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AN EVALUATION OF THE CROSS-BORDER NATURE OF CARTELS: THE CASE OF BITUMEN IN SOUTHERN AFRICA

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Abstract

This paper evaluates the possible cross-border nature of a cartel uncovered and prosecuted in the bitumen industry in South Africa. The paper assesses whether the cartel in South Africa could have had an appreciable effect in the neighbouring states in the Southern Africa Customs Union (SACU) region, given the close economic integration and trade ties with South Africa. Qualitative and quantitative data analysis were undertaken to assess the possible impact of the cartel. First, a qualitative assessment of the industry stakeholders was conducted to evaluate competition in the bitumen industry within the SACU region. This covered the structural characteristics of the industry which renders it susceptible to collusion. Second, trade data was used to demonstrate the dependency of the SACU member states on South Africa for their bitumen imports and an analysis of the pricing trends derived from the import prices was conducted. The trade data demonstrated that the SACU member states were almost wholly dependent on South Africa for their bitumen needs for the duration of the cartel, which was produced and supplied by the companies implicated in the cartel. Similar pricing trends to South Africa were also found in the SACU region. This suggests that the effects of the cartel may have extended beyond the South African borders. The contribution of the study is to highlight the significance of screening and timeously investigating cartel conduct prosecuted in neighbouring countries in cases where there is significant trade dependency, as these may have an appreciable impact on regional markets.

JEL classification: L2, D49

Keywords: cross-border cartel, screening, cartel overcharges, SACU region

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1. Introduction

In the past 15 years, the Competition Commission of South Africa (CCSA) has had considerable achievements in uncovering and prosecuting cartels, although this has subsequently declined since 2014. Collusive behaviour has been uncovered in a range of industries including construction, banking, petroleum and agriculture and agro-processing. The success in uncovering activities of cartels has mainly been attributed to the implementation of the Corporate Leniency Policy². However, notwithstanding the aggressive enforcement against cartels and the fines levelled against the offenders, cartel activity in the Southern African region does not seem to be on a downward trajectory (Kaira, 2015). The ongoing discovery of cartels in South Africa itself indicates that they remain relatively under-deterred. In part, this may be due to discovered cartels not being sanctioned in all jurisdictions where they caused harm and the sanctions not accounting for the harm in foreign markets. This is a possible indication that profits from cartel activity in multiple countries outweighs the costs of being prosecuted in just one jurisdiction.

South Africa, as the largest (in terms of gross domestic product (GDP)) and most developed economy in the SACU region, has a significant influence on various supply chains in the region. The country is a source market for direct and indirect investment in many sectors across the region (Kaira, 2015). Many South African companies operate or have a presence in the region through direct exports. Consequently, cartels prosecuted in South Africa, have at times involved firms that also operate or have a presence in the region. This then implores the question as to whether those companies that were uncovered to have participated in cartel arrangements in South Africa could have extended those arrangements into other countries in the region in which they have operations. In addition, it also raises the question of the impact of these collusive agreements in the region, if any.

Extensive links in trade and investment between South Africa and other countries, especially those in the SACU region, therefore, increase the probability of a cartel in South Africa being spread to the other neighbouring states where the same businesses operate. Firms that participate in one cartel are more inclined to participate in other collusive arrangements when the same firms are involved in different markets, primarily because they develop the rapport with their competitors and the organisational skills to make collusion more effective (Levenstein and Suslow, 2008). This is because even when explicit collusion ends, the nature of the agreements that existed between the firms in organizing their illegal conduct, the processes by which they monitored one another, and the mechanisms used to threaten punishment are not automatically forgotten by the former conspirators (Kovacic, Marshall, Marx and Raiff, 2007). In an adverse yet possible case, firms may cease cartel activity in South Africa, however, continue to maintain cartel activity in the other SACU member states with frail enforcement of anti-trust laws or those that do not have effective competition authorities (Kaira, 2015).

While the South African authorities have achieved relative success in unearthing and prosecuting cartels since the enactment of the Corporate Leniency Policy in 2008, other

² The corporate leniency policy aims at eradicating and preventing cartels by setting out benefits, procedures and requirements for co-operation of cartel members with the Commission in exchange for immunity.

competition authorities in the region have not been as successful in this regard (Kaira, 2015). There has been relatively little activity on the part of other countries in the region to respond to these cartels even after they have been uncovered in South Africa. Very little work has also been done on detecting and screening for collusive arrangements in firms with operations which transcends national borders in Africa. In addition, fewer efforts have been directed towards understanding cartel conduct with regional dimensions notwithstanding the linkages of most economies in Southern and East Africa (Roberts, Vilakazi, and Simbanegavi, 2014). This is of concern especially in the SACU countries where markets are increasingly integrated, which is further compounded by the presence of multinational firms. Important to note that the SACU region does not have an effective regional competition authority, therefore the onus for any cartel investigation with regional dimensions is on the individual country authorities. Cartels uncovered in neighbouring countries with common firms are therefore low hanging fruit for authorities to conduct cartel screening studies.

This paper focuses on analysing the relationship between a specific cartel discovered and prosecuted in South Africa in the bitumen industry ('the bitumen cartel') and the neighbouring countries in the SACU region, namely Botswana, Lesotho, Namibia and eSwatini. The SACU region is a Southern African regional economic organisation. The five member states (including South Africa) maintain a common external tariff, share customs revenues, and coordinate policies and decision-making on a wide range of trade issues.

2. The Bitumen Cartel

The bitumen cartel was a legal, state-sanctioned, cartel in South Africa until 2000. However, after market liberalisation, the legal cartel was disbanded. The cartel comprised of oil companies namely, Total, Engen, Shell, Sasol, Tosas, Masana Petroleum Solutions, Chevron and the industry association SABITA, in which all the companies were members. The bitumen producers who were competitors in a horizontal relationship in the production of bitumen, continued to engage in practices emanating from the legal cartel era which post market liberalisation were now in contravention of section 4(1) (b) of the South Africa Competition Act no. 98 of 1998 as amended. These practices included price-fixing through sharing of price sensitive information through the industry body (SABITA).

