Understanding competition at the regional level: an assessment of competitive dynamics in the cement industry across Botswana, Kenya, Namibia, South Africa, Tanzania and Zambia

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1. Introduction

Competitive interaction between firms to supply products such as cement happens in geographic markets which depend on where production is located, where the main sources of consumption are and transport and logistics infrastructure and costs. In addition, competition depends on past decisions to invest in capacity. National borders are just one part of the picture in that there may be tariffs and non-tariff barriers, as well as national regulations which affect supply and location decisions. Taking a regional view is thus important to understanding the outcomes observed, such as pricing, and what are the underlying competitive dynamics. There are also very important links between competition, regional integration and trade. This study seeks to assess these issues through the lens of a competition analysis of cement across six countries in Southern and Eastern Africa.

As highlighted recently by Frédéric Jenny, an increasing number of cartel investigations being conducted by competition authorities are global in scope.[1] Professor Jenny has often observed the importance of taking an international view to understanding potential anti-competitive arrangements in order to see the ways in which firms can divide markets by exploiting national borders as easy boundaries to restrict competition between themselves. We know that this is how the cement cartel in the Southern African Customs Union (SACU) worked until it was uncovered in 2009. The four producers in the cartel agreed on market shares across the whole of SACU and monitored the agreement through sharing monthly sales information. The agreement also involved allocating some countries predominantly to one producer or another which led to greater cartel stability and ease of monitoring.[2]

Consistent with the potential cross-border scope of anticompetitive conduct and its effects on international trade, a large number of regional economic groupings have adopted competition articles in their agreements. These include the Southern African Customs Union (SACU), Common Market for Eastern and Southern Africa (COMESA) and Southern African Development Community (SADC).

It is in this context that the African Competition Forum (ACF) launched the six country research project covering three industries, cement, poultry and sugar. This study on cement covers all six countries, namely, Botswana, Kenya, Namibia, South Africa, Tanzania and Zambia.

Objectives of the study

The study aimed to map out the major producers across the countries, the main changes over time and the market structures. The market dynamics were assessed including barriers to entry, regulatory arrangements, and the outcomes observed in terms of price and supply.

[1] Speech delivered by Frédéric Jenny, Chairman of the Organisation for Economic Cooperation and Development's (OECD) Competition Committee at 3rd Biennial International Conference on Competition organised by CUTS and CIRC, 18 & 19 November 2013, New Delhi, in India. See also Levenstein and Suslow (2008).

[2] Competition Commission South Africa press release of 11 November 2009 'PPC confesses to being part of a cement cartel and gets conditional leniency', and Confirmation of consent agreement between Competition Commission and Afrisam (South Africa) Pty Ltd, confirmed on 16 November 2011 and available on www.comptrib.co.za

We reflect on issues of competition law that have arisen and the implications for competition enforcement and policy.

Cement is a critical product for infrastructure and housing which means its price and supply has wider impacts for investment. It is also a product which has been prone to anti-competitive conduct, especially collusion (Hüschelrath et al., 2013). The inelastic demand means that the potential price increases from coordination are high while the homogenous nature of the product means price competition can be intense. There is important learning from other country experiences, especially as many of the same companies operate across continents.

The study is structured as follows: section 2 presents a short background to the cement industry, section 3 looks at the structure of the cement industries in each of the six countries, section 4 discusses regulatory issues in the six countries, in section 5 we present an analysis of cement prices in the six countries, and section 6 looks at specific competition issues in the region. Section 7 provides concluding remarks.

2. Background to the Cement Industry

2.1 The nature of the cement product

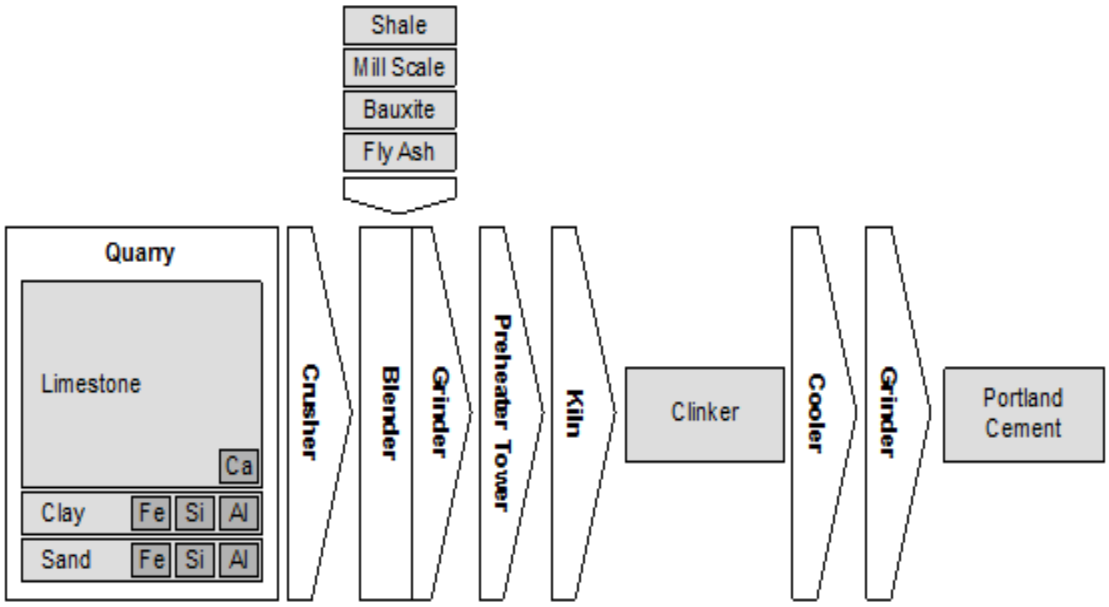
Cement is a largely homogenous product, produced in the same way by all the players in the industry. However, by using an extender (such as slag or fly ash) cement manufacturers can produce blended products (typically cement sold in bags) that differ in strengths.

Cement is a relatively low value, high weight product that is expensive to transport by land. This means understanding the geographic positioning of cement plants relatively to the main sources of demand is important. Cement plants are generally located close to raw material inputs (such as limestone deposits) or close to ports allowing for importation of key inputs. Logistics such as roads and railway lines are critical for accessing customers. These factors mean that the most obvious markets for a producer may well stretch across borders, given the location of plants.

2.2 The cement production process

The process starts with the primary raw material calcium carbonate or limestone (which is quarried) being crushed (Figure 1). The crushed rock and other required ingredients are stored in stockpiles before blending takes place and a uniform quality of raw material is achieved. The main elements of cement are calcium oxide, silica, alumina and iron oxide. Once the blending process is completed, the meal is fed to homogenizing silos where it is carefully mixed to make certain that the kiln feed is uniform - a requirement for the efficient functioning of the kiln and for good quality clinker. The next stage involves the burning of the raw meal to form cement clinker in the kiln. The components of the raw meal react at high temperatures (900-1500°C) in the pre-calciner and in the rotary kiln, to give cement clinker. It is important that the elements are combined in the proportions desired which means systematic sampling and laboratory testing is used to monitor the process.

Figure 1: Cement production process



Source: IDC

After cooling, the clinker is ground together with additives[3], and the resultant product is ordinary Portland cement (OPC). The additives can be used to 'extend' the cement, which yields different strengths of the blended cement.

2.3 Typical value chain in the cement industry

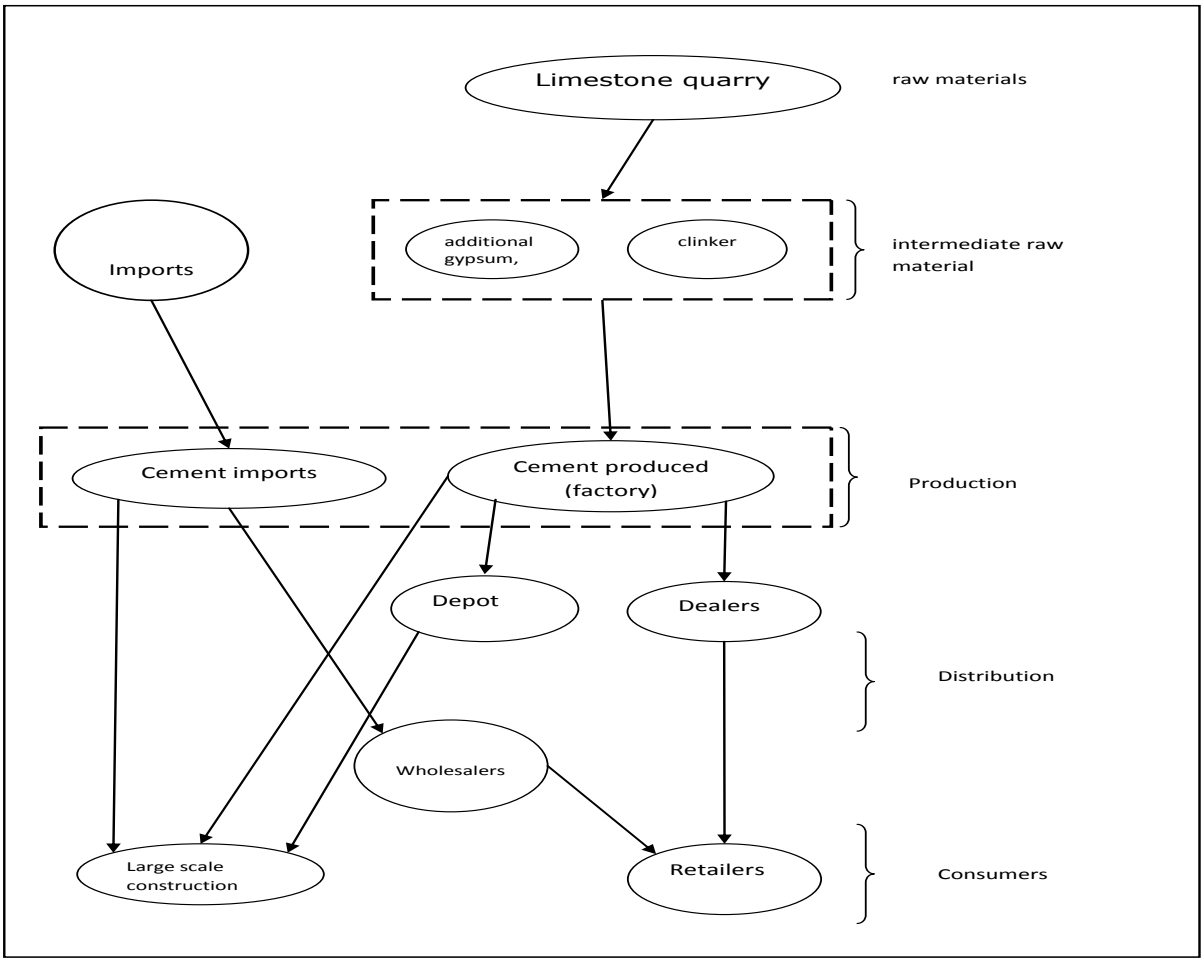
In all the six countries that are subject of this study, the value chains have similar structures, with some variations occurring mainly in the supply of raw material for cement production (see Figure 2). As mentioned, the main raw materials in use are limestone and fly ash, while the end raw material is clinker. Limestone is mined from quarries while fly ash (an electricity generation by-product) is often obtained either directly from electricity supply companies or indirectly through middlemen. Five (Namibia, Kenya, South Africa, Tanzania and Zambia) out of the six countries have large deposits of limestone, with low deposits in Botswana. The issue is about the control of these deposits and whether they are located in areas that are cost-effective in terms of transportation within each country.

Most cement factories have clinker producing capabilities where they process limestone to obtain clinker, but in some instances factories are merely grinding facilities that source clinker from external suppliers with excess clinkering capacity or they import the clinker into the country. In fact, in some countries factories do not produce cement at all, but specialise instead in producing clinker for sale into the open market. Cement producers in Namibia, Kenya, Zambia and South Africa also sell clinker. South African cement factories also sell clinker to Botswana (which imports most if not all of its clinker) and in Tanzania all producers have grinding capacity larger than their clinker production capacity and therefore occasionally import clinker from other countries. Across the six countries, cement producers usually have a physical presence in the countries in which they operate, but they also serve

[3] These additives come in different forms and they include Gypsum, Blast furnace slag, Fly ash, Silica fume, Lime or limestone and aggregates.

external export markets. There are also imports, by either independent trading companies or large-scale consumers who import cement for their projects.

Figure 2: Cement value chain



Source: Compiled by researchers

Transportation and distribution logistics are an important element in the value chain. The distribution channels vary widely, not only across countries but also between companies within particular countries. The most common distribution models involve the use of producers' own depots, dealership arrangements, subsidiary companies and direct supply. Traditionally, depots are often owned and operated by cement producing companies themselves or by subsidiary companies. Depots often offer cement at ex-factory or wholesale prices, a relatively lower price than the retail market. The dealership arrangement is organized through contracts agreement between producers and established trading companies. Distribution through subsidiary companies operates when a cement producing company uses its subsidiary to distribute the cement consignment. Direct sales to consumers (where producers deliver the cement directly to consumers) are usually feasible with large scale consumers such as large construction projects that require substantial amounts of cement in bulk.

