

# **The Last Frontier: Prospects and Policies for the Automotive Industry in Africa**

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**Abstract:** Sub-Saharan Africa (SSA) remains one of the last frontiers for automotive production. This seemed a distant prospect in the lost decades of the 80s and 90s. But since 2000, SSA has been one of the world's fastest growing regions and over the next five years it is predicted that seven out of the 10 fastest growing countries in the world will be in Africa. The rapid growth in the middle class is already evident in the surge of demand for vehicles albeit from a very low base. Much of this demand is being met by imports because outside of South Africa, production is almost non-existent. Imports of light vehicles into SSA (excluding South Africa) grew at 19% per annum from 2000-2013. While such a rapid pace will not be sustained, we forecast that the passenger vehicle market will exceed 10 million units by 2030, which will make it comparable to the projected market in South America. The first key question, therefore, is the size and growth of the market in the region and sources of supply for these various national markets.

This leads to a second question of whether and how the continent can begin to meet this booming demand by developing its own industry. The level of industrialisation in most parts of SSA is very low and manufacturing capabilities are limited. A major constraint in an industry where economies of scale are important is that the continent is divided into dozens of mainly small markets. Nevertheless a number of the larger countries, for example Nigeria and Kenya, are already putting policies in place to encourage domestic production. Moreover, they are attracting the interest of leading western multinational carmakers as well as Chinese and Indian firms. Small scale investments in vehicle assembly are underway. To make the most of this opportunity, African countries will need to adopt appropriate policies and also accelerate the process of regional integration to allow for sufficient market scale.

The first part of this paper therefore provides a comprehensive analysis of current and future market demand, production and trade across the region making use of international trade data as well as national statistics. This includes a discussion of the limitations of existing data. The second part of the paper critically considers the policies that are being put in place, the strategies and investments of multinational firms and the prospects for an African industry outside the long established South African industry. It draws on national sources from the various countries as well as interviews with the regional headquarters of multinational firms, many of which are based in South Africa.

## List of abbreviations

APDP	Automotive Production and Development Programme
CBU	Completely built up
CET	Common external tariff
CKD	Completely knocked down
COMESA	Common Market for East and Southern Africa
DTI (later dti)	Department of Trade and Industry
ECOWAS	Economic Community of West African States
MIDP	Motor Industry Development Programme
NAACAM	National Association of Automotive Component and Allied Manufacturers
NAAMSA	National Association of Automobile Manufacturers of South Africa
NAIDC	National Automotive Industry Development Council
NAIDP	National Automotive Industry Development Plan
NAFTA	North American Free Trade Area
OE	Original equipment
OEM	Original equipment manufacturer (vehicle producer)
OICA	Organisation Internationale des Constructeurs d'Automobiles
SACU	Southern African Customs Union
SADC	Southern African Development Community
TFTA	Tripartite Free Trade Area
SKD	Semi knocked down
WTO	World Trade Organization

## 1. Introduction

The automotive industry is one of the world's largest industrial sectors and over the past three decades, the centre of gravity of global production has been shifting towards developing countries, most notably China but also to other parts of Asia and to Latin America. Sub-Saharan Africa (SSA) has hardly been touched by this shift in production and, outside of South Africa, the industry is virtually non-existent. SSA therefore remains the last frontier for automotive production. This is not surprising given prevailing low incomes and low growth for the last two decades of the twentieth century. But since 2000, SSA has been one of the world's fastest growing regions and rapid expansion looks set to continue.

Demand for motor vehicles is highly income elastic and in developing countries undergoing rapid growth, the experience all over the world has been of extremely rapid increases in demand for new vehicles. The reason is simply that when per capita incomes are rising in lower income countries, the middle class expands much more rapidly than the economy as a whole. This is the case in SSA, which is experiencing rapid growth in vehicle demand albeit from a very low base. Virtually all of this demand is being met by imports because outside of South Africa, production is almost non-existent. Vehicle imports therefore provide a good proxy of market size and imports of passenger vehicles into SSA (excluding South Africa) amounted to 1.4 million vehicles in 2013 and have grown at 19% per annum since 2000. While such a rapid pace will not be sustained, our projections show that the passenger vehicle market will exceed 10 million units by 2030, which will make it comparable to the expected market in South America at that time.