During the exemption period from 1986 until 2000, the oil firms collectively determined the price of bitumen by using a pricelist, the Wholesale List Selling Price (WLSP). This price had the approval of the government and was not subjected to price-fixing restrictions. The WLSP for bitumen was made up of the 'In Bond Landed costs', which essentially was an import parity formula where various transport related costs were added to a Free on Board heavy fuel oil price (linked to the international crude oil prices) at typical international refining centres (Boshoff, 2015). The final WLSP price also included the SABITA levy, profit margin and the road equalisation factor. Information on the WLSP was exchanged through regular email communication between the oil companies, informing them of the price escalation figures for each month. A 'Bitumen Price Adjustment Factor' (BPAF) was used to adjust the present month's WLSP to calculate the next month's WLSP.

The cartel members approached the industry association to calculate the bitumen reference price that was to be used as a referral point to determine actual prices. It was also used as a point of reference for price escalation from month to month. Therefore, the bitumen producers

agreed on a reference price from which actual transaction prices could then be negotiated. SABITA calculated the BPAF used to compute monthly transaction prices as follows:

$$BPI_t = BPI_{t-1} * BPAF = BPI_{t-1} [f * \frac{HFO_t}{HFO_{t-1}} + (1 - f) * \frac{PPI_t}{PPI_{t-1}}]$$

Source: Adapted from Boshoff (2015)

Where: BPI is the bitumen price index, BPI_{t-1} is the bitumen price index for the previous month, BPAF is the price adjustment factor, HFO is the heavy fuel oil, which is the price used to approximate for bitumen prices, PPI is the producer price index and f is the adjustment factor.

The outcome of the formula above was termed “the bitumen price index” which was used to adjust the bitumen prices to accurately reflect price fluctuations caused by foreign exchange variations, fluctuations in the crude oil prices and domestic influences such as the inflation. The bitumen price index was published monthly, enabling contract prices to be adjusted at a minimum on a monthly basis.

Investigations in the bitumen cartel case were triggered by Sasol and its subsidiary, Tosas’s³ request for immunity under the Corporate Leniency Policy. The bitumen producers jointly established the pricing formula, which was a reference price and price adjustment system for each month. In their defence the oil companies (bitumen producers) argued that due to the nature of the bitumen industry, the consumers of bitumen desired a fixed and more transparent pricing mechanism for effective adjustment of bitumen prices.

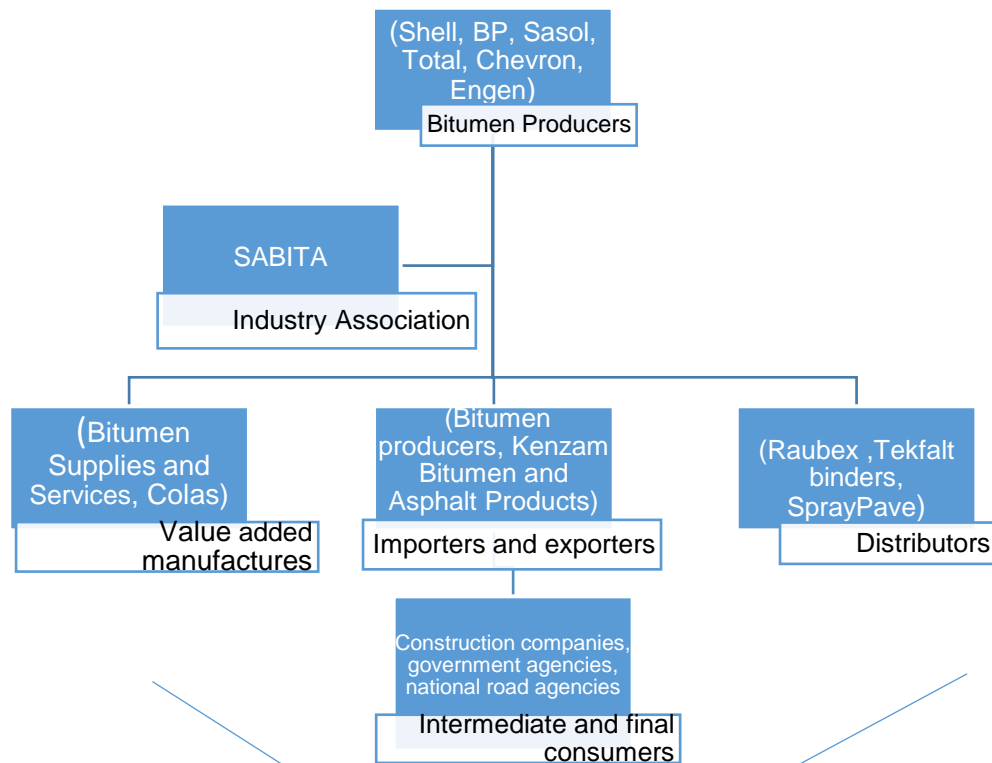
In terms of this cartel, investigations were not extended to markets in the SACU member states to inquire whether their respective markets were cartelised or directly affected by the cartel uncovered in South Africa. This is despite the possibility that the cartel that was uncovered in South Africa could have been facilitated by the bounds of the common customs union which make the movement of goods between South Africa and its SACU neighbours more attractive. This is further facilitated by relatively shorter distances between the countries. These factors, along with the same players implicated in the South African cartel, render it plausible that firms could have developed strategies at a regional level given the bulky nature of the bitumen plants and the importance of securing sufficiently large localised markets to ensure offtake and scale.

2.1 Bitumen value chain in the SACU region

Bitumen is produced, as a by-product in the process of oil production. The rest used in industrial applications (Bester, 2014). The production of bitumen takes place during distillation of oil. There are different bitumen types, produced from different fuel production processes. Final bitumen is predominantly used in the manufacture of asphalt (used for road construction and maintenance). Bitumen is produced in various grades; the grade that is the subject of this study is penetration grade.