The distribution patterns for locally produced and imported cement across the studied countries are in many ways identical. For instance depot distribution is widely used by producers in Tanzania, Kenya and South Africa. In Tanzania all big producers supply

cement within and outside the country through the use of depots. They also use depots to serve some regional markets within the country. Depots can also be operated by subsidiary companies, the model widely used by the AfriSam Consortium, Lafarge, Ohorongo and Sino Cement who all export cement from their home countries to Botswana. In Tanzania, one player uses established logistics companies to handle all of its transportation logistics.

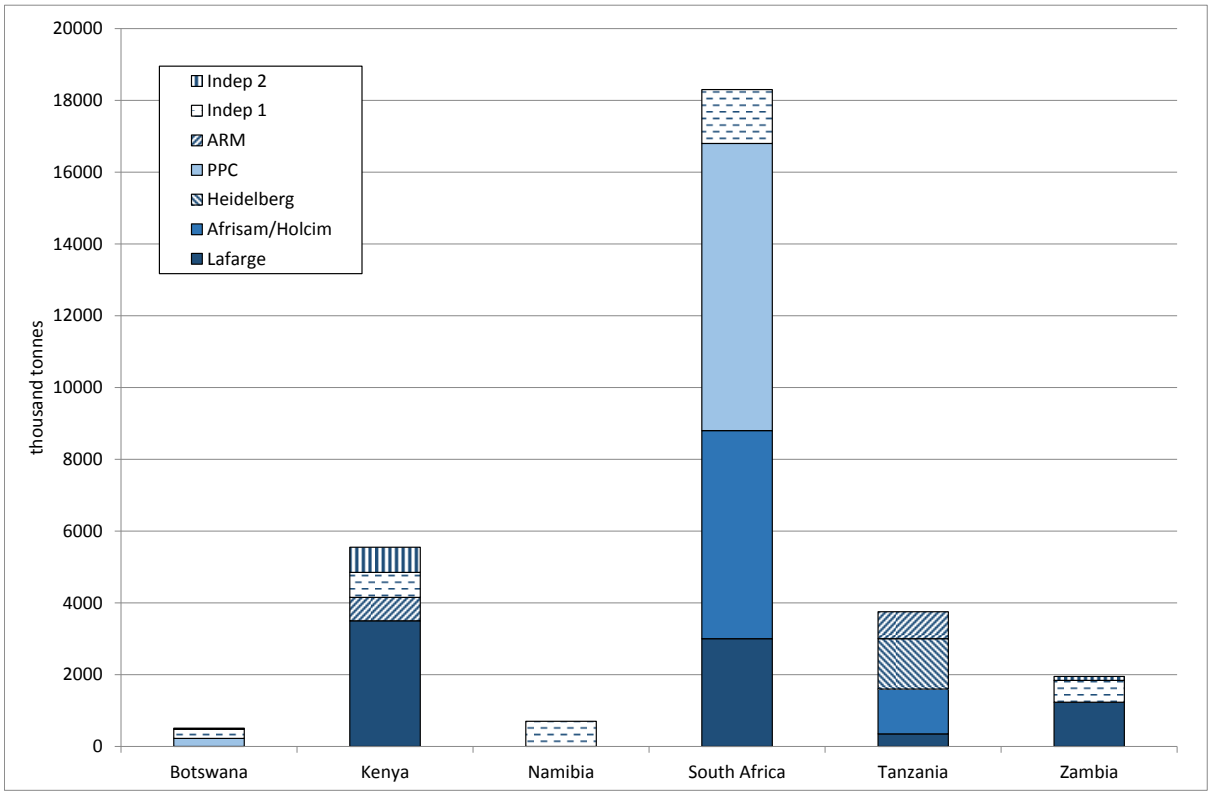
Dealership arrangements between producers and business firms are used in Tanzania, Zambia, Kenya, Botswana and South Africa. This distribution method is normally regulated by exclusive agreements between producers and firms doing the business. Dealers charge a retail price to reflect the transportation cost and their margin. In some instances, it was established that producers give indicative retail prices to their dealers. To ensure retail prices are maintained producers compensate dealers for transport costs by offering ex-factory price discounts depending on distance from the factory. Alongside this is the direct supply to especially large scale consumers, most of whom are construction companies. Cement is transported directly to construction sites where it is offloaded to mini silos which are usually installed at the construction site. This is feasible when consumption and production points are in close proximity. Sales to small scale private use by individuals usually are conducted through 50kg bags distributed through retail outlets.

3. Structure of the Cement Industry within and across the six countries

The cement industry is concentrated, reflecting the importance of scale economies and the substantial capital investment required. Production of clinker also requires access to raw materials which means locations are influenced by the availability of limestone deposits which can be exploited and the necessary mining licences and permissions to do so. Alternatively, the plant needs to be located on transport routes allowing the purchase of clinker.

Historically three companies, PPC, Lafarge and Holcim/Afrisam, have dominated the whole Southern African Customs Union which includes Botswana, Namibia and South Africa in this study, along with Lesotho and Swaziland. South Africa has a fourth smaller producer NPC-Cimpor, which used to be jointly controlled by the other three, while Namibia has a recent entrant, Ohorongo cement (Figure 3). Botswana has a very small local producer of clinker, MPC, and otherwise is reliant on imported clinker and cement. Moving north, in Zambia one producer, Lafarge, accounts for the great majority of production, Tanzania has three major producers associated with European multinationals - Tanzania Portland Cement (Heidelberg) and Tanga Cement Company (Holcim) on the coast and Mbeya Cement (Lafarge) in the west of the country close to the Zambia border. Maweni Cement (established by Kenya's Athi River Mining) started operations in 2012. In Kenya the cement sector has also been very concentrated with a few main producers led by Lafarge associated Bamburi and EAPCC (in which Lafarge also has a stake) and Athi River Mining.

Figure 3: Capacity by country and producer, 2012



Source: Compiled by researchers (see Appendix Table A1)

There have been major developments in recent years, with entrants being announced, investments being made, and some production starting to come on-stream in 2013 and 2014. These include:

- Dangote cement with investments in Tanzania, South Africa (in Sephaku cement which started production in 2014) and Zambia.
- Jidong Cement[4] is planning a major plant in South Africa
- Mombasa cement, National cement, Savannah Cement and Cemtech Sanghi Group in Kenya
- Lake cement in Tanzania

There are also a number of smaller producers, some who are effectively downstream processing, blending and distribution operations of larger operations in neighbouring countries. These entrants reflect the growing demand associated with infrastructure spending and high economic growth rates across the Southern and Eastern African region. The entry of new participants along with expansions of existing operations suggest attractive returns are perceived, consistent with relatively low competitive intensity to date. There is a range of issues related to entry, including being able to access raw materials and obtain the necessary approvals, as well as financing, as we discuss below.

The backgrounds of the entrants are also interesting as the industry has been dominated by firms with strong links to established players from Europe, along with South Africa's PPC. In recent years, entrants have included the Nigerian multinational Dangote and several Chinese companies. PPC has also looked to expand aggressively, possibly linked to the end

[4] http://usa.chinadaily.com.cn/epaper/2013-06/13/content_16616045.htm accessed October 2013.

of the cartel in the South African Customs Union (SACU). At the same time, the Government Employees Pension Fund (GEPF) of South Africa has looked to take equity stakes in a number of companies, as part of its investments across the continent in infrastructure related businesses.

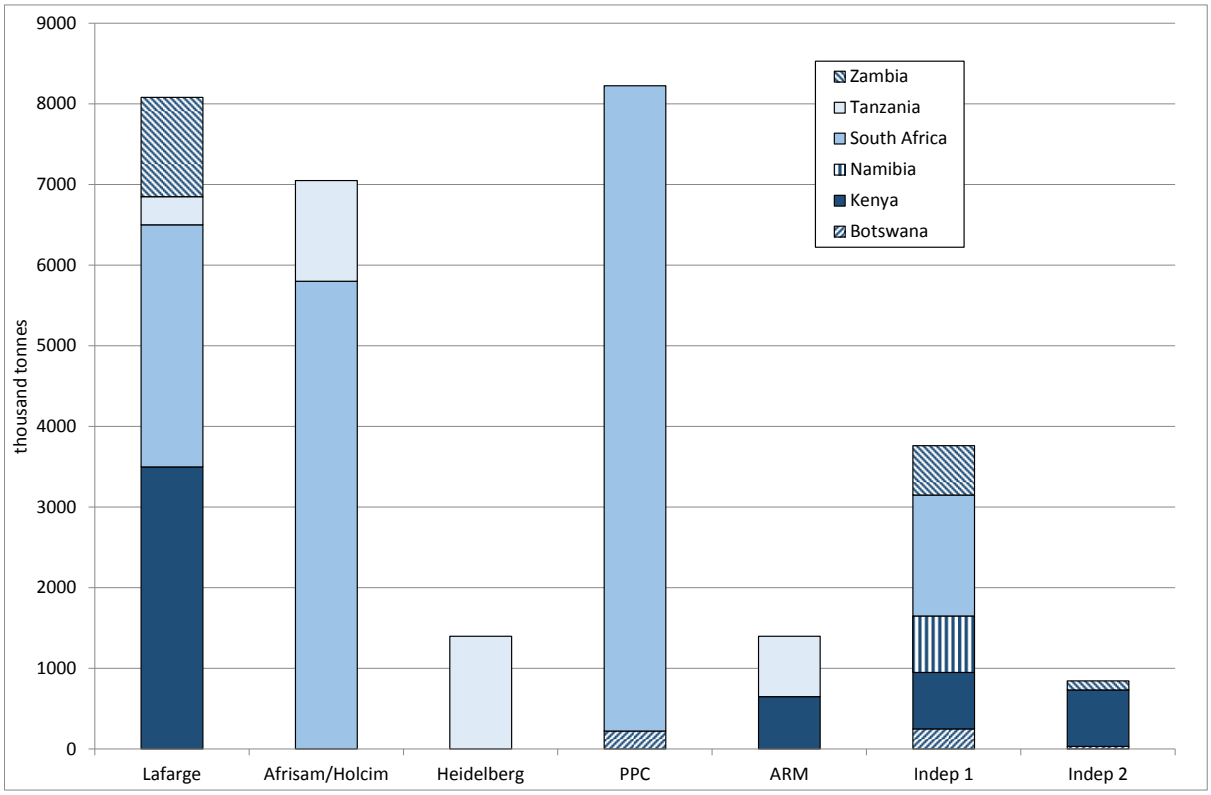
There is thus an important question as to what effect these entrants will have on prices across the countries studied. The cross-country comparisons here provide an indication of what might be expected from more competitive markets.

3.1 Main cement producers in each country, location and size of their operations

Within each of the six countries the cement markets have oligopolistic structures and a monopolistic structure in Namibia. While in Kenya there appears to be a relatively large number of producers, with eight if the planned entrants are included, some of these are very small and it is unclear what the impact of the entrants will be. This means the concentration is still very high with share of the largest three firms being close to 100% in 2012. In South Africa and Tanzania, the CR3 calculated based on 2012 capacities is around 90% while in all the other countries it is 100%.

Taking the six countries as a whole, Lafarge accounted for 26% of capacity in 2012, with PPC also accounting for 26%. These two leaders are followed by Afrisam with 22%, and then ARM, TPC (Heidelberg) and NPC each with 4-5% shares in the total. The South African cement producer PPC also has plants in Rwanda, Zimbabwe and Ethiopia (27% share in Habesha) countries which neighbour those in the study. Bamburi (Lafarge) has a substantial operation in Uganda (Hima cement) and in Zimbabwe. Interestingly when we compare the total capacities of the main producers across the six countries, the size of Lafarge, Afrisam/Holcim and PPC are quite close to each other, around 7mn to 8mn tonnes (Figure 4).

