requirement of **necessity**. In our view, the necessity test applied by the Appellate Body in the *EC-Asbestos* case could be applied in this instance²⁸. Thirdly, the export duty needs to prevent the **erosion** of any restriction applicable to exports outside the Community. Within this context, we understand “erosion” to mean that the absence of an export duty within the Community will limit the effectiveness to bring about the desired objective of any export restriction or prohibition in place on exports to countries outside of the Community.

We recall that **Namibia** imposed duties on all exports of cattle (and possibly weaners) as well as sheep, irrespective the export destination. From the background documentation it appears that the purpose of imposing the export duty was and continues to be to encourage the local slaughtering of livestock in Namibia. Trade data indicates that almost all exports by Namibia of small livestock

²⁸ See footnote 17 *supra*.

are destined for South Africa²⁹. In light of this, we seriously question any suggestion that failing an export duty applied within SADC, the duty in force on exports of livestock to countries outside SADC would be eroded within the meaning of Article 5(2) as very little exports of livestock are destined for countries outside the Community. We are not convinced that Namibia can rely on the exception provided for in paragraph 2. **As a result, we are of the view that the imposition of an export duty on small livestock (once the suspension has been lifted) and bovine animals within SADC is contrary to provisions of Article 5(1).**

2.4.1.3.2 Non-tariff barriers

The Protocol defines a non-tariff barrier (NTB) in broad terms so as to include, in our view, quantitative restrictions in the form of quotas as well as import and export licences³⁰. When addressing NTBs the Protocol makes a distinction between NTBs existing upon the date of entry into force of the Protocol in 2000, which need to be phased out in accordance with Article 3 towards the end of 2008 (unless a “period of “ has been granted) and NTBs not so in existence at the time.

2.4.1.3.2.1 Article 6 (Non-tariff Barriers)

The obligation on Member States to eliminate all **existing** forms of NTBs is repeated in Article 6(a) of the Protocol.

With respect to the imposition of **new** NTBs (i.e. NTBs not in existence at the entry into force of the Protocol), Article 6(b) makes it clear that “..., *Member States shall (b) refrain from imposing any new NTBs*”.

However, Article 6 is qualified by the phrase “*Except as provided for in this Protocol...*”. Hence, it is important to understand the circumstances provided for in the Protocol under which a Member State is allowed to maintain existing NTBs and/or to introduce new NTBs. We will deal with this matter by referring to the provision dealing with the elimination of quantitative export restrictions, i.e. Article 8³¹.

²⁹ See “*The Impact of the Namibian Small Stock Marketing Scheme*”, Report for the National Agricultural Marketing Council dated May 2008, compiled by Nick Vink and Ron Sandrey, on page 2. Whether the position is similar with respect to the exports of bovine animals needs to be confirmed.

³⁰ A non-tariff barrier is defined as “... *any barrier to trade other than import and export duties*” – See Article 1 of the Protocol. Borrowing from the wording of Article XI:1 of GATT, NTBs could include any “*prohibition or restriction other than duties, taxes or other charges whether made effective through quotas, import or export licences or other measures*”.

³¹ Article 7 of the Protocol provides for the elimination of existing quantitative import restrictions in accordance with Article 3 as well as a prohibition against the introduction of new such measures. Article 7 has its own exception to the extent that it allows for the imposition of tariff quotas on imports provided that the in-quota tariff is below the rate applied under the Protocol.

2.4.1.3.2.2 Article 8 (Quantitative Export Restrictions)

Member States are prohibited from applying quantitative restrictions³² on exports to intra-SADC trade. Again this general prohibition against quantitative export restrictions is qualified by the phrase “*except where otherwise provide for in this Protocol*”³³.

It appears as if paragraph 1 does not even allow for the phased elimination of quantitative export restrictions as opposed to Article 7.1 which allows for the *phased* elimination of quantitative *import* restrictions in accordance with Article 3. However, in our view, an interpretation to the effect that Article 3 informs Article 8.1 is more plausible. If Article 3 was not intended to cover also the phased elimination of quantitative export restrictions, it would have stated so.

According to this reading of Article 8(1) **Namibia** will have until the end of 2008 to abolish any quantitative export restrictions on intra-SADC trade that existed at the time of the entry into force of the Protocol, unless (i) it has applied for a “grace period” in accordance with Article 3(1)(c); or (ii) it can justify the continuation of the application of quantitative export restrictions by reliance on Article 8(2) or any other exception(s) provided for in the Protocol. Similarly, for Namibia to introduce a new quantitative restriction on exports within the Community it will have to find justification for such measure in paragraph (2) of Article 8 or any other exception provided for in the Protocol.

The second paragraph of Article 8 of the Protocol provides for an **exception** to the prohibition contained in paragraph 1. However, “*any prohibitions or restrictions which apply to exports outside the Community*” referred to in paragraph 2 will have to comply with the provisions of GATT regulating the use of export restrictions and prohibitions, especially Article XI read with the exceptions to that article. We are of the view that paragraph 2 does not authorize a SADC Member State to prevent the erosion of WTO inconsistent prohibitions or restriction applied by such Member State to exports outside the Community. As we have indicated, our view is that both the export quota mechanism and discretionary export permit system applied by Namibia amount to a *prima facie* violation of the GATT, which are not justified under that agreement. Moreover, any application of quantitative export restrictions needs to meet the requirement of **necessity**. In our view, the necessity test applied by the Appellate Body in the *EC-Asbestos* case could be applied in this instance³⁴. Thirdly, the quantitative export restriction needs to prevent the **erosion** of any restriction applicable to exports outside the Community. Within this context, we understand

³² The Protocol defines quantitative restrictions as “*prohibitions or restrictions on imports into, or exports from a Member State whether made effective through quotas, import licences, foreign exchange allocation practices or other measures and requirements restricting imports or exports*”- See Article 1.