³ During the cartel period Tosas was a joint venture company owned by Total and Sasol

Figure 1: The bitumen value chain in the SACU region



Source: Author's construction

The bitumen industry in the SACU region consists of key stakeholders which include oil refining companies (bitumen producers), bitumen value added manufacturers, traders, importers and exporters, distributors, immediate consumers (primary road construction firms) and final consumers of bitumen and the regional industry association, SABITA. The oil companies are vertically integrated along the petroleum value chain with presence at wholesale and retail levels. Bitumen is produced in four refineries in South Africa. These are Natref (operated by Sasol and Total), Sapref (operated by BP and Shell), Enref (operated by Engen) and Calref (operated by Chevron) (Boshoff, 2015).

South African bitumen producers have substantial operations and presence in the SACU markets. In terms of bitumen traders, there are only a few main traders that are vertically integrated with construction firms that operate in more than one country. In most cases, these companies (traders and construction firms) are South African. These construction companies typically purchase bitumen in South Africa and use it in the region. Due to the small domestic markets in the SACU countries, there tends to be close coordination between these bitumen producers in their day-to-day operations. This close coordination reduces the incentives for competition among the companies. For example, in Namibia, due to the relatively small market for petroleum products, companies share import shipments and facilities for storage. This is done to reduce costs and maximize benefits (Bank of Namibia Quarterly Bulletin, 2003), but it also means that there is greater private information being shared about import volumes as part of the operations of the shared infrastructure.

3. Analysis of the factors that could have facilitated collusion in the bitumen industry in the SACU region

3.1 Structural characteristics that facilitate collusion

This paper made use of qualitative assessments to deliberate the competition landscape in the SACU region. The information was largely derived from interviews conducted with the bitumen stakeholders as well as from other research sources.

The general structural characteristics that facilitate collusion are set out in the literature. These include concentration of companies trading in homogenous products, high barriers to entry, stable demand conditions, a history of a legal collusion, high ratio of fixed to variable costs, price transparency and symmetry among firms, multi market contact between firms, existence of a trade association and cross ownership among firms (Church and Ware, 2000). A detailed discussion of these factors will be presented below as they relate to the bitumen collusion case.

Predictably, the respondents generally noted that there was sufficient competition in the bitumen industry within the SACU region during the cartel period. Their response was based on what they explained as 'aggressive pricing' in the market and the pricing outcome being a process of negotiation. With the quality being graded according to industry specifications, the main parameter for competition is pricing (Interviews, 2019). Competition is noted to be mainly on pricing (lower pricing and higher discounts) and security of supply (that is, sustained long term supply). The bitumen specialist also detailed that discounts on transaction prices are negotiated with individual customers and are confidential. However, a closer assessment into the structural characteristics of the bitumen industry in the SACU region points to an industry conducive for a regional cartel. Most structural features of the bitumen industry facilitate collusion.

It was noted that it is more economical for the SACU member states to import bitumen from South Africa due to the shorter distances between the countries. Therefore, it is impractical from a logistics perspective for land-locked SACU countries (Botswana, Lesotho and eSwatini) to import bitumen from alternative sources, although there are small imports from other sources. Bitumen needs to be transported and delivered in hot liquid form because a minimum temperature is required to produce asphalt, where it serves as an adhesive binding other material together. Due to the short distance between markets, bitumen from South Africa is moved in hot tankers as opposed to importing from other destinations where it would have to be imported cold and will need to be heated on arrival. The heating on arrival attracts additional costs. This means that bitumen could be imported to the SACU markets from other markets at higher prices. Another dynamic is that most Middle East and Chinese suppliers (who provide an alternative to South African imports) insist on minimum import quantities of (at least 500 tonnes) being imported, while this is not case with South African suppliers of bitumen (Interviews, 2019). Small quantities of bitumen from South Africa can be supplied in drums or containers to accommodate smaller bitumen orders.

Overall, there are limited volume usages of bitumen in Botswana, Lesotho, eSwatini and Namibia given the small market sizes of their economies. Bitumen consumption in these markets is low relative to global volumes, hence the absence of bitumen plants in these markets. Consequently, local demand is mainly satisfied by imports from South Africa. In the

SACU region, bitumen production facilities are only located in South Africa. The four South African refineries account for all the bitumen production in the SACU region (Bester, 2014). Effectively, bitumen production is concentrated in SACU region to the six oil companies that control the refineries. Therefore, for the duration of the cartel period, these companies accounted for all bitumen production used for road construction and maintenance in the region. This implies that there is high concentration in the industry at production level and no significant competition for the South African bitumen producing refineries. Moreover, concentrated markets are more predisposed to result in cartelisation. Concentrated markets may also imply that the leading firms have a larger market share and may have similar cost structures and market shares. This makes it easier for members to monitor each other in terms of adherence to the rules of the cartel.

The findings in Connor (2007) that cross-border cartels predominantly involve firms that have a controlling market share in the countries where they operated, is a structural feature which increases the possibility that the South African bitumen cartel could have been extended to the SACU region because the bitumen producers in the region controlled all bitumen production. A smaller number of firms lowers coordination costs and makes organisation of secret cartel meetings easier. Moreover, these oil companies interact in more than one market, as they are vertically integrated from refinery level to wholesale marketing and retail distribution networks. Another factor is that all the companies have extensive operations in the SACU region. The frequent multi-market interactions in the different product and geographical markets, increases the likelihood of successful collusion in the bitumen market. This is because the greater the multi-market contacts, the more times and places the firms interact increases the number of opportunities for monitoring and punishing of any deviation from the collusive agreement, therefore increasing the likelihood of successful collusion. Furthermore, the industry structure and customary practices make the bitumen industry a fertile ground for price-fixing. This is evidenced by cartel cases in the bitumen industry in other countries, such as those uncovered and prosecuted in Spain, Belgium and the Netherlands.