Figure 4: Capacity by producer and country, 2012



Source: Compiled by researchers (see Appendix Table A1)

Table 1: Actual cement production capacity and its utilisation (tpa), 2012

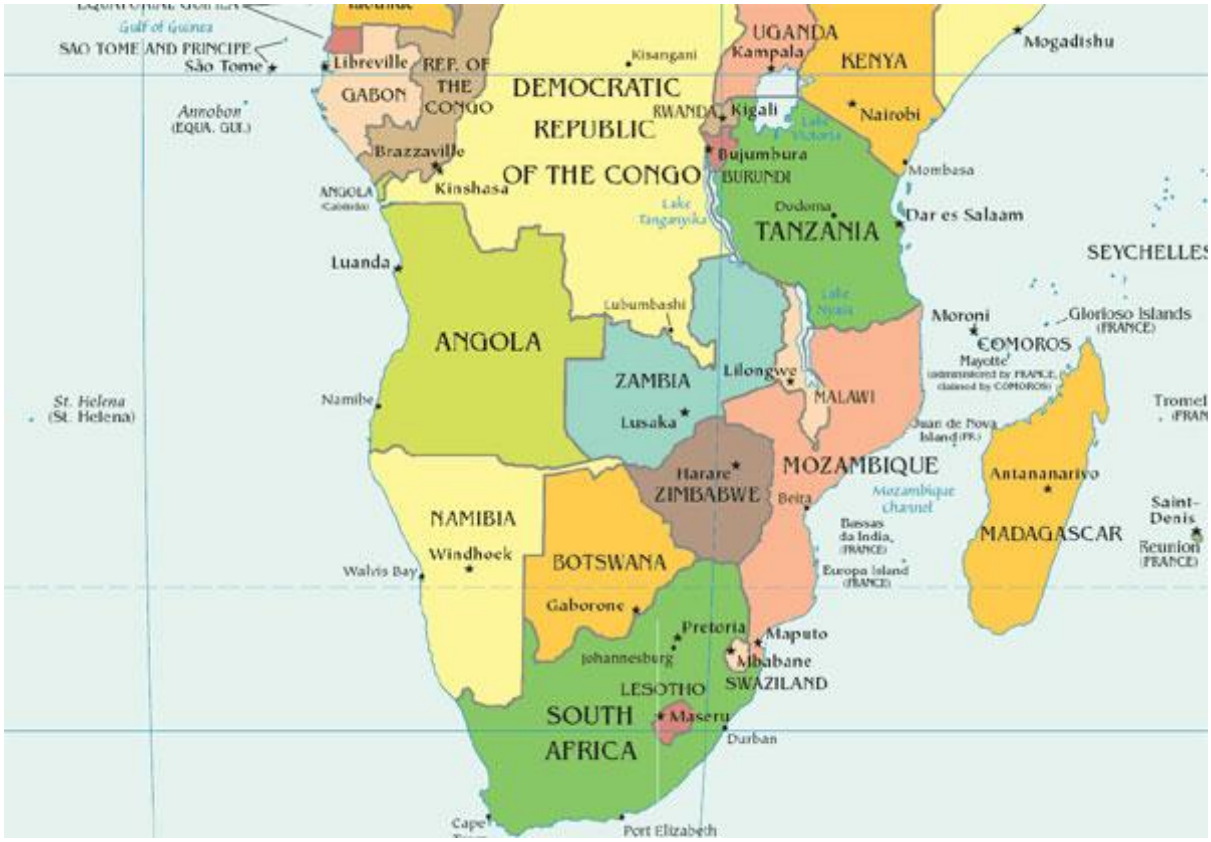
Country	Production capacity	Actual Production	% capacity utilisation	Per capita consumption
Botswana	510 000	366 570	72	0.18
Kenya	5 550 000	4 200 000	76	0.10
Namibia	700 000	501 000	72	0.24
South Africa	18 300 000	13 725 000	75	0.27
Tanzania	3 850 000	3 344 000	87	0.08
Zambia	1 951 500	1 617 417	83	0.12
		Average	77	0.17

Source: Compiled by researchers (see Appendix Table A1)

However, the location of plants is also important, taking borders into account. For example, while Mbeya Cement (Lafarge) is in Tanzania it is actually just across the border from Zambia, in which Lafarge also dominates, while being around 850km from Dar es Salaam, the main market. There are two producers on the coast of Tanzania, relatively close to each other - Tanga Cement is 350km from Dar es Salaam, where TPC is located. In Kenya, ARM, Bamburi and EAPCC are close to Nairobi, while Mombasa cement is 500km away in the port city of Mombasa, where ARM also has a second plant. In Zambia the plants are all around the capital Lusaka and the Copperbelt (main city of Ndola).

Ohorongo Cement is the sole cement producer in Namibia, commencing its operations in December 2010. It is located close to Otavi in the north of the country. Prior to the establishment of Ohorongo Cement, the Namibian cement market was supplied by the South African cement producer AfriSam, which covered 95 per cent of the Namibian market. A very large proportion of cement demand in Namibia comes from the greater Windhoek, Walvis Bay, Swakopmund and the northern parts of the country. These markets are all very distant (for example about 1 645 km in the case of Windhoek) from what was the source of cement, Afrisam's Ulco cement plant situated near Kimberley in the Northern Cape Province of South Africa.

Figure 5. Map of Southern, Central and Eastern Africa



3.2 Vertical integration and key inputs

There are critical inputs to the production and supply of cement, principally limestone required for the manufacture of clinker. However, it is possible to enter the market by first importing or buying in clinker and engaging in the processes of grinding, blending and bagging. This is much less capital intensive, but means higher costs. With clinker comprising about 95 per cent of the cost of inputs in cement manufacturing, it is normally important for companies to vertically integrate upstream, or have long term arrangements to secure inputs.

Not all companies in the six countries are integrated into limestone. Factors to be considered include the prevalence of limestone deposits, the ability to get mining licences, the alternative option of importing (proximity to port, link to multinational sources of clinker), and

the size of the demand to justify the scale of investment. For example, in Botswana there are limited limestone deposits, which is controlled only by MPC in its Matsiloje Quarry. Therefore, the other manufacturers have to source fly ash and clinker material from neighbouring countries. The available limestone is in small quantities which would not be enough for all the producers. In Tanzania and Kenya there have also continued to be imports of clinker despite there being available limestone deposits.

In Kenya, most of the cement manufacturers are vertically integrated. There are many limestone deposits and limestone mining is done in various parts of the country but more in the coastal region and the areas near Nairobi. The firms in the coast have clinker plants in the coastal region and have established grinding plants at Athi River (near Nairobi). Other firms, such as EAPCC and National Cement, have mining sites at Athi River where they have established both clinker and cement plants. Most of the cement companies own the land on which they mine limestone and a few (such as National Cement) mine limestone on leased land. There has also been use of imported clinker, and companies such as EAPCC are in the process of expanding their total clinker production so as to reduce costs on imported clinker. New entrants ideally establish both a clinker and a clinker grinding plant at the point of entry, which, however, requires a very high level of capital.

In Zambia the established producers are all vertically integrated. Lafarge Cement indicated that they are directly integrated into the following raw materials, namely limestone and shale, at their quarries and the rest of the raw materials are either acquired from other firms on the domestic market or imported from outside Zambia. For example, coal is locally produced from Mamba collieries and column coal mines in the southern province, gypsum from Chambishi mine on the Copperbelt province, and saw dust from Ndola city council, on the Copperbelt province. In terms of other raw materials such as bauxite, it is imported from Mozambique and when there is a shortage of coal locally, it is imported from Hwange, Zimbabwe. As for Scirocco Cement and Zambezi Portland Cement they are also vertically integrated into the input market. For example, Scirocco is the most integrated downstream into aggregates, block making and ready mix concrete.

In Namibia, Ohorongo Cement is directly involved in the extraction of limestone near its production plant situated not far from Otavi in northern Namibia. These are far from the sources of local demand around Windhoek, Walvis Bay and Swakopmund. The alternative has been to import from South Africa which has been done by Afrisam from their Ulco plant, some 1645km from Windhoek.

Each cement producer in Tanzania that produces clinker has its own source of limestone or pozolana, facilities for producing and grinding clinker. Further, one of the manufacturers uses its sister company for the distribution of cement and the other two operate their own distribution depots. Furthermore, all three cement producers in Tanzania use wholesalers to distribute their products. The wholesaler arrangement is such that costs of transport and the associated risks are solely the responsibility of the wholesalers/distributors.

In South Africa all the cement producers are vertically integrated, from the raw material inputs (such as limestone, fly-ash and slagment) to cement, aggregates and readymix concrete. Limestone is an important input into the cement manufacturing process and therefore it is important to have easy access to it and also in enough volumes. The new

entrant Sephaku Cement indicated that limestone is a very scarce resource in South Africa, but it managed to secure supplies from the mining firm Anglo American. Other limestone deposits are far from the main markets.

There are also questions of downstream integration. Cement producers sell through various intermediaries such as wholesalers and retailers, as well as into readymix and to cast concrete products manufacturers. It emerged from the South African cement cartel investigation that forward integration into readymix was used by the cement producers to divide the cement market by selling cement into each other's readymix concrete operations. The investigation also uncovered that the cement producers had planned to curtail the activities of cement blending firms that buy clinker from them for further processing into cement. They would however enter into vertical agreements to sell or grind clinker for each other as the primary cement producers.

3.3 Trade flows

Botswana and Namibia stand out as having been reliant on imports, whether of clinker and/or blended cement. In Namibia, the product was mainly supplied by Afrisam as part of the cartel arrangements, while Botswana was largely supplied by PPC. Important changes in recent years have been the setting up of the Ohorongo plant in Namibia and the supply by different producers into Botswana. In Namibia Ohorongo Cement supplies about 69 per cent of the market, with the remainder now being imported mainly from Asian countries. We examine the effects on prices below.

In other countries, imports have set the ceiling to the pricing power of local producers. At times local producers have lobbied governments for protection, arguing that the increased imports may kill the local industry. Ohorongo applied for infant industry protection to support its establishment although the tariff was not actually imposed.

Trade flows in the region also appear linked to production and location decisions by multinational producers. In the case of Kenya, a net trade surplus was maintained on cement over the period, with exports strong to the eastern African region. However, exports of cement to Uganda and Tanzania have been dropping since 2008, whilst exports to other countries increased. This appears to be linked to Kenyan cement firms establishing plants in these countries and expanding capacity of the existing ones. For example, Bamburi doubled its capacity at Hima plant in Uganda, whilst ARM established a subsidiary in Dar es Salaam.

South Africa has historically recorded a trade surplus but moved to a net deficit in 2005 to 2008 before returning to a positive trade balance once again in 2009. South Africa's major export destinations were mainly to Mozambique, Angola, Zimbabwe, the DRC and Zambia. These countries received exports from South Africa consistently in the period (with the exception of the DRC), who's prominence as an export destination became noticeable post 2007.

The majority of cement exports from South Africa were of ordinary Portland cement and not much for clinker. In addition, South Africa was a net exporter of limestone used in the manufacture of lime or cement for the period 2001-2011. The country's main export destinations for limestone were other Southern African Development Community (SADC)

member states. The DRC, Malawi, Mozambique, Zambia, and Zimbabwe, have consistently purchased limestone from South Africa during the period 2001-2011.[5] The SADC share of South Africa's limestone exports ranged from 16 per cent to 95 per cent for the same period, with the lowest exports in the region occurring in 2005.

With regards to imports, South Africa sourced cement mostly from Asia (Rep. of Korea, Pakistan, China, India and Indonesia) and the European Union (France and United Kingdom), with some coming from Zimbabwe and Brazil (the only African and South American import sources, respectively). The imports were mainly driven by cement clinker, which contributed 41% to the imports, and are likely to have been sourced from related firms.

Tanzania has consistently been a net importer from 2002 with the main sources of cement imports being from Pakistan. It is estimated that over 80 per cent of cement imports into Tanzania are from Pakistan (TRA, 2010). Tanzania exports cement mainly to economies in the region.

By comparison, Zambia has been a net exporter in all years, and substantially so for most of the decade from 2002. Imports are insignificant and are mainly at the border towns around the country. These imports come from some neighbouring countries and also from South Africa. Exports of cement by Zambian cement producers are mainly to the DRC, the great lakes region and Malawi. Moderate exports of clinker have been reported mainly by Lafarge to its sister company in Malawi.

In general, the trade flows taken together with the presence of common firms across the region support the need to analyse the market dynamics of the region more holistically.

4. Regulatory Environment and Industry Associations

4.1 The role of government

Government plays a significant role in the cement industries of the six countries that are under study, but not to the same extent in all the countries. For example, in some countries (such as Tanzania) the government has designated cement as a strategic commodity and investors receive preferential treatment and are guaranteed zero-rated import duty and VAT deferment on project capital goods, favourable investment capital allowances and deductions, recognition of private property and protection against any non-commercial risks. Investors are also guaranteed that they will be allowed to repatriate all profits, gains and dividends from investment after tax.[6]

In all the six countries there are significant regulatory hurdles to setting up a cement factory. These include conducting extensive environmental impact assessments, securing a mining licence for the mining of limestome, rezoning of the land to be used, complying with labour

[5] There was some limestone trade with Angola, but the trade was sporadic and the value of the trade was relatively small.
[6] TIC, 2010

legislation, immigration legislation in cases of foreign labour, amongst others. These regulatory requirements are considered much more daunting than for example securing finance for constructing the cement factory as they may take years and large amounts of money before the first brick is laid to build the factory. For example, in one case it took a new entrant 18 months to comply just with immigration legislation. The firm suggested that it would have been easier if all these regulatory requirements were centralised and handled by one government body.