³³ See Article 8(1) of the Protocol.

³⁴ See footnote 17 *supra*.

“erosion” to mean that the absence of a quantitative export restriction within the Community will limit the effectiveness to bring about the desired objective of any export restriction or prohibition in place on exports to countries outside of the Community.

We recall that **Namibia** imposed quantitative export restrictions (in the nature of a quota and/or export permits) on all exports of cattle (and possibly weaners) as well as sheep, irrespective the export destination. From the background documentation it appears that the purpose of imposing these restrictions was and continues to be to encourage the local slaughtering of livestock in Namibia. Trade data indicates that almost all exports by Namibia of small livestock are destined for South Africa³⁵. In light of this, we seriously question any suggestion that failing these quantitative export restrictions applied within SADC, the restrictions in force on exports of livestock to countries outside SADC would be eroded within the meaning of Article 8(2) as very little exports of livestock are destined for countries outside the Community. For these reasons we are not convinced that Namibia can rely on the exception provided for in paragraph 2.

Two other Articles of the Protocol provide for exceptions to the general prohibition against the application of quantitative export restrictions namely (i) Article 9³⁶ dealing with general exceptions; and (ii) Article 10³⁷ providing for the so-called “security exception”. Neither of these exceptions, in our view, speaks to the objective behind the imposition by Namibia of these quantitative export restrictions on sheep and bovine animals. Neither of them provides justification for the application of these restrictions.

As a result, we are of the view that the continued imposition of quantitative export restrictions on small livestock and bovine animals within SADC is contrary to provisions of Article 8(1).

³⁵ See “*The Impact of the Namibian Small Stock Marketing Scheme*”, Report for the National Agricultural Marketing Council dated May 2008, compiled by Nick Vink and Ron Sandrey, on page 2. Whether the position is similar with respect to the exports of bovine animals needs to be confirmed.

³⁶ “...nothing in Article 7 and 8 of this Protocol shall be construed as to prevent the adoption or enforcement of any measures by a Member State:

a) necessary to protect public morals or to maintain public order;
b) necessary to protect human, animal or plant life or health;
c) necessary to secure compliance with laws and regulations which are consistent with the provisions of the WTO;
d) necessary to protect intellectual property rights, or to prevent deceptive trade practices;
e) relating to transfer of gold, silver, precious and semi-precious stones, including precious and strategic metals;
f) imposed for the protection of national treasures of artistic, historic or archaeological value;
g) necessary to prevent or relieve critical shortages of foodstuffs in any exporting Member State;
h) relating to the conservation of exhaustible natural resources and the environment; or
i) necessary to ensure compliance with existing obligations under international agreements.”.

Note that paragraph (g) is similar to Article XI:2(a) of GATT.

³⁷ “1. Nothing in this Protocol shall prevent any Member State from taking measures which it considers necessary for the protection of its security interests or for the purpose of maintaining peace”.

2.4.2 Conclusion

Based on our analyses of the measures imposed by Namibia on the export of sheep and cattle in light of the provisions of the SADC Protocol on Trade, we conclude for reasons stated that –

- the imposition of an export duty on small livestock (once the suspension has been lifted) and bovine animals within SADC is contrary to provisions of Article 5(1) of the Trade Protocol and is not justified by other provisions of that Protocol;
- the imposition of quantitative export restrictions (whether in the form of an export quota or discretionary export license) on small livestock and bovine animals within SADC is contrary to provisions of Article 8(1) of the Trade Protocol and is not justified by other provisions of that Protocol.

2.5 SACU

Namibia is part of the SACU, established through the conclusion of the Southern African Customs Union Agreement, 2002. This Agreement replaces the previous Customs Union Agreement concluded on 11 December 1969 to which Namibia was also a party³⁸.

2.5.1 The relevant provisions of the SACU Agreement

2.5.1.1 Objectives of the SACU Agreement

Two of the objectives of the Agreement most relevant for the purposes of this opinion are found in Article 2 i.e. “(a) *to facilitate the cross-border movement of goods between the territories of the Member States;*” and “(e) *to enhance the economic development, diversification, industrialization and competitiveness of Member States*”.

2.5.1.2 General obligations on Member States

The Agreement demands from Member States to *inter alia* –

- i. ensure the effective and harmonious application of the provisions of the Agreement³⁹;
- ii. develop common policies and strategies with respect to industrial development⁴⁰;
and

³⁸ Article 50 of the SACU Agreement, 2002 provides that any “*obligation or arrangement of SACU which exists immediately before the entry into force of this Agreement shall, to the extent that it is not inconsistent with the provisions of this Agreement, continue to subsist, operate or bind Member States of SACU as if it were established or undertaken under this Agreement.*”

³⁹ See Article 23(1) of the Agreement.

⁴⁰ See Article 38(2) of the Agreement.

- iii. co-operate on agricultural policies “*in order to ensure the co-ordinated development of the agricultural sector within the Common Customs Area*”⁴¹.

These objectives and obligations as well as the legal nature of a customs union provide the context and spirit within which Member States must conduct their trade relations with each other and exercise their rights and obligations.

2.5.1.3 Article 18 (Free Movement of Domestic Product)

Part Five of the Agreement deals with Trade Liberalisation⁴². A **general prohibition**⁴³ is provided for against the imposition of customs duties and quantitative restrictions on “*importation from the area of one Member State to the area of another Member State*” of goods grown, produced or manufactured **in** the Common Customs Area. This general prohibition is qualified with a similar phrase as found in Articles 6, 7 and 8 of the SADC Protocol on Trade i.e. “*except as provided elsewhere in this Agreement*”.