The absence of significant competition in the region for the South African bitumen exports points toward market power by the South African bitumen producers in the region. Moreover, there are opportunities for the bitumen producers to exercise this market power through cartel activities when faced with weak competition (Martyniszyn, 2012). Having established that the South Africa bitumen producers face limited competition in the region and with bitumen being a relatively homogeneous product, price is the crucial variable for competition. This is as the number of parameters that companies must deliberate to accomplish a collusive agreement are reduced. It is also important to mention that homogeneous products generally facilitate collusion (Church and Ware, 2000). Together with the lack of substitutes for bitumen, this points to a lack of competition for the bitumen producing companies. This in turn fosters a conducive environment for a cartel to flourish within the region.

The possession of market power by the bitumen producers and the potential to exercise this market power makes it plausible that the pricing mechanism used in South Africa could have been extended to the region. As postulated by Griffin (2001), membership of a trade association can also facilitate cross-border cartel activity. Most cross-border cartels prosecuted and investigated by the US Antitrust Division endured due to a trade association (Connor, 2007). The members of the South African bitumen cartel were all members of the trade association, SABITA. SABITA facilitated the price-fixing in the South African market as

it was used as a platform to calculate the reference price which in turn was used to adjust prices on a monthly basis. While it is common practice for bitumen prices to be collected and published, this function is customarily done by an independent public entity in other countries (Boshoff, 2015). In the South African case, however, this was done by a private entity, SABITA, whose members were the bitumen producing companies. As such, this exchange of information facilitated the price-fixing between the parties. Information exchange is even more damaging when companies share pricing data which is forward looking. In the bitumen cartel case, the producers shared information on prices which were forward looking (the reference price was used to adjust prices every month). Given that SABITA is a regional association, it is plausible that the agreements could have extended to the whole SACU region.

After having established the structural characteristics in the bitumen industry which facilitate collusion, high barriers to new entry would then be an important consideration to any cartel agreement. High barriers to entry could facilitate collusion within the SACU region in the bitumen industry. The SACU region is characterised with high barriers to entry due to large investments required to establish a bitumen plant. Bitumen production has considerable barriers to entry due to the importance of scale economies and the substantial capital investment required in setting up bitumen plants. The major oil companies who control bitumen production face no credible threat of entry or expansion by other competitors which implies that there is a benefit of continued tacit collusion.

The history of cartelisation dating back to the legal cartel era also facilitates collusion in the region as the market participants are used to cooperating than competing. In the case of the bitumen cartel the cartelists were used to jointly determining the prices using a predetermined formula. The well-known focal pricing points among the cartel participants increases the risk of recidivism. The history of cartelisation is conducive to facilitating collusion (Church and Ware, 2000).

Certain market aspects of the bitumen industry make it susceptible to market allocation and coordination at a regional level. The geographical location of the SACU countries could facilitate market sharing. SACU countries are in proximity, eliminating the transport distances and costs between the countries. The shorter transport distances between South Africa and the SACU markets present South African exports with relative pricing advantages compared to other countries which are further from the SACU markets. Moreover, the fact that the countries belong to the same customs union, means that a common tariff (which is relatively less than those that apply to trade with other markets) apply. This also adds to the attractiveness of the South African bitumen exports. Cartels become stable as trade barriers are reduced. The fundamental reasoning behind this perspective is that reduced trade barriers also reduce the costs of punishment and hence make the severity of punishment – when breaking the collusive agreement harsher. Lower trade barriers, while beneficial for regional trade and economic development, can also make it easier for cross-border cartels to maintain collusive outcomes in the region. Therefore, with reduced trade barriers, it is more important to ensure that measures are in place to ensure that anticompetitive behaviour does not spill over across borders.

3.2 Summary of the structural characteristics in the SACU region

In conclusion, Table 1 summarises the structural and behavioural factors discussed above that facilitate collusion in the bitumen industry within the SACU region.

Table 1: Economic conditions facilitating collusion in bitumen industry within the SACU region

Structural factors facilitating collusion	Factors in the SACU bitumen market facilitating collusion
High seller concentration	Four bitumen producing refineries in the region owned by six oil companies.
Few cartel participants	Six oil companies controlling all bitumen production in region.
Lack of buyer power	Bitumen buyers are fragmented and face inelastic demand.
High barriers to market entry -Large plants which require large upfront investments -Sunk investments costs - Enormous technological costs	High barriers to entry, bitumen production requires large plants with large sunk investment costs. There is little prospect of the construction of new bitumen plants in the region given the small domestic markets.
Large infrequent transactions	Bitumen transactions are large and infrequent in nature.
Annual market growth	Steady market growth.
History of cartel activity	The South African cartel was a legal cartel before market liberalisation. The 'rules of the game' were well established and persisted for a long time.
Industry association	All bitumen producers are members of the regional industry association SABITA.
Transparency of market prices to buyers including information exchange	Historic known bitumen pricing methodology in the region and well-known pricing points. Private, highly disaggregated information exchange through SABITA.

Source: Author's construction

The implication is that these market characteristics are conducive to collusion in the other SACU countries, and given the history of collusion by the same firms in South Africa that supply the other SACU countries, it is very probable that the collusive outcomes (whether directly or indirectly) could have spread across the borders.

3.3 Quantitative data analysis

Bitumen traders (producers, value added manufacturers and importers) operate on a wholesale business-to-business basis, in which discounts are negotiated confidentially and individually. Therefore, pricing information is not publicly available, both from South Africa (Bester, 2014) and from the SACU member countries. As such, the paper uses trade data, reported in volumes and values, to make inferences about the pricing of bitumen in the region. The trade data is from the UN Comtrade data. The data was collected for the period 2000 to 2015. Data until 2015 is included to observe changes post prosecution of the cartel.