4.2 Trade restrictions

Botswana, Namibia and South Africa (together with Lesotho and Swaziland) are members of the Southern African Customs Union (SACU), meaning that these countries can freely trade in cement with each other. There are however exceptions, such as Article 26 of the SACU Agreement of 2002, which affords certain industries infant industry protection for a period of about eight years. While the cement industry in Namibia was granted an infant industry protection in 2012, with an import duty of 60 per cent to be imposed until 2014 and reductions thereafter to 12 per cent in 2018, the process has been stalled by court challenges from the Namibian importers of cement.

Together with Botswana, Namibia and South Africa, Tanzania and Zambia are members of the Southern African Development Community (SADC), which has in total 15 member states. Again, this means free trade of cement between these countries.

Kenya and Tanzania are members of the East African Community (EAC) (which also includes Burundi, Rwanda and Uganda). Under an agreed EAC Protocol, cement was for a while considered a sensitive product to be treated differently from other products. It was agreed that imports of cement to the EAC would attract a 55 per cent common external tariff, to be decreased by 5 per cent annually to allow time for the EAC member states to accumulate efficiency necessary to sustain competition from outside the region. However, following unprecedented price increases in 2007, it was determined that the protection be waived to allow for imports, which eventually resulted in price stability. Notwithstanding the trade surplus in Kenya, it had an import duty on cement of 40 per cent, which was decreased to 25 per cent in 2008/2009.

Protection has been important in reducing the pressure from import competition from deep sea imports. However, if there had been vigorous competition within and across the countries studied here then deep sea imports would have played a less important role.

4.3 Industry associations

Industry associations are not part of government regulation but are typically important institutions of producers which engage government on the regulatory environment as well as lobbying for support. In addition to these roles, industry associations could be used to facilitate cartel conduct in a number of ways. Cartel meetings could be held under the auspices of the association. In addition, competition sensitive information can be shared by players in an industry, designed to increase transparency and therefore bring stability to a cartel arrangement. The information exchange arrangements in themselves could constitute a coordinated practice.

The role that can be played by industry associations was sharply illustrated by the cement cartel which operated across the whole of the Southern African Customs Union (SACU) comprising Botswana, Lesotho, Namibia, South Africa and Swaziland. The operation of the cartel was integrally tied-up with the Cement and Concrete Institute (C&CI), an industry association ostensibly responsible for advancing common industry concerns and not for colluding.

At the heart of the cartel was an agreement on market shares across SACU.[7] Each of the four producers provided detailed monthly data on sales disaggregated by geographic regions within SACU, by product specification, by end-use sector (customer category), and also covering imports of members. These data were then aggregated across the four producers by an audit firm appointed by the C&CI and this was provided back to the four producers. Each producer could then calculate on a monthly basis what its share was, across SACU, as well as tracking its share in different geographic regions and by different customer categories. In 2009 the South African Competition Commission stopped this information exchange (at least in its original form) after having conditionally granted PPC immunity from being prosecuted on 7 August 2009. This followed a search and seizure operation conducted by the South African Competition Commission on 24 June 2009. The C&CI has since closed its doors. We consider the effect on the market including on prices in more detail below.

Cement producers in Kenya and Tanzania belong to the East African Cement Producers Association (EACPA), which also includes producers from Burundi, Rwanda and Uganda. There are country chapters in each of the countries. Through their association, manufacturers have commissioned a research company to conduct studies related to technology and challenges facing the cement industry. One such study is to create a 'level playing field' for cement manufacturers. The study was commissioned to give manufacturers facts on cement market dynamics which was eventually used as tool to advocate their positions in different platforms including government bodies. According to the report the main challenges facing the industry include high energy cost, transportation costs, cheap imported cement, subsidized imported cement and under-declaration at the point of entry.

[7] For the details see Competition Commission South Africa press release of 11 November 2009 'PPC confesses to being part of a cement cartel and gets conditional leniency' and confirmation of consent agreement between Competition Commission and Afrisam (South Africa) Pty Ltd, confirmed on 16 November 2011 and available on www.comptrib.co.za

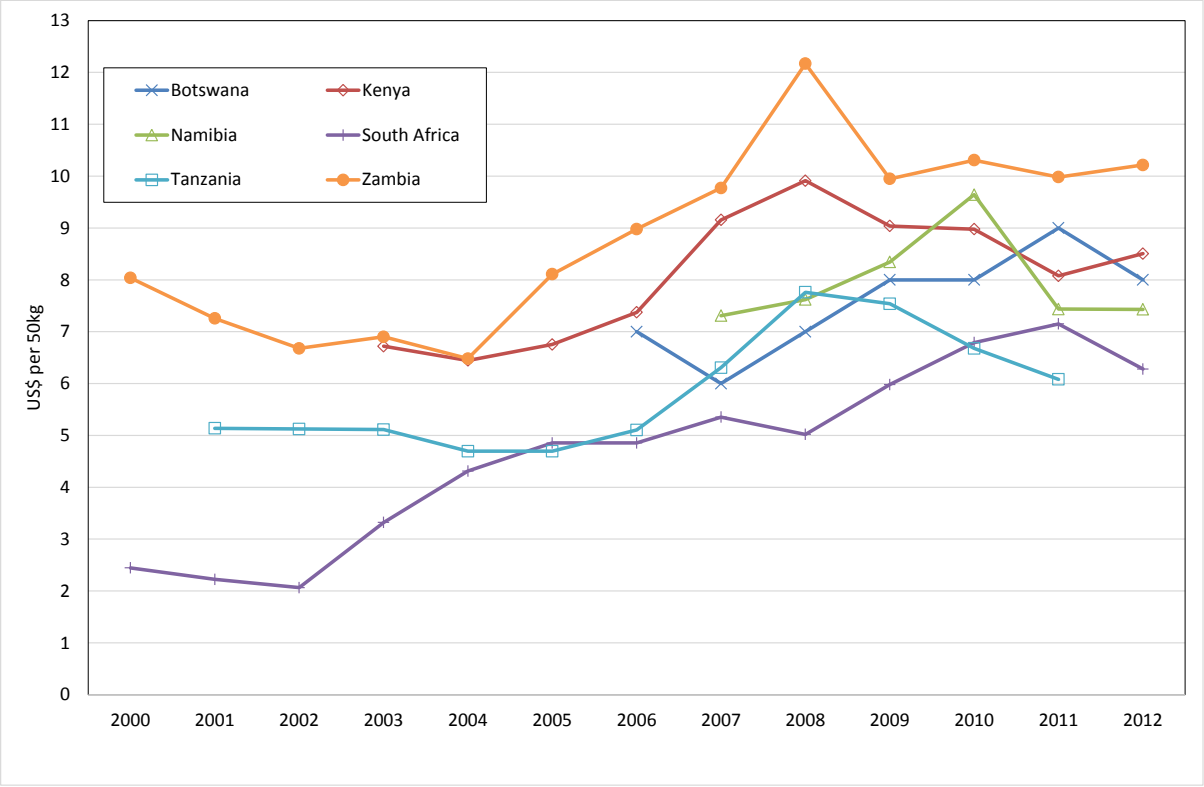
5. Cement Prices and Volumes

We first examine prices across the countries for which we convert into US$ as a common currency before drilling down into country by country, looking at monthly pricing trends in local currencies.

5.1 Price comparisons across countries

We compare the estimated average annual ex-factory cement prices in US dollars for a 50kg 32.5MPa strength cement in the six countries under study for the period 2000 to 2012 (Figure 6). Throughout the period, Zambia's prices have remained above those of the other countries, accelerating between 2004 and 2008, before stabilising at around US$10 a bag between 2009 and 2012. Kenya has the second highest prices for much of the period, although with somewhat of a gap opening up in the last two years and prices around $8.50 in 2012.[8] Prices in Tanzania appear to follow a similar trend to Kenya and Zambia, with which it shares important borders and transport corridors, however, the Tanzanian prices are substantially lower, especially in the most recent years for which we have data with prices falling to $6 in 2011.

Figure 6: Estimated ex-factory cement prices, 50kg bag, US$



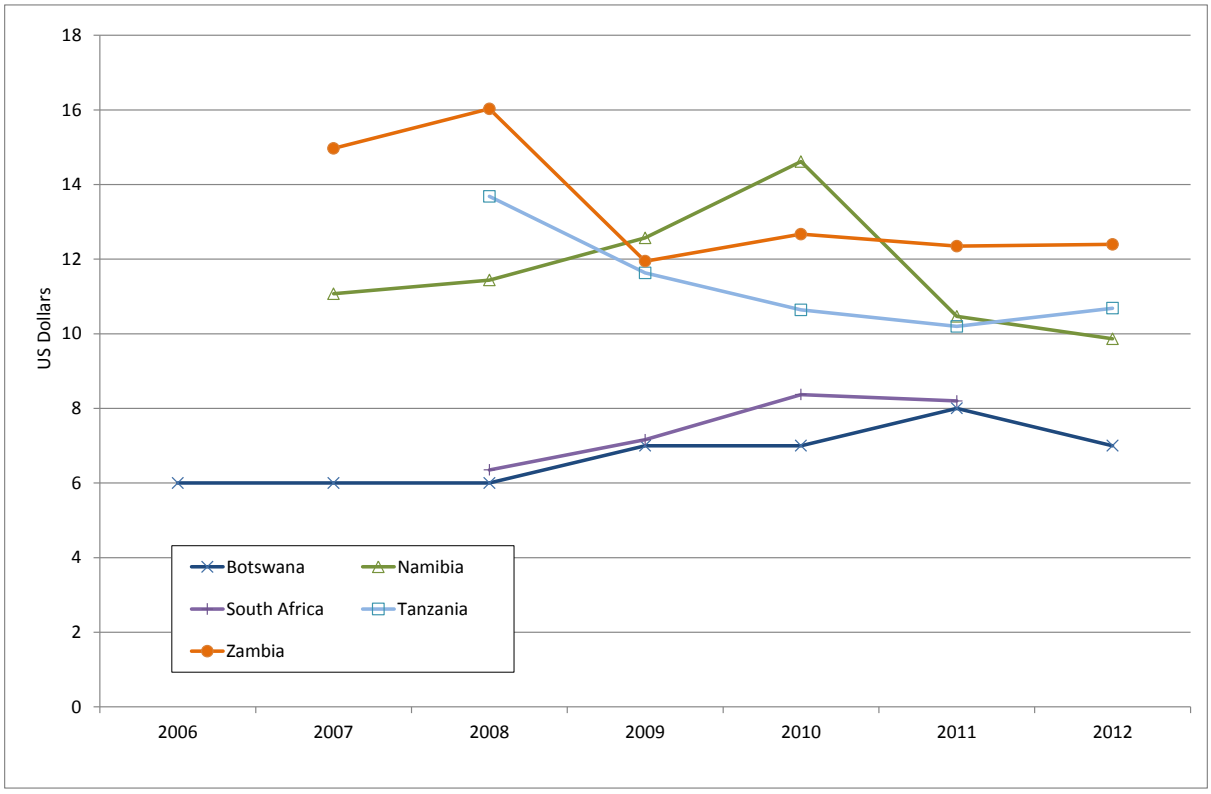
Sources: Averages computed by researchers from data from firms and national statistics. Note: Kenya and Tanzania data from respective National Bureau of Statistics (per tonne prices converted to per 50kg and thus exclude bagging costs). South Africa data for 2008 to 2012 was extended to earlier years using the producer price index for ordinary and extended cement. Calculated in US$ using average annual exchange rates.

[8] It should also be noted that the Kenyan prices have been calculated from per tonne prices and hence do not take into account bagging costs, which would possibly increase the prices further.

Turning to the Southern African Customs Union (SACU), the impact of the cartel in SACU appears evident in the sharp price increases from 2002 to 2005. This is also consistent with a strong increase in the margins of PPC as the largest producer from 20% to 40% in 2005, measured as operating profits out of turnover (see Figure 11, below). After the cartel from 2010, prices only fell in 2012, however, we consider the pricing in local currency terms in more detail, together with the way pricing change such as the offering of discounts and rebates. The Botswana prices track the South African prices, being marked up above these prices consistent with higher transport costs and the fact that the cartel effectively allocated the Botswana market to PPC.[9] By comparison the Namibia prices fell sharply in US$ terms in 2011, consistent with the start of operations by the new entrant Ohorongo, in December 2010. Based on comparison with South African prices (a mark-up from 2007-2010 of around $2 to $2.50), the new entrant brought benefits of some $2 lower prices (or around 25%), measured on an ex-factory basis.

In terms of retail prices, over the shorter period of time for which data has been compiled indicates that Zambia is most expensive apart from two years when Namibia is higher (Figure 7). It should be noted that in addition to retail margins being added, there are also transport costs to retail outlets around the countries where the prices are measured. This may explain why the retail prices in Namibia and Tanzania are higher by a greater margin than those in other countries. Somewhat confusingly the retail prices in Botswana are lower than the ex-factory prices in some years, such as 2006.