The following observations can be made with reference to paragraph 1 of Article 18:

- Article 18(1) is restricted to **intra-SACU trade** and only with respect to goods grown, produced or manufactured in the Common Customs Area. Paragraph 2 of Article 18 could be open for an interpretation that it applies to both intra-SACU trade as well as trade with third countries to cover both SACU produced goods as well as imported goods;
- The phrase “*on importation from the area of one Member State to the area of another Member State*” appears to be limiting the scope of the prohibition against the use of customs duties and quantitative restrictions to **imports**.

We are of the view that the scope of paragraph 1 applies to restrictions imposed on **exports** as well, for the following reasons –

- the heading of Article 18 refers to “**Free Movement** of Domestic Products”. Free movement can only be attained if restrictions on both imports and exports are eliminated;
- Article XXIV:8(a)(i) of GATT requires from SACU as a customs union to eliminate duties and other restrictive regulations on commerce with respect to substantially

⁴¹ See Article 39(2) of the Agreement.

⁴² See Articles 18 – 31 of the Agreement.

⁴³ See Article 18(1): “*Goods grown, produced or manufactured in the Common Customs Area, on importation from the area of one Member State to the area of another Member State, shall be **free of customs duties and quantitative restrictions**, except as provided elsewhere in this Agreement*” [Emphasis added].

all intra-SACU trade. Paragraph 8 does not limit this prerequisite to imports only; and

- the wording contained in the chapeau of paragraph 2 of Article 18, which provides for a qualification of paragraph 1. We deal with this matter below;
- The Agreement does not provide for a definition of “quantitative restrictions”. The reference to quantitative restrictions should in our view, be interpreted broadly so as to include “*other restrictive regulations of commerce*”⁴⁴. The latter phrase, we believe, is informed by the wording used in paragraph 1 of Article XI of GATT i.e. “... *prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licences or other measures ...*”. It will therefore include measures such as quotas as well as licences or permits; and
- To give effect to the phrase “*except as provided elsewhere in this Agreement*”, care should be taken to identify the exceptions provided for in the Agreement.

The text of paragraph 2 reads:

“Notwithstanding the provisions of paragraph 1 above, Member States shall have the right to impose restrictions on imports or exports in accordance with national laws and regulations for the protection of –

- (a) Health of humans, animals or plants*⁴⁵;
- (b) the environment;*
- (c) treasures of artistic, historic or archeological value;*
- (d) public morals;*
- (e) intellectual property rights;*
- (f) national security; and*
- (g) exhaustible natural resources”.* [Emphasis added].

Paragraph 2 continues to provide for similar exceptions as are provided for in Article XX of GATT and Article 9 of the SADC Trade Protocol.

The following observations are pertinent:

- It is clear that paragraph 2 qualifies paragraph 1. It would not be necessary to put a qualification in place with respect to exports if there was no obligation in paragraph 1 to eliminate restrictions on exports;

⁴⁴ See Article 8(a)(i) of Article XXIV of GATT.

⁴⁵ See also Article 30(2) of the Agreement where Member States reserve the right to apply sanitary and phyto-sanitary measures.

- Paragraph 2 only refers to “restrictions”. We are of the view that the term covers both customs duties and quantitative restrictions;
- The exceptions listed in paragraph 2 inform the phrase “*except as provided for elsewhere in this Agreement*” found in paragraph 1. This is in accordance with Article XXIV:8(a)(i) read with Article XX of GATT. To be noted however is that no reference is made in paragraph 2 to any requirement of “*necessity*” as found in both paragraph 8(a)(i) or in some of the paragraphs of Article XX⁴⁶. Moreover, there is no requirement that any measure imposed are not applied in “*a manner which could constitute a means of arbitrary or unjustifiable discrimination ... or a disguised restriction on international trade*” as is provided for in Article XX⁴⁷.

The imposition and maintenance by **Namibia** of export duties and quantitative restrictions (in the form of an export quota as well as export permits) with respect to intra-SACU trade in small stock and bovine animals is *prima facie* in violation with the general prohibition contained in Article 18(1) of the Agreement. Moreover, none of the exceptions provided for in Article 18(2), in our view, speaks to the objective behind the imposition by Namibia of these restrictions on the export of live sheep and bovine animals. None of them provides justification for the application of these restrictions.

Two other Articles in the SACU Agreement are of particular relevance for the purpose of this section of the opinion namely Article 25 (Import and Export Prohibitions and Restrictions) and Article 29 (Arrangements for Regulating the Marketing of Agricultural Products).

2.5.1.4 Article 25 (Import and Export Prohibitions and Restrictions)

Article 25 addresses import and export prohibitions and restrictions. Due to the importance of this Article for the purposes of this part of the opinion, the text of the first three paragraphs is provided

“1. Member States recognize the right of each Member State to prohibit or restrict the importation into or exportation from its area of any goods for economic, social, cultural or other reasons as may be agreed upon by the Council.

2. Except in so far as may be agreed upon between the Member States from time to time, the provisions of this Agreement shall not be deemed to suspend or supersede the provisions of any

⁴⁶ See paragraphs XX(a), which corresponds with paragraph (d) of Article 18(2) of the SACU Agreement; paragraph XX(b) which corresponds with paragraph (a) of Article 18(2); paragraph XX(d) with no corresponding provision in Article 18(2).

⁴⁷ See the Chapeau of Article XX of GATT, 1947.

law within any part of the Common Customs Area which prohibits or restricts the importation or exportation of goods.

3. The provisions of paragraphs 1 and 2 shall not be so construed as to permit the prohibition or restriction of the importation by any Member State into its area of goods grown, produced or manufactured in other areas of the Common Customs Area for the purpose of protecting its own industries producing such goods.”