3.3.1 Pricing of bitumen in the SACU region

Given that the quality of penetration bitumen is largely homogenous and standardised, price is a major decision variable for any collusive agreement in the bitumen industry. As previously noted, actual transaction prices are not publicly available as these are concluded independently by the different bitumen producers and or traders with individual customers. Bitumen prices are impacted by the same factors that impact global oil markets, such as geopolitical events. Therefore, global bitumen prices are strongly correlated with the global oil prices, as bitumen is a by-product in the oil production process. Consequently, it is expected that the price of bitumen fluctuates in line with the US dollar price of crude oil and the relevant exchange rate. However, on a localised level, bitumen prices are most significantly impacted by other factors such as product availability, storage capacity and shipping costs. Prices are also driven by the demand for bitumen, the number of on-going road infrastructure projects, government road infrastructure expenditure and refinery productivity levels (Interviews, 2019). In addition, the interviews revealed that bitumen prices are also affected by the locking in long term contracts in the region (Interviews, 2020). The significance of this is that transactions associated with longer term contracts tend to have lower prices as would be expected.

Bitumen is a commodity typically characterised by seasonal demand and consequently, it reflects seasonal price volatility. The application of bituminous materials is restricted to periods of dry and warm weather conditions. This causes seasonal fluctuations in the demand for bitumen depending on the prevailing local climatic conditions. Moreover, in any given calendar year, bitumen refineries have to shut down for maintenance work and given that the Sapref refinery which is jointly owned by Shell and BP, has the largest bitumen refinery capacity in South Africa, prices tend to increase during its shutdown. The construction industry also shuts down for one month over December and January for their annual holidays thereby pushing the prices downwards due to the depressed demand environment (Interviews, 2019).

Typically, the demand for bitumen is driven by demand from road agencies and municipalities for construction works. However, it was noted that demand for bitumen in the region is primarily driven by donor funds from donor organisation, such as United States Agency for International Development (USAID) (Interview, 2019). This shows that the bitumen buyers' market in the region is fragmented and small, facing inelastic demand. This makes them less able to exert pressure on suppliers to destabilise any cartel activity. The other key driver of the demand for bitumen is government expenditure for road construction, this also impacts on prices. Most road authorities and in particular local authorities (municipalities) tend to hold back on road maintenance expenditure until closer to their financial year-end, before issuing orders for the resurfacing of their respective roads, thus exerting upward pressure on bitumen prices (SABITA, 2007) and this creates lumpy demand.

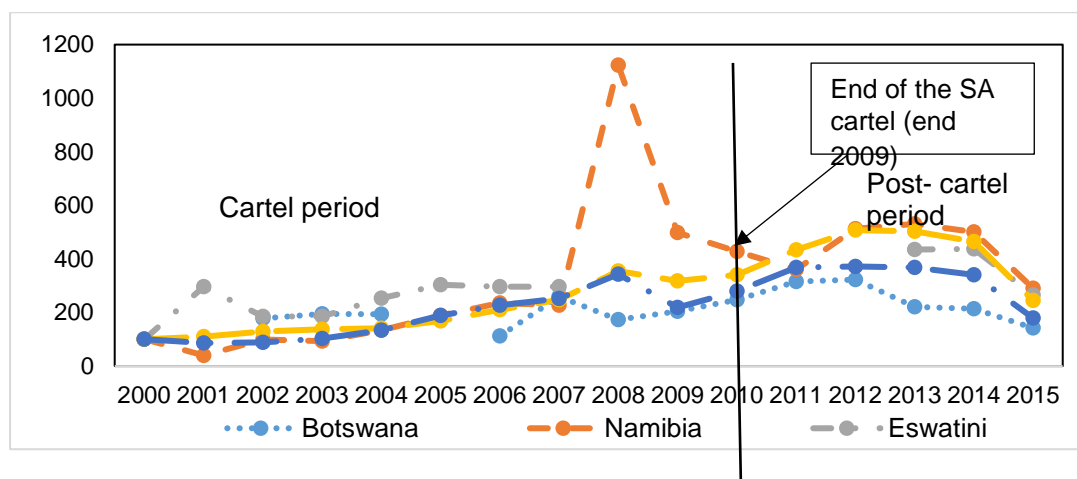
For the duration of the cartel, the interviewees were of the view that the bitumen prices to the SACU markets were set independently by the different oil companies. The interviewees were unclear on whether the jointly calculated bitumen index was used as the reference price in the export markets. However, while it is plausible that the oil companies determined bitumen prices independently, the history of the focal pricing points (Boshoff, 2015), also makes it probable that the same pricing mechanism used in South Africa could have been extended to the SACU markets. The interviewees were of the view that export prices were much lower than the domestic (South African) prices as the bitumen producers compete with other

producer countries in the supply of bitumen to the SACU markets. However, this statement is to be taken with caution, given that the overall level of South African prices are much higher – a feature that reflects the long history of a legal collusion in this industry (Boshoff, 2015) and given that there is no competitive threat from other imports in the SACU markets as previously highlighted.

According to the interviewees, the payment terms by the SACU bitumen importers also favours imports from South Africa over imports from alternative sources. For bitumen imports from alternative sources, buyers typically pay 30% on order and the balance of 70% while the goods are in transit (with general average transit duration of 6 weeks reported). This is in comparison to much more favourable payment conditions from South African bitumen producers which also often include credit terms for the buyers. It is clear from the interviewees that importing from other countries will have a negative effect on the importer’s cash flows. In addition, it is more convenient to purchase from South Africa as it has reduced transit time due to the proximity between the countries. The implication for this is that there is limited direct competition for the South African bitumen exports from alternative imports for the SACU region. Therefore, in the case of land locked countries like Lesotho, eSwatini and Botswana from a logistics point of view, it is impractical to consider other countries for alternative supply.

In the absence of individual transaction prices, it is not possible to verify the actual final pricing that customers are charged. The South African bitumen producers have a large degree of market power which they have potential to exercise in the SACU market, given that there is no serious competitive constraint from other sources. Therefore, there is a case to be argued for the pricing mechanism being similar in the domestic and regional markets, and there is no indication (including from interviews with industry stakeholders) that different pricing formulas were used for local and SACU sales.