Figure 7: Estimated average retail cement prices, 50kg bag, US$



Sources: Surveys by authorities and researchers, including of large retailers in different countries.

[9] See Competition Commission South Africa press release of 11 November 2009 'PPC confesses to being part of a cement cartel and gets conditional leniency'.

In what follows we examine pricing and competition dynamics in more detail in SACU (in which Botswana, Namibia and South Africa fall) and then in Tanzania, Kenya and Zambia, taking account of the market structure and industry developments reviewed above.

5.2 The SACU cement cartel and after

The cement industry in South Africa had been run through a legal cartel dating back to the 1940s. Through various institutional arrangements including the company known as Cement Distributors (South Africa) (Pty) Ltd ("CDSA"), sales and distribution were centralised and planned across two large regions of the country, the Northern Region and Southern Region.[10] This involved fixing market shares, and balancing up actual deliveries against the stipulated market shares of the producers.

Pricing of cement was done using a model called the Twycross pricing model that optimised rail transport. This model used Lafarge's Lichtenburg plant as the base pricing point off which all sales in the CDSA market area were priced by adding the transport costs from the Twycross pricing model. Indeed, it was this very function that was notionally the raison d'être for the cartel: optimising the rail transport of cement so as to minimise the distribution cost of cement. This amounted to price fixing because it set a rule on delivered prices to customers.

The Competition Board of South Africa withdrew the exemption from competition law in 1995 and the companies were allowed until September 1996 to terminate the legal cartel arrangements. The time period allowed was due to the time required for the companies to establish their own sales, distribution, marketing and transport functions. Although apparently the companies agreed they would keep to the cartel market shares, this did not happen and competition broke out for around two years from the end of 1996. In particular, PPC which had the largest production capacity sought to expand its market share, competing for customers on price and non-price terms, and expanding their operations.

In 1998 all the cement producers showed poor financial performance due to the price competition, leading them to hold several preliminary meetings, in Port Shepstone in KwaZulu-Natal, to attempt to bring the market back to 'stability'. During these meetings PPC was accused by Lafarge and Afrisam of breaching the market share agreement, and spending too much money on promotions and the branding of its products, as well as discounting at a local and regional level. Among other things, these meetings resulted in agreement on pricing parameters for different types of cement and cartel members agreed not to offer special discounts on higher quality cement.

There was also an agreement to close certain offices and depots in some regions. For example, it was agreed that PPC would not compete in Northern Natal in exchange for Lafarge not competing with PPC in the Botswana market.[11] After the Port Shepstone agreement there were continued interactions about the implementation of the arrangements

[10] Confirmation of consent agreement between Competition Commission and Afrisam (South Africa) Pty Ltd, confirmed by Competition Tribunal on 16 November 2011 and available on www.comptrib.co.za.
[11] See Competition Commission South Africa press release of 11 November 2009 'PPC confesses to being part of a cement cartel and gets conditional leniency'.

through to at least 2002.[12] It is also important to note that the three producers, PPC, Lafarge and Holcim/Afrisam had shared ownership of two companies (called Ash Resources and Slagment) with control over inputs of fly ash and slag (used as extenders) as well as of a smaller regional cement producer, NPC. The companies thus had several forums in which they met, as well as tying up inputs so as to block possible entrants.

Nodal Pricing System

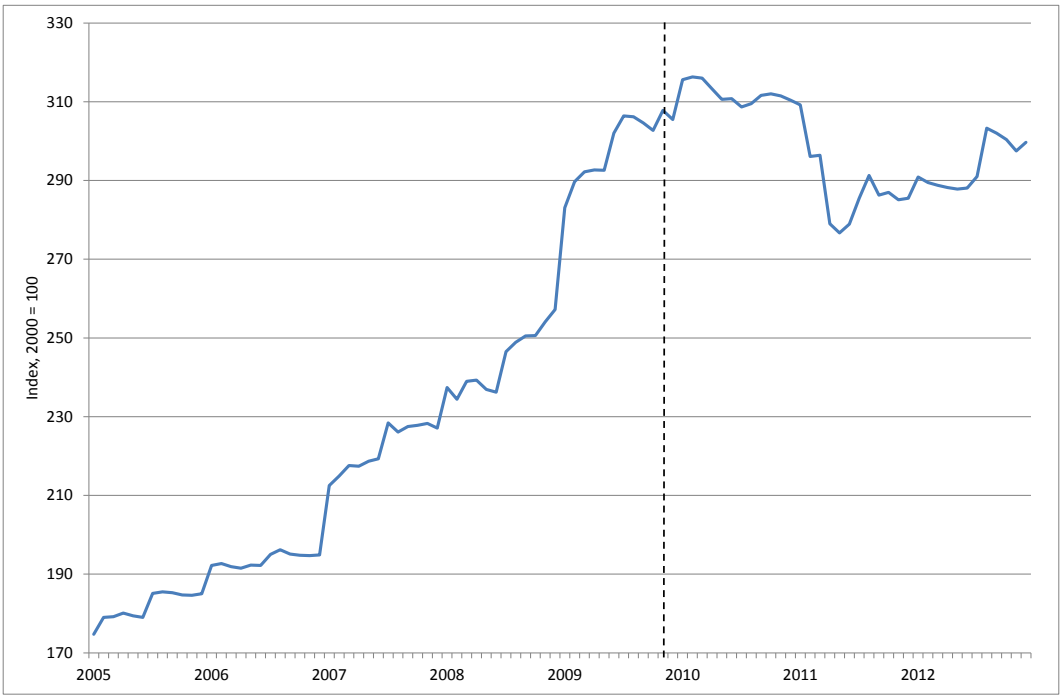
The price-monitoring also seems to have been augmented by a nodal pricing strategy adopted by PPC, Lafarge, and followed by others from 2001 onwards. The nodal pricing system meant that PPC committed to no discounting on prices (outside of fixed discounts on price lists), and that customers within a node were charged the same price. Prices were determined at executive level for 'nodes', which were geographic regions or zones of supply. Thus towns in any given node would pay the same price irrespective of distance from the core. Different nodal prices were calculated for different cement products and packaging options. As these were transparent to other producers it allowed them to follow.

The critical point is the role of information exchange on supply volumes and the understanding about market shares in ensuring prices were adhered to. The incentive to discount (or 'cheat' on the arrangement) exists because of the attraction of winning a larger share of the juicy profits, even with the slightly lower margin that would result from the secret discounting. The sales information meant that each firm could see if such a strategy was being followed by a rival and where and in what customer segment the discounting to win over customers was happening. This in turn means the other firms could retaliate meaning the increase in share would be short-lived and the incentive to cheat is greatly reduced.

The impact in terms of maintaining closely matched price increases, and firms sticking to the price, is evident in the producer price index data, which should reflect discounts if there were any (Figure 8). Instead, the 'step' price increases are readily observable indicating that the firms all increased their prices at the same time. The leniency agreement reached with PPC (and the exit of PPC from the arrangement) in August 2009 and the press release of the Commission regarding this in November 2009, is also closely linked to a change in the pricing pattern.

[12] Afrisam consent agreement, para 3.3.2 and 3.3.3. See also confirmation of Consent Agreement between the Competition Commission and Lafarge Industry South Africa, confirmed by Competition Tribunal on 28 March 2012, available on www.comptrib.co.za.

Figure 8: South Africa Producer Price Index for Ordinary & Extended Cement

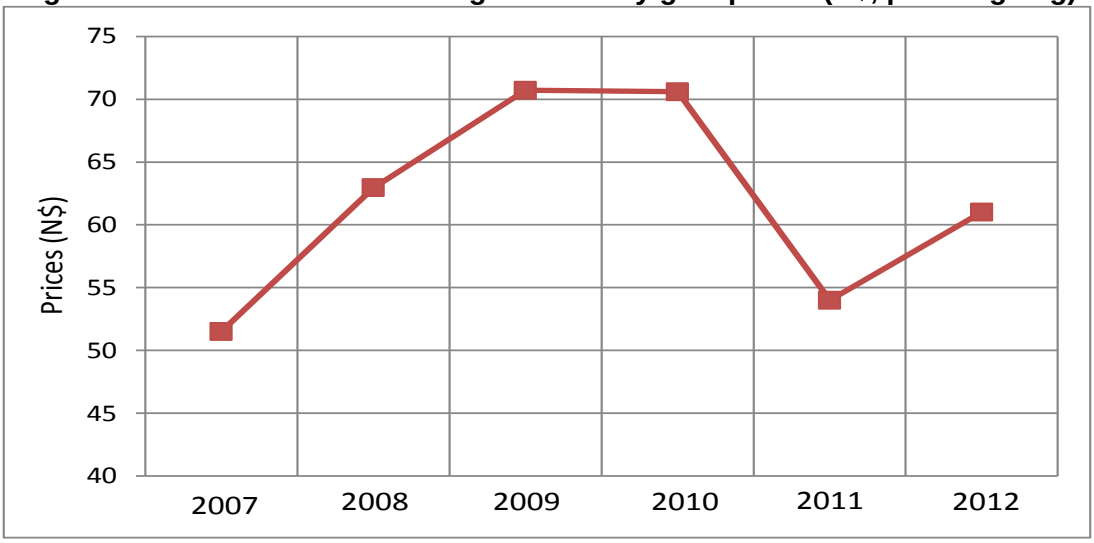


Source: Statistics South Africa

Note: dashed line denotes leniency agreement of PPC and its announcement meaning end of cartel

Namibia and Botswana share the common features of the cartel having largely allocated each country to one supplier, and of not having local integrated production capacity of any significance. In the case of Namibia, Afrisam was the supplier, while Botswana was supplied by PPC. In each country the end of the cartel has meant the entry of other suppliers. In particular, Lafarge has actively supplied into each in recent years and there appears to have been some variation in pricing. However, there is an important difference in that Namibia has seen the entry of Ohorongo. The start of operations of Ohorongo saw a substantial reduction of price in 2011 in nominal local currency terms (Figure 9), as well as relative to other countries as indicated above.

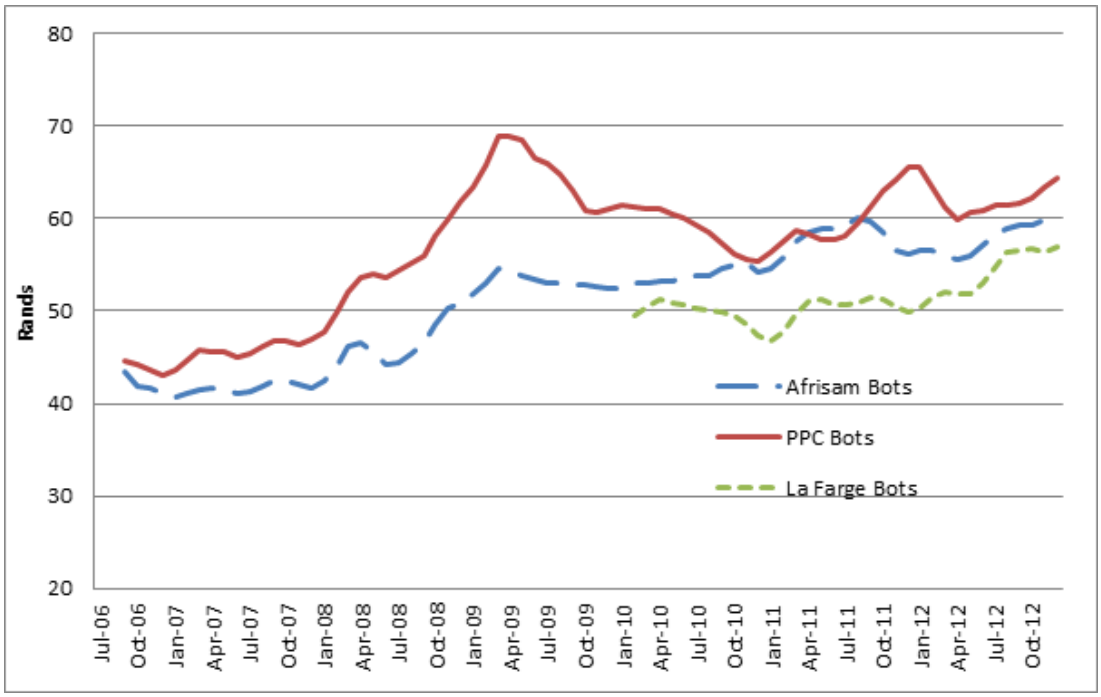
Figure 9: Namibian annual average ex-factory gate prices (N$, per 50kg bag)



Source: Major retailer/Ohorongo Cement

While Botswana did not experience such a price reduction, the end of the cartel brought more meaningful competition from other suppliers. Data from a major South African based building materials retailer that has branches in other southern African countries, including Botswana and Namibia reveals that PPC had the highest prices. As indicated, while Afrisam may have registered lower prices in some stores (possibly on the Namibia border) it did not offer volumes such that PPC effectively set the price. However, in 2009 and 2010, PPC's prices dropped to meet Afrisam's indicating effective competition from Afrisam supply into the country (Figure 10). In addition, Lafarge entered Botswana in December 2009, with lower prices.