The question before us is how to reconcile the provisions of Article 25 with the general prohibition contained in Article 18(1). More specifically, does Article 25 fall within the ambit of the phrase “*except as provided for elsewhere in this Agreement*” which qualifies the general prohibition in paragraph 1 of Article 18 or does Article 18 as a whole inform our understanding of Article 25? We will address this issue by commenting on each of the paragraphs of Article 25.

2.5.1.4.1 Ad paragraph 1

- The “right” referred to in this paragraph is not an unlimited right. Firstly, this provision is not limited to “*goods grown, produced or manufactured in the Common Customs Area*” as is the case with paragraph 1 of Article 18 Agreement. It pertains to “*any goods*”, i.e. also goods grown, produced or manufactured outside the Common Customs Area. Secondly, it refers to both intra-SACU trade as well as trade with third countries outside SACU. Hence, the scope and meaning of this “right” is defined both by the provisions of the SACU Agreement (see below) and importantly, by the rules of the WTO to which each of these Member States are party to⁴⁸.
- Paragraph 1 needs to be read with Article 18 of the SACU Agreement in so far as it relates to “*goods grown, produced or manufactured in the Common Customs Area*”. Notwithstanding the qualification of paragraphs 1 and 2 contained in paragraph 3, if paragraph 1 should qualify as an exception to paragraph 1 of Article 18 (i.e. falling within the scope of the phrase “*except as provided elsewhere in this Agreement*”), it would, for all practical purposes render the wording of Article 18(1) without meaning or effect as almost any measure could be justified for “*economic*” reasons. It makes the detailed listing of exceptions provided for in paragraph 2 of Article 18 almost redundant.

2.5.1.4.2 Ad paragraph 2

- The meaning of the provisions of paragraph 2 is all but clear. Despite the provisions of Article 18 of the SACU Agreement, which go to great effort in regulating the use of

⁴⁸ See in this regard Article XI read with Articles XII, XIII, XIV, XV, XVIII, XX and XXI of GATT.

trade restrictions by Member States, paragraph 2 appears to excuse any legislative measure⁴⁹ by which a restriction on imports or exports is applied, “*except in so far as may be agreed upon between the Member States from time to time*”.

Any legal instrument which allows for the imposition of a measure contrary to the rules of the WTO will amount to a violation of a Member State’s international trade commitments. As every Member of the WTO is under an obligation to bring its legislation into conformity with the WTO rules, this provision in paragraph 2 is meaningless in its aim to allow Member States to retain legislation which may be contrary to Article XI of GATT. Moreover, under international law, a nation cannot shy away from its international obligations by its reliance on its national legislation⁵⁰. Member States have agreed to the regulation of the use of trade restrictions under Article 18. It should not be necessary for the Member States to agree “*from time to time*” that a particular provision of the SACU Agreement “*suspends or supersedes the provisions of any law*”. If a Member State’s national legislation is contrary to Article 18, it should be obligated to bring its provisions in line with that Article. We believe that retaining any legislation which is contrary to the provisions of the Agreement amounts to a violation of the object, purpose and spirit of that Agreement and runs contrary to the principles of the international law of treaties⁵¹.

2.5.1.4.3 *Ad paragraph 3*

- As mentioned above, paragraph 3 qualifies paragraphs 1 and 2 of Article 25. The scope of paragraph 3 is however limited to –
 - (i) only goods “*grown, produced or manufactured in other areas of the Common Customs Area*” whereas paragraph 1 relates to “*any goods*”. As a result the qualification pertains only to imports **from within SACU**, which causes paragraph 1 to be without any qualification with respect to imports from outside the Common Customs Area. Clearly, this right of Member States of SACU referred to in paragraph 1 will have to be exercised in compliance with other international commitments with respect to countries not part of the customs union.
 - (ii) The qualification is limited to prohibitions or restrictions on **imports** only and not exports. In view of the nature of a customs union and particularly the aim of the SACU Agreement to “*facilitate crossborder movement of goods*”

⁴⁹ Except, if a measure is aimed at protecting a domestic industry against imports (See Article 25(3)).

⁵⁰ See Article 27 “*Internal Law and Observance of Treaties*” of the Vienna Convention on the Law of Treaties, 1969 which stipulates that “*A party may not invoke the provisions of its internal law as justification for its failure to perform a treaty.*”

⁵¹ See Article 26 “*Pacta sunt Servanda*” of the Vienna Convention on the Law of Treaties, 1969 which determines that “*Every treaty in force is binding upon the parties to it and must be performed by them in good faith*”.

between the territories of the Member States”, it is incomprehensible why paragraph 3 will only apply to protectionist import restrictions and not similarly to protectionist **export** restrictions.

Our view of Article 25 (1) is that it is too broad in scope for it to constitute an exception to the general prohibition against export restrictions contained in Article 18(1) of the Agreement. In our opinion, a proper understanding of Article 25 (1) is only possible by having regard to Article 18. Article 18 informs and gives meaning to Article 25.

2.5.1.5 Article 29 (Arrangements for Regulating the Marketing of Agricultural Products)

Article 29 concerns domestic marketing regulations imposed by Member States within their borders with respect to domestically produced agricultural commodities as well as to similar commodities imported from elsewhere in the Common Customs Area. It provides for national treatment to be afforded to imported agricultural commodities when implementing marketing regulations. Such marketing regulations shall not restrict the free trade of agricultural products between the Member States, except where such regulations are aimed at emergent agriculture and related agro-industries agreed upon by Member States or for such other purposes as the Member States may agree. In our view, this Article concerns conditions affecting market access for imported agricultural commodities. As a result, it is not relevant for the purpose of addressing export restrictions in this opinion.