Figure 2: Comparison of the import prices with SA local prices and the crude oil price



Source: UN Comtrade data, Stats SA, Author’s calculations

Figure 2 above plots five series: import prices indices for Botswana, Namibia and eSwatini, the South Africa bitumen price index and the crude oil price index. All the prices plotted above are in index form with the year 2000 as the base year. The data for Lesotho was dropped, as it had several missing values. As already indicated in the section above, disaggregated (transaction), prices are more appropriate for analyses of cartels. However, such information

is not available in the public domain and the only viable option is a price index which captures national prices. As such, the import prices were in turn converted to index points with the year 2000 as the base year. The figure above shows how the import prices moved over the years. As can be seen, and as would be expected, both the domestic South African bitumen price and the import price indices track the international crude oil price. While South African prices tracked international crude oil price increases till 2008, it is interesting to note the price stickiness downward when international crude oil prices declined. After 2008, the South African index remained persistently higher than the crude oil price index.

The prices of bitumen (both domestic and import prices) rapidly rose in the early 2000s, peaking in 2007 before declining in 2009 in line with global financial crisis. The prices rose thereafter in line with the global economic recovery. This shows that the bitumen prices tend to respond to developments in the global economy as expected. Figure 2 above also shows that for the duration of the cartel the import prices in SACU markets largely tracked the South African domestic bitumen price index in terms of general trends. There are, however, differences in levels and certain anomalies as discussed below.

For the most part of the duration of the cartel, import prices for all countries were above the South African prices (except in the case of Botswana, discussed below). This implies that the bitumen price index in the SACU markets were higher than the South African price index which was already cartelised. The likely reason for this is that prices in the SACU countries followed a similar pricing methodology that was used in South Africa. However, the higher prices in the SACU countries can be explained by the additional transport, storage costs and other trade related costs.

After the prosecution of the South African bitumen cartel (post 2009), both the South African bitumen price index and import price indices in the other SACU countries continued to move together, tracking the crude oil price index. The implication is that the same pricing mechanism which mirrors crude oil prices continued to be used in the region. However, as noted above, the bitumen prices in South Africa post 2008 are higher than the international crude oil index and in the region possibly because of the increased demand in South Africa owing to large infrastructure projects leading up to the 2010 Soccer World Cup hosted in South Africa. Moreover, during that period a significant general spike in the costs of petroleum products was observed (Ross and Field, 2007), spurred by unprecedented growth in several of the world's largest countries (especially China). The lower bitumen prices in the SACU region could be explained by a possible lag effect in the sense that prices are locked in long term contracts and on the other hand, it could be explained by the lack of cartelisation in the respective markets.

Botswana exhibits the most stable prices, while Namibia and eSwatini are characterised by more erratic price changes over the period. There is a noticeable peak in 2008 in the Namibian import prices. The driver of this anomaly is, however, likely to be attributable to a measurement error as there is no other reasonable explanation for the one-time spike in the prices.

Interestingly, as previously noted, the import price index for Botswana was lower than the South African index in some periods. As will be shown in Table 3 Botswana was the only country of all the SACU member states that had sourced some of its bitumen requirements from other countries (China and US) during the cartel period.

Post-cartel prosecution South African export volumes to the SACU region have continued to increase, relative to the cartel period. The post-cartel export statistics are illustrated in table 2 below. Although the interviewees noted that there is increasing competition in the post cartel period (2010 – 2015) to the South African bitumen exports, the trade data proves contrary. The increase in the export volumes is an indication that even after the disbandment of the cartel, in terms of trade, business is continuing as usual. Therefore, this could imply that the status quo in the competitive dynamics within the region has remained the same with South African exports dominating these markets. This could be attributable to the factors discussed above such as the relatively shorter transport distances. The trade data below clearly demonstrate that there has been limited export penetration to the bitumen market in the SACU region from other countries, with exception of Lesotho whose import volumes remain low and insignificant compared to the rest of the region. Lesotho sourced some of its bitumen requirements from alternative sources, driven by bitumen procurement conditions for donor funded road construction projects. South Africa is therefore still an important source of bitumen for the SACU region.

Table 2: Bitumen imports in the SACU markets from South Africa

Summary of key statistics 2010 – 2015 (Post-cartel period)		
	Total value imported bitumen (USD)	% of the total bitumen imports (5-year average)
Botswana	7 329 704	96.4
Namibia	28 171 339	100
eSwatini	5 664 017	100
Lesotho	603 979	74

Source: Author's own calculations based on UN Comtrade data

3.3.2 The special case of Botswana

For the duration of the cartel period, (2000 - 2009) Botswana is the only SACU country which sourced some of its bitumen requirements from other countries. The actual bitumen figures that were sourced from alternative sources during years which the bitumen cartel was in operation in South Africa is depicted in Table 3 below. This is in comparison with the other SACU countries who sourced all (100%) of their bitumen requirements from South Africa for the duration of the cartel. The reason for Botswana importing from alternative sources could be the conditions of donor funded road infrastructure projects or better alternative pricing. As discussed above donor funding for road infrastructure plays a significant role in the SACU markets. According to the interviewees, donor funders, at times dictate the countries from which bitumen is to be imported (Interviews, 2019).

The periods which Botswana sourced, some of its bitumen requirements from other countries corresponds to lower prices of imported bitumen for the country. The average import price differential between Botswana and that of Namibia and eSwatini is significant (as illustrated in Figure 2 above), however, it is possible that the differential may be biased due to the measurement error in 2008 and the base effect of using the year 2000 as the base year for computing the import price indices. The lower price however, points to potential evidence that where there is some, albeit small level of competition from sources other than South Africa, prices were lower during the formal cartel. This shows that donors may have countervailing

buyer power (which is often absent in the region) and are able to get lower prices. This is an important competitive constraint to the South African bitumen producers (Interviews, 2019).

These results illustrate that a little competition for the South African exports had an effect of reducing the overall average prices compared to the countries that sourced all their bitumen requirements from South Africa. However, it is important to note that, these results are subject to certain limitations, as the conditions in the countries may not be directly comparable. Moreover, the analysis did not explicitly consider other factors that affect import prices.