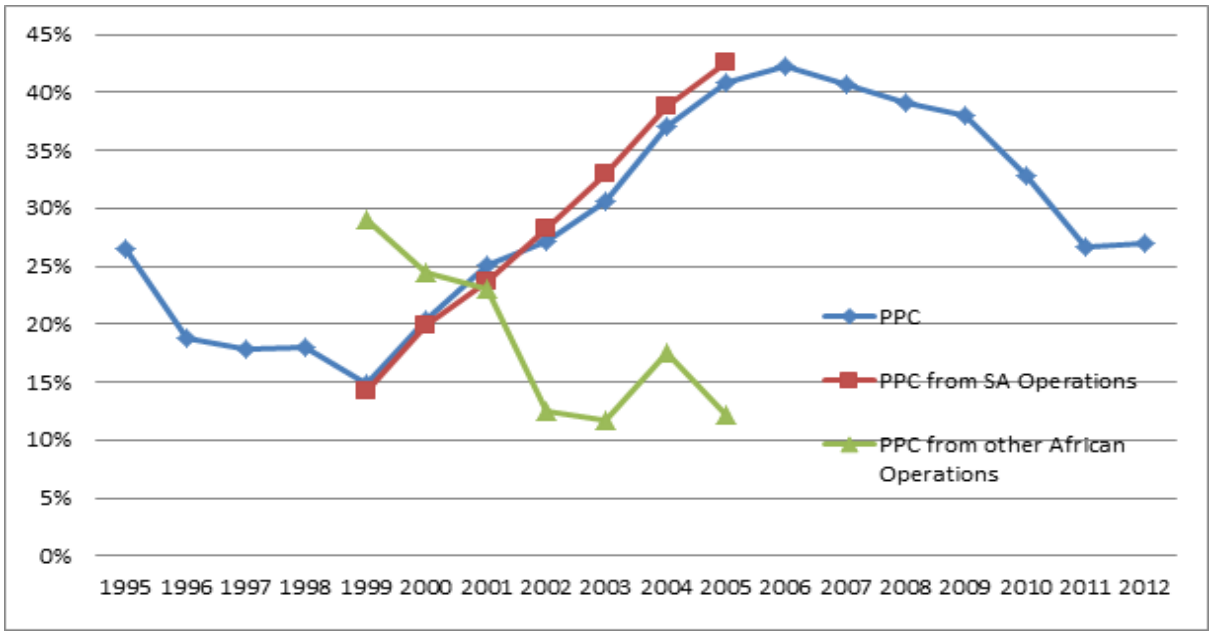
Figure 10: Prices to major retailers in Botswana for bagged cement (3-mma)



Source: Various retail stores in Botswana

Information on profit margins for PPC, the only producer listed, is consistent with the impact of the cartel. Margins measured simply by operating profit as a percentage of revenue reveal a declining trend from 1995 to 1999 after which a strong recovery is witnessed until 2006 (Figure 11). At this point, the margins are in excess of 40%. The decline from 1995 to 1999 coincides with the period of price wars in the South African cement industry following the termination of the legal cartel in 1996. The recovery from 1999 also coincides with the subsequent illegal cartel agreement between cement producers in 1998. A further sharp decline is seen from 2009 till 2011, where the margin reached 27%. The available data also reveals that margins from the South African cement operations are in line with the overall margin reflecting the dominance of the South African business in the total. Margins from other African operations, however, show a contrasting trend. These operations were very small at the time and included the PPC plant in Zimbabwe. Sales into Botswana were essentially made from South Africa meaning the transfer price would influence the margin made.

Figure 11: PPC's margins from cement operations (% operating profit of turnover)



Source: Authors calculation based on data from various annual financial reports

5.3 Market dynamics and pricing in Kenya, Tanzania and Zambia

Kenya and Tanzania both have tight oligopolies with two to three major producers. There's also overlap between them in that Lafarge and more recently Athi River Mining operate in each country. Tanzania has Tanzania Portland Cement (Heidelberg) and Tanga Cement which both have more than one million tonnes of capacity while Kenya has Mombasa Cement, National Cement and Savannah Cement, each slightly smaller.

Kenya and Tanzania are both members of the East African Community (EAC) which has identified cement as a sensitive product and had imposed a 55% external tariff. This was removed in 2007 but, while in force, meant that competition within the EAC was even more important in determining prices as the external tariff effectively increased the limit to the exertion of market power that is provided by deep sea cement imports. There is also an industry organisation that covers the whole of the EAC, the East African Cement Producers Association.

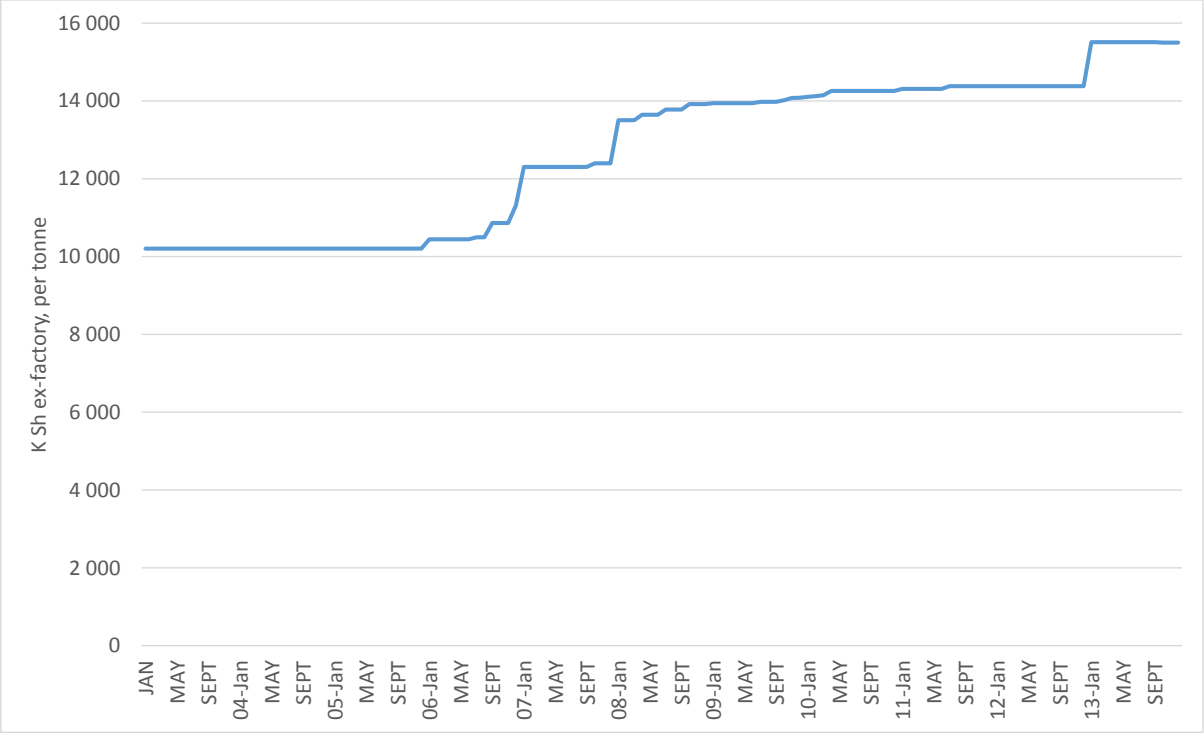
Comparisons of prices between the countries at the producer level (ex-factory) indicate that Kenyan prices have been substantially higher than Tanzanian prices. There are a number of possible reasons for this, as we discuss, before considering the Zambian situation.

In Kenya there have been, and remain, cross-shareholdings between the major producers. Lafage's Bamburi business, the largest producer in the region with 2.2mn tonnes of capacity, continues to have cross-shareholdings with the East African Portland Cement Company (EAPCC) in which the government of Kenya through different entities holds the controlling interest. Bamburi also held a 14% interest in Athi River Mining (ARM), although this is no

longer the case after it divested in 2009.[13] Cross-shareholdings such as these are widely recognised to dampen competition. They assist in reaching a common understanding (including through directors) and mean a presumption of an agreement in some jurisdictions.[14] Even passive shareholdings change the incentives to set prices as some of the earnings from sales diverted to a rival are now internalised.

Another difference between Kenya and Tanzania is that Kenya had a national tariff of 40%, reduced to 25% in 2008/09. As illustrated below, Kenya prices at the ex-factory level have continued to increase in local currency terms, with substantial increases of around 40% from 2006 to 2008 (Figure 12).

Figure 12: Kenya cement prices (Kenyan Shillings per tonne)



Source: Kenya National Bureau of Statistics

Kenya has seen new entry, but has this made a difference? The entrants include Mombasa Cement which entered in 2009 and National Cement which commissioned its plant in June 2011.[15] Mombasa Cement, has the backing of Taiheiyo Cement Corporation, the largest cement producer in Japan, while National Cement is associated with Devki Steel. Both are committed to expanding output and are integrated back into clinker. While newspaper reports have suggested lower prices being offered by the entrants,[16] the official statistics indicate only that nominal price increases have been negligible from mid-2008 through to late 2012.

[13] It still holds a small shareholding of some 3% but no longer has a director. http://www.reuters.com/article/2009/10/21/bamburi-athiriver-idUSLL19772920091021

[14] See, for example, the rebuttable presumption in s21(5) of the Competition Act of Kenya of 2009 and s4(2) of the South African Competition Act of 1998.

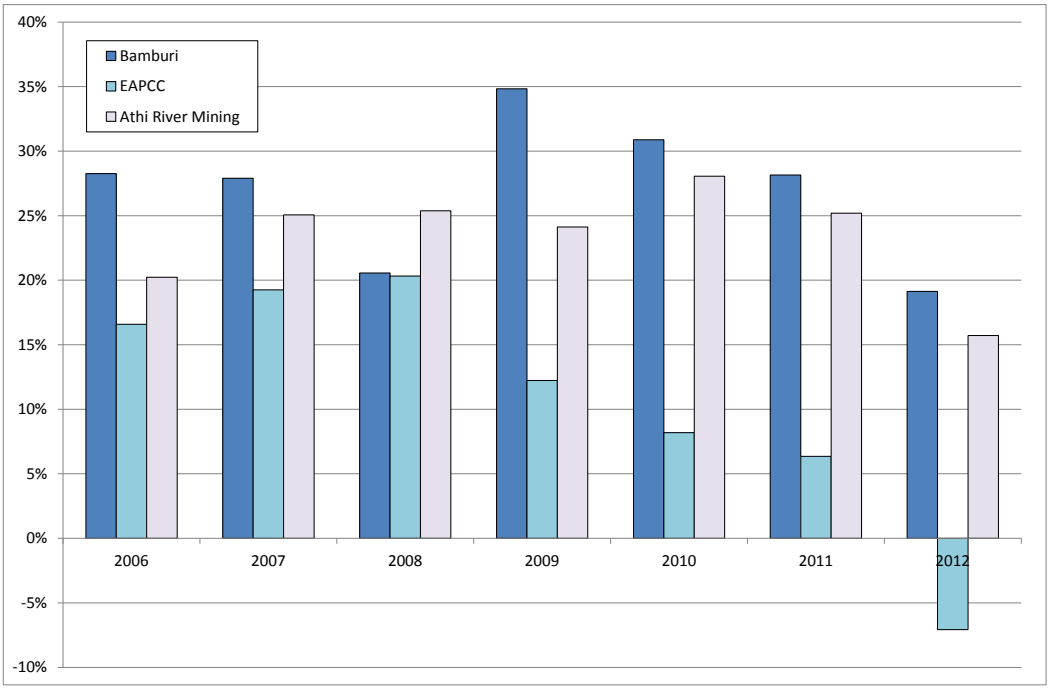
[15] The other entrant, Savannah Cement, apparently operates in an Export Processing Zone and is restricted from selling more than 20% into the EAC market. See http://www.theeastafrican.co.ke/business/Why-cement-companies-are-kicking-up-dust-over-Savannah/-/2560/1913490/-/14d7r8u/-/index.html

[16] See, for example, *The East African* 'New players changing the game in cement industry', 12 June 2011.

A comparison with South African prices also suggests somewhat improved outcomes. Ex-factory prices in Kenya had been more than 50% higher than the South African prices from 2003 to 2009 (and note the South African prices are already those pertaining under an admitted cartel). Over 2010 to 2012, the difference has reduced such that Kenyan prices have been around 25% higher than the South African prices, and this period also coincides with the end of the southern African cartel indicating that the South African prices were being set competitively.

The operating margins of listed companies provide some support for more competitive outcomes being realised from 2010. The largest producer, Bamburi, has continued to record strong margins but these have been reducing from the peak in 2009 (Figure 13). EAPCC's margins have been consistently lower than other firms but it relies on imported clinker and is widely reported to have old equipment and low efficiency levels.