2.5.2 Conclusion

Given the ambiguous wording of some of the provisions in the SACU Agreement dealing with trade restrictions, it is difficult to provide a clear assessment of the legality of the export regime of Namibia relating to sheep and cattle. However, we will limit our assessment to the following observations –

If we are correct in our assessment, which we believe we are for reasons stated, that the general prohibition against the use of customs duties and quantitative restrictions in paragraph 1 of Article 18 should equally apply to the **exportation** of goods “*grown, produced or manufactured in the Common Customs Area*”, then **Namibia** will only be allowed to impose an export quota on sheep, an export duty on cattle as well as an import and export permit system on sheep and cattle if justified under one or more of the exceptions provided for in the SACU Agreement. We have identified paragraph 2 of Article 18 as well as paragraphs 1 and 2 read with paragraph 3 of Article 25 as possible exceptions to paragraph 1 of Article 18⁵².

⁵² Another exception may be Article 26 dealing with infant industry protection.

Nothing in the documentation provided to us concerning the small stock marketing scheme suggest that the export measures are put in place for any one or more of the reasons provided for in paragraph 2 of Article 18.

Moreover, we have argued that paragraph 1 of Article 25 does not constitute an exception to Article 18(1), but should rather be informed by paragraph 1 of Article 18 (with respect to intra-SACU trade) to avoid nullifying the general prohibition contained in the latter paragraph. Furthermore, the “*right of each Member State to prohibit or restrict*” imports and exports (with respect to trade with other WTO Members not part of SACU) must be defined by reference to the WTO commitments (as well as commitment under the SADC Protocol on Trade, where applicable) which such Member States took upon themselves regarding import and export restrictions. We have also questioned the omission of any reference to export restrictions for purposes of domestic protection in paragraph 3 of Article 25.

Given our assessment of the provisions under the SACU Agreement dealing with trade restrictions, we are of the opinion that Namibia is acting contrary to the provisions of Article 18 of the SACU Agreement by imposing an export restriction on sheep and cattle in the form of export duties, quotas and/or permits.

In the unlikely event that our interpretation of Articles 25(1) and (3) is erroneous, then Article 25 (1) provides an almost unlimited exception to Article 18(1) with respect to export prohibitions and restrictions. This is because paragraph 3 would be seen as only applicable with respect to import restrictions (and not export restrictions) for purposes of domestic protection. Should this be the case, which we have argued it is not, Namibia will be within their rights, based upon Article 25, to impose restrictions on the export of sheep and cattle to South Africa.

2.6 WTO, SADC Protocol on Trade and SACU: Is there an opportunity for forum shopping?

South Africa and Namibia should first attempt to resolve this trade impasse through bilateral consultations. However, failing a satisfactory settlement of the matter through political avenues, what other remedies are available to South Africa to address this potential trade dispute with Namibia?

This raises several important questions related to forum shopping and re-litigation as well as to what the relationship is between SACU, the SADC Protocol on Trade and the WTO as international agreements all dealing with trade issues between two or more of the same countries? It falls outside the scope of this opinion to deal with these issues in a comprehensive manner, save the following terse remarks:

A dispute based upon the alleged violation of any WTO legal rule, can be brought before a panel in the WTO in terms of the Dispute Settlement Understanding, irrespective whether the WTO Members involved in the dispute are also parties to another regional trade agreement governing the same matter, for example the SADC Protocol on Trade. Hence, a WTO panel will have jurisdiction to entertain a claim of an alleged violation of Article XI of GATT. Similarly, if a claim can be based on the alleged violation of a legal provision found both in the SADC Protocol on Trade and in the SACU Agreement, South Africa may be able to bring the matter before the SADC Trade Panels or the SACU Tribunal (once it is established), as the case may be, to adjudicate over the matter.

2.7 Final conclusions

We have studied the background information on certain restrictions imposed by Namibia on exports of live sheep and bovine animals. We have concluded that Namibia is imposing an export duty on live bovine animals, an export restriction made effective through a quota on the export of live sheep and a restriction in the form of an export permit system on the exports of both sheep and bovine animals. An analysis of the relevant provisions, in our view, of the WTO, the SADC Protocol on Trade and the SACU Agreement addressing trade restrictions was conducted. Namibia is a party to all three of these regulatory instruments.

Based on the information provided to us and on our subsequent analysis we have drawn the following conclusions –

- i. with respect to the duty charged on the exports of live bovine animals (including both mature cattle and weaners): the measure is permissible under the GATT, 1994, but that Namibia is in violation of both the SADC Protocol on Trade as well as the SACU Agreement; and
- ii. With respect to restrictions on exports made effective through an export quota and/or a discretionary export permit system: both these measures are applied in violation with Namibia's commitments under the GATT, the SADC Protocol on Trade and the SACU Agreement.