Table 3: Botswana bitumen imports during the cartel period (2000 -2009)

	Imports from South Africa (USD)	Imports from the world (USD)	% of imports from South Africa
2000	11 315	11 315	100
2001	549	549	100
2002	13 963	13 963	100
2003	245 731	245 731	100
2004	154 080	154 080	100
2005	72 455	72 455	100
2006	54 763	79 000	69
2007	72 346	102 000	71
2008	37 821	37 821	100
2009	135 488	173 000	78
2010	882 628	1 004 000	88
2011	1 316 895	1 446 000	91
2012	1 747 802	1 747 802	100
2013	563 197	563 197	100
2014	1 690 555	1 690 555	100
2015	1 128 627	1 128 627	100

Source: UN Comtrade data, Author's calculations

Conclusion on pricing assessment

While the analysis in this section is not conclusive evidence of collusion in the bitumen industry in South Africa extending to the SACU region during the cartel period. The presence of structural factors which are conducive for collusion and the dependency of the SACU markets on the South African exports for their bitumen requirements highlights that competition authorities in the region need to timeously investigate cross-border effects of cartel activity uncovered in another country in the region. This is even more important when the anti-competitive effects emanate from South Africa, given the country's economic importance in the region. The analysis points to red flags, given the structural characteristics discussed, and the significance of exports by the cartel members that the cartel conduct could have been extended to the region.

3.3.3 Quantifying the possible impact of the bitumen cartel in the SACU region

Growing interest in the impact of cross-border cartels has produced several important works in the field, for instance, by the OECD (2003), Levenstein and Suslow (2003), Connor (2007) and Yu (2003). Although purchases made by the SACU countries from the companies prosecuted for collusive behaviour cannot be observed directly, we can infer from aggregated trade data information on bitumen purchases and import price fluctuations.

To quantify the impacts of the cartel conduct, considering the possibility of the cartel spreading into the SACU region, this paper takes imports of bitumen from South Africa as proxies of sales of the cartelised product to the SACU member states. Absent other available information, the trade data provides the best proxy of the cartel's impact on developing country consumers (Yu, 2003). There are very few studies of the economic effects of cross-border cartels, and there is no consensus on the correct way to measure these effects. In addition, data problems make this kind of analysis extremely difficult. Furthermore, it is not possible to measure accurately the impact on the market of a cartel, due to insufficient information on actual bitumen transaction prices after discounts.

Notwithstanding these difficulties, it is still possible to give an indication of the extent of harm. Given the magnitude of the trade figures shown in Table 4 below, it is possible that the cartel adversely affected a significant portion of trade in value terms and therefore the trade balances of the respective countries. If the cartel distorted the bitumen market in the wider SACU region, these countries would have suffered substantial losses in the form of welfare transfers from the purchasers to the sellers of bitumen and deadweight losses.

During the period under review, South Africa was a net exporter of bitumen to the SACU member countries. As discussed in the qualitative section, the other economies in the SACU region do not have bitumen production capacities. In addition, it was also noted that there is no significant competition for the South African bitumen exporting refineries in the other SACU countries. Therefore, the SACU member countries are to a large degree dependent on South African refineries to supply their bitumen needs.

The trade data for the duration of the cartel (2000 - 2009) in Table 4 confirms that the South African bitumen exports faced insignificant competition in the SACU region as the countries imported almost all their bitumen needs from South Africa. This is further confirmed by statistics published on the SABITA website which shows that local South African consumption was less than local supply. Thus, the scale of production of bitumen in South Africa is far above the demand for local consumption as well as those of neighbouring economies. Therefore, the SACU countries imported a large proportion of their bitumen requirements from South Africa.

Table 4: Summary of bitumen imported by the SACU countries from South Africa (2000 - 2009)

Country	Total imported from SA	value (USD)	% of the total bitumen imports to country (average)	% of GDP
Namibia	8 564 605		100	0.161
eSwatini	839 943		100	0.034
Botswana	798 511		91.9	0.009
Lesotho	373 743		100	0.031
Total	10 576 802			0.235

Source: UN Comtrade data, IMF World Economic Indicators Database, Author's calculations

Following the approach of Levenstein, Suslow and Oswald (2003), Table 4 summaries import data for SACU countries. It is reported in three ways: in absolute US dollar values, as a percentage of total bitumen imports and as a percentage of the respective country's GDP. The GDP figure used are the figures for each corresponding year, after which the average over the period is reported in the Table 4. The total value of bitumen imports which could

potentially had been a result of collusive pricing mechanism in the SACU member countries over the duration of the cartel amounted to approximately US\$10.6 million. This is an aggregation of the total South African bitumen exports to all the SACU countries. The figure is significant and if the cartel had been extended to the region, it then implies that the impact was substantial. Therefore, it would warrant further investigations by the competition authorities in the other SACU countries.

In order to provide an estimate of the order of magnitude of the overcharge of the bitumen cartel, this paper uses Boshoff (2015) overcharge estimates calculated for the South African cartel case. Boshoff (2015) calculated the estimated overcharges to be between 18% and 20% over the years the illegal cartel was active (2000 – 2009), while considering that the cartel was previously a legal cartel.

If the cartel indeed extended to the SACU region, taking a conservative estimate of 18% price overcharge, the overcharge amount included in the total bitumen imports by the SACU countries totalled approximately US\$1.9 million over the duration of the cartel (Table 5). In other words, the SACU countries, on the more conservative measures, paid US\$1.9 million more on average than they would have absent the cartel, and on the less conservative measure of 20%, they paid US\$2.1 million. This potential overcharge of between US\$1.9 million – US\$2.1 million calculated by this study is an approximate estimate of the welfare loss due to the potential collusion. If indeed the cartel was extended to the SACU region, this impact was substantial. However, any conclusions, about the effects of cartel activity need to be drawn with great care as this approximates the direct price effects and any cartel activity could have had far reaching indirect effects when considering multiplier effects.