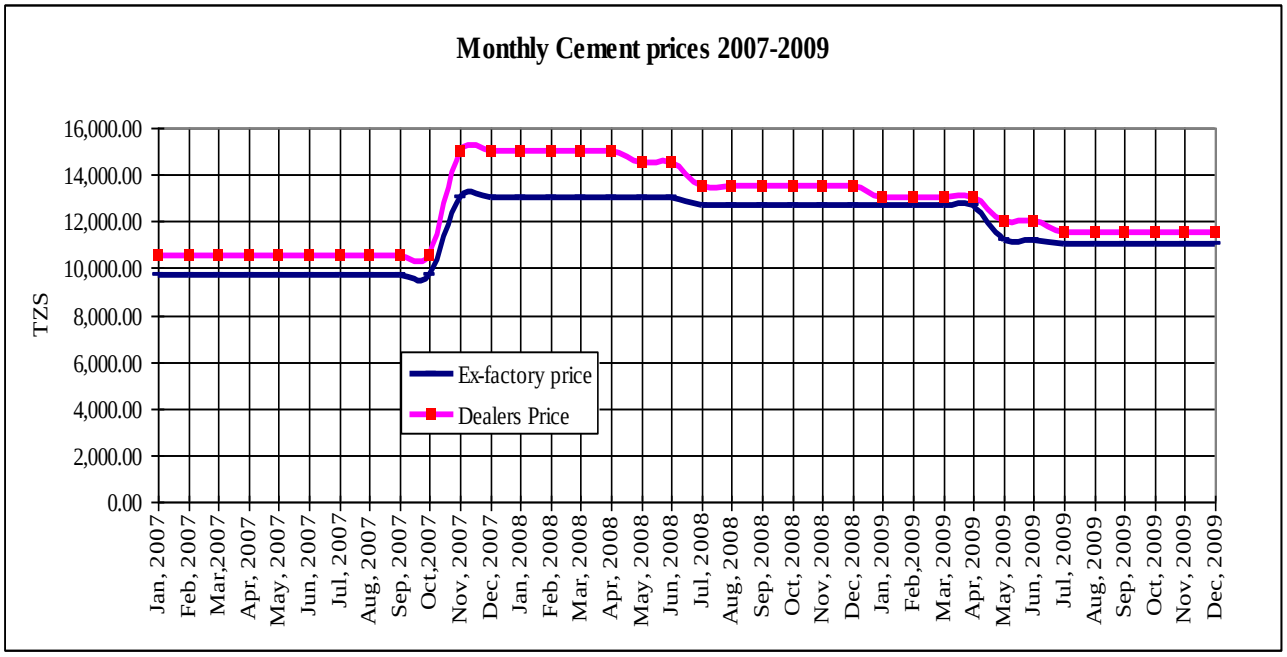
Figure 13: Operating profit margins, Kenya, percent of sales revenue



Source: published financial results of companies

In Tanzania, in 2007 the cement price increased significantly, by more than 30% in both local currency and in US dollar terms (Figure 6 above, and Figure 14 below). The Government of Tanzania initiated two interventions to curb the soaring cement prices. The first measure was undertaken in 2007 whereby importation within East Africa Community (EAC) was allowed at zero tariff. The intervention did not work as the prices remained at peak. The second was in 2008 whereby the Government allowed the importation of cement from outside EAC by removing the suspended duty. This led to reductions in both the ex-factory price and the dealers price (Figure 14). As reflected above, in US dollar terms, the Tanzania price in 2011 was the lowest of all the countries being studied.

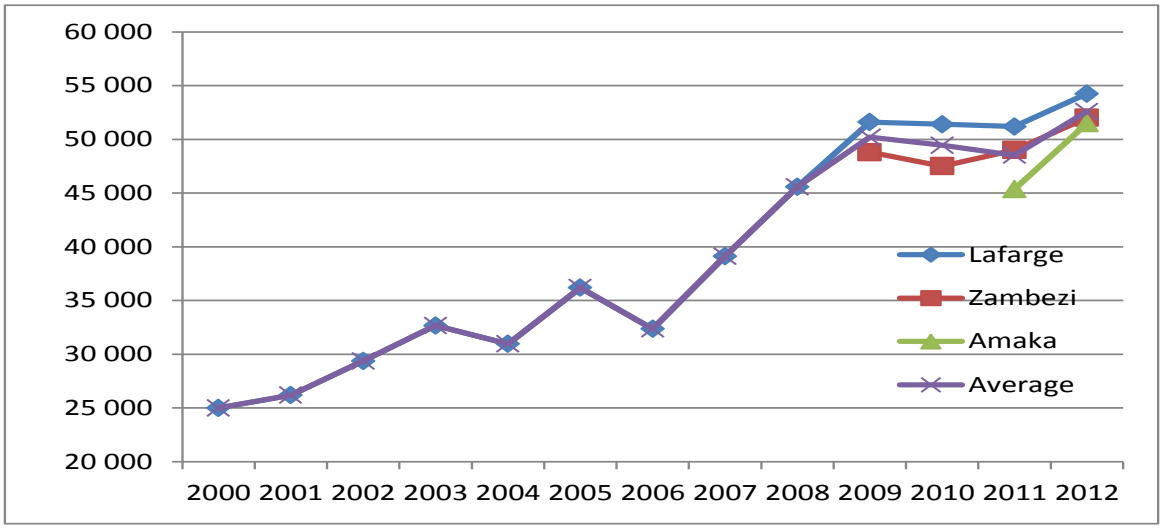
Figure 14: Cement prices before and after government interventions



Source: FCC, 2010

The manufacturers had claimed that the hike in prices was a result of profiteering by unscrupulous traders coupled with a supply-demand mismatch due to internal production capacity constraints. There are also questions about the pricing to different distributors depending on the distance of the market from factory. On average producers give a discount of US$23/km per tonne which is built in ex-factory price. Thus, manufacturers give ex-factory prices depending on the distributors' location, implying higher ex-factory prices to those close to the factory.

Figure 15: Zambia ex-factory price trend for the three players in the sector (Kwacha)



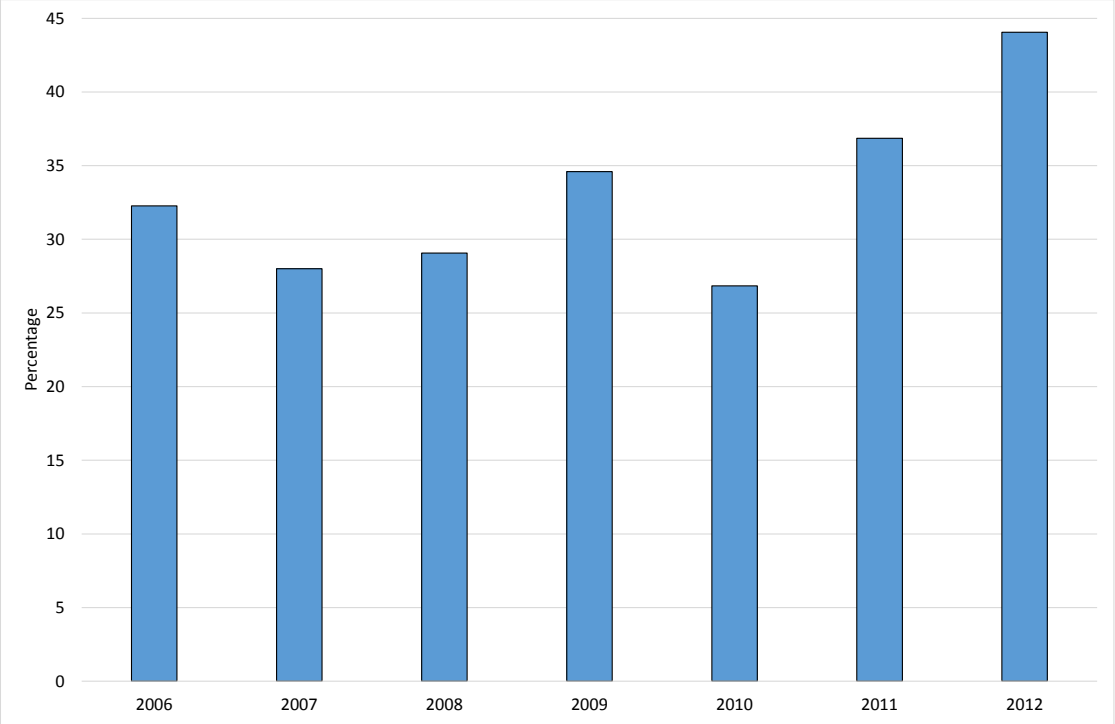
In Zambia the market structure has been of a monopoly producer from 1949 to 2005, namely Lafarge Zambia. In 2005, Scirocco enterprises limited entered the market and the price of the dominant player dropped slightly the following year (Figure 15) even though the competition offered by Scirocco enterprises was insignificant owing to its limited production

capacity. In 2009, Zambezi Portland cement entered the market and the prices dropped slightly in the following year, however, returning to the upward trend thereafter. The international comparisons show Zambian ex-factory prices are substantially higher than in other countries over the period, and at times close to double those in South Africa, the lowest priced country.

The entry of the two cement firms in the market has not appeared to offer significant or effective price competition against Lafarge cement. This is unsurprising as the companies are small and Lafarge continues to have substantially more than 60% of the local capacity. Zambia has also sustained high prices while being a substantial net exporter. This suggests increased volumes could be directed to the local market but instead is being sold into export markets, possibly at lower returns given the transport costs involved. In 2011 and 2012, the export prices were 12.4% and 7.2% (respectively) lower than the domestic prices of the standard 32.5 strength bagged cement.

Margins of the main producer Lafarge have been strong (Figure 16). Examining average revenue from local and export markets suggests the prices are similar. However, distribution expenses are recorded separately which indicates that if exports on average involve greater transport costs then the net prices are lower on an ex-factory basis.

Figure 16: Lafarge Zambia, Profit before tax, % of turnover



Source: Lafarge Cement Zambia Annual Reports

In addition, despite having excess capacity and apparently very healthy margins Lafarge Zambia has historically only exported to DRC, Burundi and, mainly in later years, into Malawi (where it has a sister company). In other words, exports have only been to countries without local established cement producers. There are no exports to neighbouring countries such as Tanzania, Botswana, Namibia and Zimbabwe where companies associated with Lafarge, PPC and Afrisam/Holcim have operated.

6. Competition Issues in the Six Countries

The assessment of market dynamics and outcomes made above indicates the importance of entry in bringing increased competition into a market as well as understanding the behaviour of the firms in the market and whether they are competing, coordinating or if there is unilateral pricing power. In addition, trade protection means that competition which could be operating across borders is restricted, with possibly substantial negative consequences for users of cement.

6.1 Barriers to entry

In order to understand the barriers to entry to an industry it is appropriate to understand what it takes for a firm not only to enter a particular market but to be able to grow to the point of posing a credible threat to the existing firms. Barriers to entry and expansion broadly differentiate between those that arise due to the intrinsic nature of the products and activities in question (and which can be viewed as exogenous to the decisions of existing firms), and those which are associated with the existing firm's conduct which may result from strategic decisions by the incumbent firms.

Across the countries the capital-intensive nature of cement and scale economies relative to the size of local demand is a deterrent to entry. A minimum efficient 'world-scale' cement producing plant is approximately 2.5 million tons per annum, with start-up costs of approximately R3 billion or US$300mn. Having said this, several new entrants such as Cemtech in Kenya and Jidong in South Africa are planning plants around 1mn tonnes initially. The capital investment costs are substantially higher in such cases on a per tonne basis, but there is also the possibility for major expansions to be made if this is planned at the design stage. The scale economies are more significant in small economies such as Namibia and Botswana. Securing limestone, as a critical input to clinker production, further means locating an appropriate source and negotiating the necessary rights and permissions for its mining.[17] This also depends on the government stance to new investment. In Namibia the government is eager and open to investment opportunities, minimising the regulatory obstacles. The source of limestone may, however, not be close to the main area of demand. Botswana has similar challenges.

The inland region in South Africa has the highest demand for cement and there are no accessible limestone reserves for potential entrants. It is understood that to be a credible player in the cement industry it is crucial to have access to your own limestone reserves. There are limestone reserves available in the North West and Limpopo Provinces where Sephaku and Jidong respectively are erecting new plants. It took Sephaku Cement approximately two years to secure the mining rights, water and environmental licenses. The company is in the process of entering the market for cement production in South Africa. The decision to enter the market was taken in 2007 and cement production is expected to commence in February 2014. The decision to enter was influenced by Sephaku Cement's

[17] Approximately 1.5 tonnes of limestone is required to produce 1 tonne of cement.

acquisition of limestone reserves from Anglo American in 2006 as a consequence of the use-it-or-lose-it minerals principle adopted by government.