Part III of III – Recommendations

3.1 Recommendations

This report investigated the impact of the Namibian SSMS on the South African small stock (read sheep) industry. The investigation focussed on the macro, as well as, micro impact, and in some instances had to rely on anecdotal information due to the lack of data. One important conclusion drawn by the PWC study that was conducted to determine the impact of the SSMS on the Namibian small stock sector was that the SSMS created a wedge between South African and Namibian prices that is not justifiable on the basis of normal transaction costs to the detriment of the Namibian small stock farmer (another was that the SSMS has not been able to achieve the objectives it was originally design for). This study showed that the two markets are integrated, but that the nature of price transmission is asymmetric, i.e. that prices in Namibia has a much stronger impact on South African prices than the other way around. This implies that any interventions or actions in Namibia that affect lamb/sheep prices have a significant impact on South African lamb/sheep prices, while the same is not true for interventions or actions in South Africa that affect South African lamb/sheep prices. Moreover, the unjustified price wedge between South African and Namibian prices for lamb will also be transmitted to the South African lamb market and hence affect the small stock industry in South Africa adversely. This will in turn affect the operations of South African abattoirs, employment and business in the small stock industry in general. The impact is compounded by the fact that there is anecdotal evidence that shows that monitoring and control over carcass (and even live) imports from Namibia are not efficient. Finally, the status and acceptability of the SSMS, as well as a proposed export levy on weaners, is in violation with Namibia's commitments under the GATT, the SADC Protocol on Trade and the SACU Agreement

In the light the above, the following is recommended:

- **Institutional and regulatory interventions**
 - Better management and control can be exercised and enforced in terms of existing import regulations and standards at border posts and inspection points.
 - Improve control and monitoring over the quantities of sheep and lamb imports. This implies the following:
 - Institute an efficient data capturing and handling system to ensure timely dissemination of data to relevant institutions.
 - Improvement of inspection and communication procedures at border posts and inspection points.

Establish a Section 7 Committee within the ambit of the Marketing of Agricultural Products Act to facilitate the implementation and/or amendment of the following:

- i. The current import permit system should be amended to effectively monitor each live or carcass consignment. In other words, importers/business should apply for an import permit for each consignment entering South Africa.
- ii. Information applicable to the current statutory measure for the collection of levies on imports should be used more effectively for the generation of information regarding quantities entering the South African market. Much closer collaboration will be required between the Red Meat Industry Forum (RMIF), the National Agricultural Marketing Council (NAMC), the South African Revenue Service (SARS) and the National Department of Agriculture, Forestry and Fisheries (DAFF). The reason for including the latter organization is that DAFF is responsible for point i above and ways should be investigated to align the permit and the statutory levy system better with each other.
- iii. Investigate the feasibility to introduce a monitoring unit in consultation with the mentioned organizations to assist with monitoring of compliance with points i and ii above.

- **Competition Commission issues**

The study showed a relatively high level of concentration (market power) as far as the imports of lamb is concerned. This, combined with the fact that the study showed that there currently exists asymmetric price transmission that is a typical outcome of a market that is characterised by concentration, provides a sufficient reason to request the Competition Commission to investigate the conduct of lamb importers and the impact thereof on the South African small stock sector.

Request the Competition Commission to investigate the conduct of stakeholders involved in the SSMS. The investigation should focus on, but should not necessarily be limited to:

- i. Market conduct in Namibia and the impact on the South African small stock sector.
- ii. The nature of conduct in terms of vertical and horizontal integration in the small stock sector in and between South Africa and Namibia.

- **Trade Law issues**

In Part II of this report it is concluded that status and acceptability of the SSMS, as well as a proposed export levy on weaners, is in violation with Namibia's commitments under the GATT, the SADC Protocol on Trade and the SACU Agreement. In this regard, the following is recommended.

- i. To address the issue of export restrictions imposed by Namibia within SACU is probably the correct way of resolving the matter. SACU constitutes the deepest level of trade integration between South Africa and Namibia. This may include clarifying and cleaning up the text of the SACU Agreement dealing with import and export restrictions. This is however more of a systemic nature.
- ii. Where the text of the SACU Agreement moves beyond clear exceptions to the prohibition on the use of export duties and quantitative restrictions it is often open to the Member States to agree to the application of these restrictions for specific purposes. South Africa could use this decision-making mechanism as an opportunity to strengthen the general prohibition against the use of these measures within SACU.
- iii. South Africa can continue to pursue a bilateral settlement with Namibia in an attempt to resolve this impasse in accordance with Article 15 of the Agreement.
- iv. The SACU Council can refer the issue to the Tribunal, once it is established, for a recommendation in accordance with Article 13(4).
- v. South Africa can approach the Tribunal, once it is established, to resolve the matter through judicial means.
- vi. Attempt to find a solution to the current state of affairs through political considerations at the highest level.

Appendix A

Table A1: Results of regression used to eliminate the effect of seasonality on lamb in South Africa

Variable	Coefficient	Standard error	t-stat	Prob(t)
Intercept	7.5564	0.0452	167.0730	0.0000
Jan	-0.0606	0.0619	-0.9781	0.3311
Feb	-0.0892	0.0619	-1.4403	0.1539
Mar	-0.1436**	0.0619	-2.3181	0.0231
Apr	-0.1442**	0.0619	-2.3282	0.0226
May	-0.1484**	0.0640	-2.3205	0.0230
Jun	-0.1339**	0.0640	-2.0927	0.0397
Jul	-0.0867	0.0640	-1.3562	0.1791
Aug	-0.0694	0.0640	-1.0855	0.2811
Sep	-0.0779	0.0640	-1.2184	0.2269
Oct	-0.0691	0.0640	-1.0799	0.2836
Nov	-0.0334	0.0640	-0.5217	0.6034

Note: *, **, *** indicate statistical significance at 10 %, 5 % and 1 % levels of significance, respectively.

Table A2: Results of regression analysis used to eliminate the effect of seasonality on lamb in Namibia

Variable	Coefficient	Standard error	t-stat	Prob(t)
Intercept	7.5010	0.0325	230.5569	0.0000
Jan	-0.0564	0.0445	-1.2659	0.2094
Feb	-0.0700	0.0445	-1.5713	0.1203
Mar	-0.1071**	0.0445	-2.4032	0.0187
Apr	-0.1115**	0.0445	-2.5018	0.0145
May	-0.1094**	0.0460	-2.3785	0.0199
Jun	-0.0835*	0.0460	-1.8147	0.0735
Jul	-0.0444	0.0460	-0.9646	0.3378
Aug	-0.0438	0.0460	-0.9527	0.3438
Sep	-0.0344	0.0460	-0.7481	0.4567
Oct	-0.0373	0.0460	-0.8118	0.4195
Nov	-0.0130	0.0460	-0.2829	0.7780

Note: *, **, *** indicate statistical significance at 10 %, 5 %, and 1 % levels of significance, respectively.