Table 5: Possible overcharges from the bitumen cartel in the region

Country	Total value imported (USD) (2000 - 2009)	Possible overcharges (calculated at 18%)	Possible overcharges (calculated at 20%)
Namibia	8 564 605	1 541 629	1 712 921
eSwatini	839 943	151 190	167 989
Botswana	798 511	143 732	159 702
Lesotho	373 743	62 274	74 749
Total	10 404 919	1 903 824	2 115 361

Source UN Comtrade, Author's calculations

4. Conclusion and Recommendations

In the advent of globalisation and trade liberalisation, individual economies have become intrinsically linked. Therefore, anti-competitive conduct in one geographical location may have an impact in another geographical location. This is increasingly more evident in the area of cross-border cartels. In Southern Africa, given the trends in trade and investments between South Africa and the SACU member states there is a high probability that a cartel that has taken place in South Africa could have been also extended to other countries in the region (Kaira, 2015).

Despite the record fines and assured vigorous enforcement in South Africa, there is little indication that cartel activity is declining (Kaira, 2015). The continuous discovery of cartels in

South Africa indicates that they remain relatively under-deterred. In part, this may be due to discovered cartels not being sanctioned in all jurisdictions where they caused harm and the sanctions not accounting for the harm in foreign markets. While the South African authorities have achieved relative success in unearthing and prosecuting cartels in the past few years, other competition authorities in the SACU region namely, the Botswana Competition Commission, Namibia Competition Commission and the eSwatini Competition Commission have not been as successful in this regard. There has been relatively little activity on the part of the other competition authorities in the region to respond to these cartels even after they have been uncovered in South Africa. Given that cartels tend to appear among domestic firms first, before going cross-border (Fear, 2006), the SACU national competition authorities and regional competition bodies should proactively investigate these cartels.

The lack of prosecution by other countries in the SACU region may present problems to the efforts of detecting cartels in South Africa and in the region. If these cartels have significant effects on the SACU member states consumers and producers, the lack of antitrust prosecutions by these countries against these cartels is an important problem. This is as geographically limited prosecutions do not provide enough disincentives to deter collusion that has region-wide benefits for colluding firms. Given the low levels of prosecution outside South Africa in the SACU region, consideration should be given on calculating fines in South Africa routinely on the basis of the cartelised market having a direct or indirect impact in the region to sufficiently deter collusion in all markets. In addition, it is important for the South African authorities to consider an enhancement to the current leniency programme which would reward firms in the form of related immunity, if they inform the authorities on collusive activity in any of the SACU markets that are not yet under any investigations.

Apart from Lesotho, all the SACU member states have enacted competition laws and have an operational competition authority. Lesotho has a draft competition law and does not yet have a functioning competition authority. The Minister responsible for Trade and Industry in Lesotho announced that the country is in the process of drafting a competition law to pave way for the formation of a competition commission⁴ organisation. All the competition laws in the SACU region include specific anti-cartel provisions. Cartel conduct is per se illegal in all countries with competition laws in the region, but enforcement has been relatively weak, with little activity done in this regard. This means that the mere existence of collusion is enough to satisfy a finding against the firms involved without necessarily considering any mitigating circumstances. Although the competition laws of specifically Namibia and Botswana apply to all economic activity within the countries or having an appreciable impact on the country's economies, there has been little initiative to follow up on cartel activity emanating from South Africa.

This study used the bitumen cartel that was uncovered and prosecuted in South Africa to demonstrate using screening mechanisms to determine if the cartel uncovered in South Africa could have had an appreciable impact on SACU members' respective countries. Structural factors facilitating collusion in the bitumen industry in the SACU region were reviewed. In this regard, the study found a myriad of structural factors that are conducive for a cross-border cartel. The trade data demonstrated the SACU member states' dependency on South Africa for their bitumen requirements. In addition, the import pricing data derived from trade data mirrors that of the South African bitumen prices. Together these factors suggest that there is

⁴ <https://lestimes.com/competition-laws-beckon-for-lesotho/>

a strong possibility that the effects of the cartel were felt in the region and that collusive pricing could have been extended region wide. Given that the arrangements between the bitumen producers have shown potential to undermine rivalry, as well as the history of cartel conduct in South Africa, this is an important red flag for the competition authorities in the region to consider. This increases the possibility that the bitumen cartel in South Africa could have been facilitated in the region by proximity of the markets and the membership of the common customs union which makes the movement of goods between South Africa and its SACU neighbours easier. In addition, various cartels have also existed in the bitumen industry internationally, which have had cross border elements. In Europe, cartels in the bitumen industry were uncovered and prosecuted in the Netherlands, Spain and Belgium. Of importance to this study, the cartel in Spain had an appreciable impact to other countries in the European region. In terms of the bitumen cartel uncovered and prosecuted in South Africa, investigations have not been extended to markets in the SACU member states to inquire whether these markets were cartelised or directly affected by the cartel uncovered in South Africa.

While the analysis that is done in this paper does not provide conclusive evidence of collusion, the patterns identified in this paper warrant further in-depth investigations in which data which is more detailed can be collected. The analysis presented in this paper is innovative in the use of trade data to compute import price indices for pricing analysis and for calculating the impact of the cartel, but there are limitations to its scope and quality. This paper simply demonstrated that basic screens of structural factors conducive for collusion and a review of pricing trends derived from trade data in the absence of direct transaction prices could be used to determine if a cartel emanating from South Africa could have had appreciable cross-border effects. These can serve as a trigger for local investigations in the respective SACU member states and facilitate cartel detection, therefore increase the deterrence rates. The formal investigations could then facilitate the collection of data directly from the exporting and importing companies (disaggregated data), for analysis of the trends and to acquire direct evidence of collusion if it is confirmed. In the absence of leniency applications, SACU countries are more likely to recognise the existence of cross-border cartels through enforcement activities emanating from South Africa. This will also require increased cooperation between the competition authorities in the region and processes and platforms, such as the African Competition Forum, to share information between competition authorities.

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