Sephaku Cement then secured its first limestone mining right in the financial year ending February 2009.[18] The initial production will be produced on a single kiln clinker line in Aganang, near Lichtenburg in the NorthWest province with a clinker capacity of 2.5mt per annum. This will be produced into cement at both Aganang and at a plant in Delmas, in Mpumalanga, using extenders secured by Sephaku Cement through a long term agreement with Eskom for fly ash. In the minimum then it will have taken 6 years and a few months between acquiring limestone reserves and the first production of cement by Sephaku Cement. This long period can be attributed to a number of factors including, regulation and securing investors. The required regulatory approval alone took approximately two years. This was however happening at the same time as securing investments. The design and construction of the plants commenced from the end of 2010 and has taken approximately 3 years. The entry of Sephaku Cement shows that, even when scarce limestone deposits are available, it takes a significant investment and time period before the first output of cement is produced.

In Botswana the main barriers to entry and expansion are those of availability and access to main inputs which are fly ash and clinker material. One of the vertically integrated cement firms in Botswana is Matsiloje Portland Cement (MPC). With new entrants most beginning their cement production process at the grinding and blending stages, they currently find that their capital requirements are high due to the need for importing clinker, which is more expensive than those locally produced. Therefore in order to cease the advantage of vertical integration cement producers and new entrants are forced to establish both a clinker and a cement plant at the point of entry, which requires a very high level of capital, which may create a barrier to new entry.

In addition to the capital investment required and securing sources of key inputs, other barriers that have been highlighted in Zambia include high cost of freight and poor infrastructure such as poor condition of roads and railways and erratic power supply. The existence of these barriers to entry into the cement sector in Zambia however, has not stopped firms from entering the market although the entrants to date are small. This should change in mid-2014 when the major investment being made by Dangote at Ndola is due to come on-stream. As with Dangote's Sephaku investment, this has taken long to plan and bring to fruition with extensive regulatory hurdles having to be overcome. The construction of the US$400 mn plant started in July 2011 and is expected to produce its first bag around mid-2014.

Dangote also has a cement plant being constructed in the south of Tanzania, at Mtwara where there have been large discoveries of natural gas. This expansion can be compared with the expansion of PPC beyond its traditional markets in SACU and Zimbabwe. PPC has focused more on acquisitions, including plants in Rwanda and Ethiopia, along with investments in new facilities across Southern and East Africa.

[18] See Sephaku Holding's Financial Statements for the 2009 financial year accessed at http://www.sephakuholdings.co.za/investors.html

In Tanzania and Kenya the access to deep-sea imported cement has seen lobbying for protection by incumbents through the EACPA. The joint effort through EACPA was, and is still, to see cement reinstated after its sensitive status at the EAC level was waived in 2008. Kenya has imposed national duties, while Tanzania has not. After the introduction of imports in Tanzania there have been allegations that imports are subsidized, substandard and duties are not properly paid. According to the Tanzania Bureau of Standards, all cement imports are subject to standard verifications and as far as the bureau is concerned, all imports in the market have passed required standards otherwise it would not be allowed. There is opinion from the general public that since introduction of imports, domestic manufacturers have found it difficult to raise price as compared to the period before.

6.2 Competition law concerns by country and regionally

The most obvious competition matter in recent years has been the uncovering of the cartel across the SACU region. A number of lessons can be drawn from the operation of the cartel. First, at the heart of the arrangements was market division and information exchange through the industry association. This effectively removed price competition, as the commitment by the major producer to a pricing structure meant other producers could readily align their prices to it while the market sharing meant there was no incentive to discount. Second, the arrangements worked across countries for SACU as a whole. This meant that taking any country individually the stability in shares was not as clear, and in some countries the cartel arrangements rather appeared as unilateral market power as there was effectively only one supplier.

Third, the cement companies had a history of vertical and horizontal relationships which reinforced their position. These included jointly tying-up critical supplies of extender materials such as fly ash and slag, while also having joint shareholding in the smaller regional producer, NPC-Cimpor. With the advent of the Competition Act the companies had actually made changes to several of these arrangements, such as divesting from NPC around 2004, and changing the ownership of the inputs supply companies to one company, with supply agreements with the others.

Fourth, the companies were well aware of competition law risks having previously had an exemption. The industry was also subject to the first (and unsuccessful) search and seizure operation of the newly formed Competition Commission in August 2000. Several of the producers (Lafarge, Heidelberg and Holcim) in the region have been found guilty several times of cartel conduct in other jurisdictions, over decades.[19]

Arrangements in the East African Community and the operations of the East African Cement Producers Association (EACPA) point to similar competition concerns. Companies appear to export into certain countries and not others. While Zambia is not in the EAC or SACU, there are also questions raised about the exports to Burundi and DRC, and not to other countries, and the lack of imports from neighbouring countries, such as Zimbabwe (where the main two producers are Lafarge and PPC). What appears to be unilateral pricing power when one stands close up may appear to be the result of coordination, or at least oligopoly interaction, when one stands further away. This must also be understood over time, as supply capacity

[19] Hüschelrath et al. (2013) for a discussion of the most recent German cartel, in which all three were involved.

results from investment decisions. The existence of significant scale economies makes competition across the region even more important as otherwise there will be national monopolies or tight oligopolies, moreover the closest plant for some regions of the country may be across a national border (as with the east of Zambia, being close to Mbeya in Tanzania). However, the plant in Mbeya is owned by Lafarge and is unlikely to compete with the Lafarge operations in Ndola and Lusaka. This begs the question about why the location of plants is as it is.

In Kenya, one firm, Lafarge (and the business it controls, Bamburi Cement), had shareholdings across all three of the producers. While it subsequently divested from one of them (ARM), it retains a substantial stake in the other, EAPCC. The fact that Lafarge has a stake in EAPCC which allows it to appoint two board members, which is a concern because then the company has access to their strategy and that may reduce competition. The local market has also been protected by tariffs, despite Kenya being a net exporter and having good resources for cement manufacture.

In Tanzania, the cement market is divided into three parts according to geographical location of producers (in Tanga, Mbeya and Dar es Salaam). However, the Dar es Salaam market is shared by all producers and importers. The price information gathered from distributors, depots, wholesalers and surveys revealed that prices in Dar es Salaam were the same for all producers. When the Dar es Salaam prices were compared to where the other firms are located, it was found that price at their local market is higher than the price charged at the Dar es Salaam market, which suggests limited competition in local markets. These distributors then sell to retailers, block layers and other end users. Distributors have limited influence on the prevailing market price as they are usually given an indicative price by the manufacturer.

In Botswana, MPC has access to the available and limited limestone in Matsiloje Quarry while other manufacturers have to source fly ash and clinker material from neighbouring countries. The available limestone is in small quantities which would not be enough for all the producers. Currently the available fly ash in Morupule Colliery Mine is given on contractual basis making it difficult for other cement players to source it. The agreement in place only allows PPC Cement as a first mover advantage to source the available fly ash. With PPC Botswana being vertically integrated with South African plant, it makes it easier to source its input materials unlike other players who are forced to find alternate sources for their inputs. This therefore requires new entrants' high capital investment into key inputs as it may require setting up a clinker and cement plant which may create a barrier to entry and even expansion.

In Namibia during 2010, a proposal was submitted for a merger between AfriSam and Ohorongo Cement. The merger proposed that Ohorongo Cement and AfriSam Namibia enter into an agreement under which AfriSam would sell and distribute cement under the management and brand of Ohorongo Cement in Namibia and neighbouring countries. The proposed merger was prohibited on the grounds that the supply agreement would potentially lead to the prevention or lessening of competition, or restriction of trade or the provision of any service, or endanger the continuity of supplies in the cement market as provided for under Section 47(2)(a) of the Competition Act, 2003. Ohorongo Cement then independently

started production in early 2011 and soon after, AfriSam closed its operations in Namibia, citing inability to compete with locally produced cement as their reason for closure.

In Zambia, in terms of market shares Lafarge dominates the cement industry at 64.4 per cent market share, followed by Zambezi Portland Cement with 29.6 per cent market share and lastly Scirocco with 6 per cent market share. This industry is clearly highly concentrated with limited competition. The dominant player,[20] Lafarge influences market conditions in the industry and especially in terms of pricing strategy. The smaller firms, Zambezi Portland Cement and Scirocco are to a large extent following the market leader in its pricing strategy instead of offering competition as can be observed in the minor differences in their ex-factory prices. Perhaps they have opted not to compete by virtue of their production quantities which cannot match that of the leader combined. As a result of ineffective competition in the domestic market, prices are very high. The lack of import competition for cement on the domestic market has exacerbated the price levels of cement. Import competition is critical in so far as disciplining the local firms against anti-competitive practices is concerned. At the time of the study, there were insignificant levels of imports coming into the country mainly concentrated in the border towns of the country. While Zambia is a net exporter of cement to countries in the region including the DRC and the great lakes region, where prices may be higher, there are also neighbouring countries such as Tanzania with lower prices.

7. Conclusion

The assessment of the cement industry across Botswana, Kenya, Namibia, South Africa, Tanzania and Zambia has revealed it to be a tight oligopoly with a small number of producers controlling operations across countries and smaller fringe independent suppliers. The nature of competition has big implications for the market outcomes. Prices and profit margins are very high in some countries, especially Zambia and, for much of the period Kenya. Tanzania appears to have used openness to deep sea imports from 2008 on to discipline prices.

The SACU countries experienced a cartel until the end of 2009 and then apparently more competitive behavior thereafter although it should be noted that vigorous competition does not necessarily break out immediately on the ending of cartel arrangements (see Khumalo et al. 2014). Comparing the higher margins of PPC with those before and after the cement cartel suggests cartel mark-ups of around 15% to 20% over competitive prices. This is in the same ball park as the assessment made by Hüschelrath et al. (2013) of the German cement cartel of overcharges in a range from 20.3% to 26.5%. The implication is that coordinated conduct would have had very substantial harmful impact on the economies in the study where it had occurred.

The study also highlighted the importance of understanding investment decisions and arrangements regarding regional trade in order to assess the nature and extent of competition. Opening borders and increased investment in the region will mean greater competition on the whole, while firms have a strong incentive to lobby for trade protection as part of coordinating and/or to use borders as convenient ways to forego competing by

[20] In Zambia the Competition and Consumer Protection Act defines unilateral dominance at 30% market share.

instead exporting to countries in which there are no cement producers. The study revealed that cement companies may operate in different regions either through the exportation of cement to those regions or by establishing plants. It is obvious that any assessment of the cement industry cannot be limited within the individual countries, but must be approached on a broader geographical basis. Cement is produced by multinational companies that develop strategies on a wider regional basis rather than on a country-by-country basis.

The cement cartel that was recently uncovered in South Africa cartelized the SACU region as a whole providing a powerful case study of how collusion can operate. The cartelists shared highly disaggregated data on a monthly and in some instances weekly basis. Could other industry associations be using a similar modus operandi to cartelize their markets?

With regard to new entry, all the countries under study have been experiencing entry by totally new players and also more established multinationals. This suggests that there should be more intense competition in future unless the new firms coordinate with the incumbents. In this regard it is interesting to note that the entrants are mostly not the same firms simply expanding operations but include those new to the region. The entrants are also constructing significant production facilities.

Lastly, the study has highlighted the importance of competition authorities working together if they are to be able to appreciate the possible regional and international dimensions of anti-competitive arrangements.

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Annexure Table A1: Structure of the cement industry within and across the six countries, including entrants

COMPANY and associated group	COUNTRY AND PRODUCTION CAPACITY (ACTUAL AND IN PIPELINE) IN TONS PER ANNUM					
	Botswana	**Kenya**	**Namibia**	**South Africa**	**Tanzania**	**Zambia**
Athi River Mining (ARM) - ARM (Kenya) - Mkuranga/Maweni (Tanzania)		650 000			500 000	
Botsino	250 000					
Cemtech Sanghi Group*		1 200 000				
Dangote - Dangote (Tanzania)* - Sephaku Cement* - Dangote (Zambia)*				1 200 000	1 500 000	1 500 000
Holcim/Afrisam - AfriSam (Botswana) - AfriSam (South Africa) - Tanga Cement Co (Tanzania)				5 800 000	1 250 000	
PPC - PPC (Botswana) - PPC (South Africa)	225 000			8 000 000		
Jidong Cement*				1 000 000		
Lafarge - Bamburi (Kenya) - EAPCC (Kenya) - Lafarge (South Africa) - Lafarge (Botswana) - Lafarge (Zambia) - Mbeya Cement (Tanzania)		2 200 000 1 300 000		3 000 000	350 000	1 230 000
Lake Cement*					500 000	
Matsiloje Portland Cement (MPC)	35 000					
Mombasa Cement		700 000				
MSAC						
National Cement		700 000				
NPC-Cimpor				1 500 000		
Ohorongo			700 000			
Savannah Cement*		600 000				
Scirocco						109 500
Tanzania Portland Cement (Heidelberg)					1 400 000	
Zambezi Portland Cement						612 000

* Not yet producing cement