Appendix B

The basic framework that was followed to quantify the volatility of the lamb prices in South Africa and Namibia is presented as a flowchart in Figure B11. Recall that price volatility in this study is considered to be only the stochastic or unpredictable component in the price under consideration.

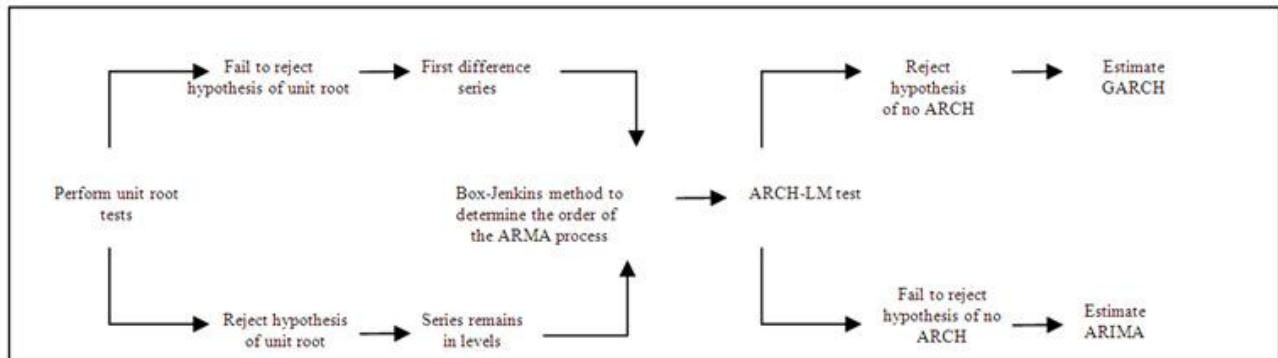


Figure B11: Flowchart of methodology to compute conditional volatility.

Source: Moledina *et al* (2003)

Moledina *et al* (2003) suggest that, before testing for stationarity of the time series using the unit root test, the predictable components (such as the effects of inflation⁵⁷, trend and seasonality) of the price process should not be considered as being part of price volatility. These components should be removed, leaving only the unpredictable or stochastic component for further analysis. The effect of inflation is removed by deflating the nominal prices with the consumer price index (CPI)⁵⁸, while the seasonal effect can be removed using seasonal dummy variables (Richardson, 2004; Moledina *et al*, 2003).

The use of seasonal dummy variables tests for the presence of seasonality in the price of lamb - eleven seasonal dummy variables were included for the twelve months in a year. The reason for including only eleven dummy variables when there are actually twelve months in a year (twelve categories) is to avoid falling into the dummy variable trap, which is a situation of perfect co-linearity (Gujarati, 2003). The twelfth month is used as the base category to which the effects of the different months are compared. The month chosen as the base category does not influence

⁵⁷ Most researchers deflate nominal price data in order to remove the effect of inflation from the price process. Moledina *et al* (2003), however, quantified price volatility using both nominal and real prices and found very little difference between results. There is thus some evidence that it is not really necessary to deflate price data when quantifying price volatility. Since the aim is to remove all the known components from the price process to quantify the true stochastic component, the effect of inflation, although it seems to be relatively small, is removed by deflating the nominal prices.

⁵⁸ Since there is no daily CPI available, the best method to eliminate the effect of inflation from daily prices is to use the monthly CPI. Note, however, that the monthly CPI is the average over the whole month and it is thus applicable to each day during the specific month.

the overall explanatory power of the estimated model, and therefore the month being used as the base category is chosen arbitrarily.

Once the prices have been de-seasonalised, the next step is to test for the presence of unit root, since most empirical work based on time series data assumes that the underlying time series is stationary (Gujarati, 2003).

- Testing for the presence of unit root (non-stationarity)

The Augmented Dickey Fuller (ADF) test was applied to test for the presence of unit root (Dickey & Fuller, 1981) and to determine the number of times the series needs to be differenced to make it stationary. Once the presence of unit root is confirmed, the data needs to be differenced to make it stationary. The ADF test is then applied to the differenced data sets to test whether differencing the data made it stationary. This process is to be repeated until it yields a stationary series that can be used in further analyses. The number of times the series needs to be differenced indicates its order of integration and hence the value of d in the ARIMA (p, d, q) process.

The de-seasonalised prices of all the crops in this study are trended⁵⁹, suggesting that ADF regressions, including intercepts and trends, are relevant to test for unit root in the prices of all the crops. The results of the ADF tests are presented in Table B1.

Table B1: ADF test results to determine the number of times the series needs to be differenced to make it stationary

Lamb prices	ADF statistic ¹		Critical value (95 %)
	Levels ²	First difference	
South Africa	-2.930121	-6.646365	-3.4620
Namibia	-2.861715	-5.642230	-3.4620

¹ Absolute value of the ADF statistic needs to be higher than the absolute value of the critical value to reject the null hypothesis of unit root (non-stationarity).

² Levels refer to the original series (before it was differenced).

From Table B1 it is evident that the original data series was non-stationary, but that it became stationary once it was first differenced. All of these series needed to be differenced once to generate a stationary series, which suggests that all the series are integrated from the order one. Hence, the value of d is 1 for all the crops. Next, the Box-Jenkins methodology was used to determine the values of p and q in the ARIMA (p, d, q) process.

⁵⁹ Recall, all prices were deflated in order to remove inflation from the price process. Trends in time series price data, however, may be caused by a number of factors, of which inflation is only one. The presence of significant trends in the deflated and deseasonalised data thus implies that there is some other factor(s) causing the trends in the data, which have to be removed due to the assumption that the time series data is stationary (Gujarati, 2003).

– Application of Box-Jenkins methodology

Once the level of integration of the different time series was confirmed and the time series were differenced accordingly, the Box-Jenkins methodology together with the Akaike (AIC) and Schwartz (SBC) information criteria were used to select the values of p and q in the ARIMA (p, d, q) process (Box & Jenkins, 1976). The ARIMA process is represented by the following equation (Box & Jenkins, 1976):

$$y_t = \alpha_0 + \sum_p^{\max} \phi_p y_{(t-p)} + \sum_q^{\max} \theta_q \varepsilon_{(t-q)} + \sum_n^{\max} \eta_n D_t \quad (B1)$$

Based on equation B1, forty-nine combinations of (AR 0-6) by (MA 0-6) were computed. Theoretically, the point at which the highest value of either AIC or SBC lies, is seen to determine the values of p and q (Pesaran & Pesaran, 1997). In simple terms, an ARIMA (p, d, q) process indicates that the intercept needs to be lagged p times, the series is to be differenced d times to yield a stationary series, and the error term is to be lagged q times to generate the desired results. Note, however, that the highest AIC or SBC value is only a guideline, and the components in the GARCH model also need to be significant. The values of p and q for the respective crops are presented in Table.

Table B2: Values of p and q in the ARIMA (p, d, q) process determined using the Box-Jenkins methodology

Lamb prices	Values of p, d, and q in the ARIMA (p, d, q) process determined using the Box-Jenkins methodology together with the Akaike information criterion		
	P	D	Q
South Africa	3	1	2
Namibia	5	1	5

Keep in mind that the values of d were already determined in the previous step, and were found to be 1 for both South African and Namibian prices. The values of p, d and q in the ARIMA (p, d, q) process, in the case of South African lamb price, indicated that ARIMA (3, 1, 2) is the best fit and can be interpreted as follows: the intercept needs to be lagged three times; the series is to be differenced once to generate a stationary series, and the error term needs to be lagged twice to generate the desired results. Similarly, in the case of lamb price in Namibia, ARIMA (5, 1, 5) is the best fit. Thus, in the case of the Namibian price the intercept needs to be lagged five times, the series is to be differenced once to generate a stationary series, and the error term needs to be lagged five times to generate the desired results. Once the appropriate ARIMA process has been identified, the next step is to test whether or not the volatility is time-varying through the identification of a significant ARCH effect.

- Test for the presence of ARCH effect

The rejection of the null hypothesis of no ARCH effect indicates the fact that the series varies over time, and suggests that the GARCH approach should be used instead. The Box-Jenkins approach is based on the assumption that the residuals are homoscedastic, or remain constant over time. Since the standard error of equation B1 is used as a measure of volatility, the homoscedastic assumption implies that uncertainty or volatility remains constant over time. The robustness of this assumption was tested by fitting ARCH equations.

The presence of ARCH effect (whether or not volatility varies over time) has to be tested in the conditional variance of:

$$h^2 = Var(u_t / \Omega_{t-1}) \tag{B2}$$

$$h^2 = \rho_0 + \rho_1 u_{t-1}^2 + \rho_2 u_{t-2}^2 + \dots + \rho_q u_{t-q}^2 \tag{B3}$$

where u_t^2 is the squared residual in period t, and $\rho_0, \rho_1, \rho_2, \rho_q$ are the parameters to be estimated.

When fitting ARCH equations, Lagrange Multiplier (LM) and F-tests were used to test the null hypothesis of no ARCH effect. Probability values lower than 0.05 indicate that the null hypothesis is rejected at 5 percent level of significance, indicating that the volatility varies over time. The results for the ARCH-LM tests are presented in Table B3.

Table B3: ARCH-LM test results to test for the presence of time-varying volatility

Lamb price	F-statistic	Probability
South Africa (ARCH 3)	1.9429	0.0466*
Namibia	0.5706	0.8566

*Reject null hypothesis of no ARCH effect at 5 percent level of significance, indicating time-varying volatility

As can be seen in Table B3, the test for the presence of ARCH effect confirmed the presence of ARCH(3)⁶⁰ in the case of South African lamb price, while no ARCH effect was detected in Namibia's case. In the case no ARCH effect, there is no need to apply the GARCH approach since the standard error of the ARIMA process is the appropriate measure of volatility in the absence of ARCH effect.

- Applying the GARCH approach

The rejection of the hypothesis of no ARCH effect leads to the application of the GARCH approach. The univariate GARCH(1, 1) model is presented as:

⁶⁰ The value of p in the ARCH (p) model represents the number of autoregressive terms in the model. In this case, p is equal to 1, which implies that only one autoregressive term is included in the specified model.

$$\sigma_t^2 = \gamma_0 + \gamma_1 \varepsilon_{(t-1)}^2 + \gamma_2 \sigma_{(t-1)}^2 \quad (B4)$$

where σ_t^2 is the variance of ε_t conditional upon information up to period t.

When using the GARCH approach, the conditional standard deviation is the measure of volatility, and is given by the square root of each of the fitted values of σ_t^2 (equation B4). Unlike the volatility in the absence of ARCH effect (where it remains constant for the entire period and can hence be presented by a single value), the conditional standard deviation varies over time. The fact that it varies over time, makes it impossible to present the conditional volatility as a single value over a period, hence it is presented graphically instead.