This leads to the question of how this booming demand will be met – from imports or from production within Africa? The automotive industry encompasses a full range of industrialisation processes including metal fabrication, plastics and electronics and has considerable technological spill overs. Without domestic production, vehicle imports can rapidly become a major foreign exchange burden. Many developing countries have sought to develop the sector which has frequently been seen as emblematic of national industrialisation. Outside of typically state owned industries such as telecommunications, no other sector has received as much state attention and support. In countries such as Korea, Thailand, Brazil and Mexico, the automotive industry has played an important role in national development. In a number of other countries, costly government support has not produced sustainable growth for the industry. This latter group include a number of countries in SSA which in previous decades, embarked on small scale vehicle assembly but with no lasting impact.

The level of industrialisation in most parts of SSA is very low and manufacturing capabilities are limited. Moreover, in the automotive industry, scale is all important and in spite of progress towards regional integration, Africa remains divided into dozens of mainly small markets. A crude comparison with India illustrates the point. In India and SSA, total output, population, per capita incomes and vehicle markets are of similar magnitude. Because it has a unified market (protected by a common external tariff) India has built up a large and

competitive industry and is a net exporter of automotive products to the tune of \$6.1 billion. SSA on the other hand has a trade deficit of 11.3 billion in the sector.<sup>1</sup>

In spite of these impediments, a number of the larger countries, for example Nigeria and Kenya, are putting policies in place to encourage domestic production. Moreover, they are attracting the interest of leading western multinational carmakers as well as Chinese and Indian firms. Small scale investments in assembly are underway.

There are essentially three conditions for viable automotive production in developing countries (Humphrey and Oeter, 2000). The first is a viable ‘automotive space’ by which we mean a domestic or regional market of sufficient size to enable production at scale. The second is improving manufacturing capabilities and competitiveness. The third is supportive policy arrangements which would include some degree of protection as well as privileged access to regional markets. To make the most of this opportunity to create a viable industry, SSA will need to accelerate the process of regional integration to allow for sufficient market scale. Automotive producing countries will need to develop the whole panoply of skills and infrastructure required for more efficient industry development and they will have to adopt appropriate automotive policies which encourage efficient development.

This paper therefore sets out to explore both the opportunities and constraints for automotive industry development in Africa. Section two provides an analysis of current and future market demand and current sources of supply into SSA. It shows that demand is booming but this is being met by imports, including of used vehicles. It also points to the limitations of the data on this young but fast growing market and industry. In section three we outline current developments in the industry and assess the extent to which SSA meets the critical conditions for successful industry development. We argue that it is of extreme importance that these policies are appropriate and provide the right kind of incentives to attract efficient investments. Section four concludes.

## 2. The market

Compiling reliable figures of car ownership and sales in the majority of countries in sub-Saharan Africa (SSA) is a formidable challenge. The accessibility, reliability and form of registration data varies widely across SSA. As such the accurate estimates of the size of the vehicle parc are limited. For instance WardsAuto cites total registrations for 2013 of 9.3 million and 1.4 million vehicles respectively in South Africa and Nigeria. The South African figures are fairly accurate but the Nigerian figures represent a major under-estimate<sup>2</sup>. As

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<sup>1</sup> We elaborate further on this point in section three (see Table **13**).

<sup>2</sup> Nigeria has now overtaken South Africa as the largest economy on the continent and it is implausible that its vehicle parc would only be 15% the size of South Africa’s. Our estimates are that annual sales in Nigeria (including new passenger vehicles and imported used passenger vehicles) amount to 706 600 vehicles per annum and that even based on a conservative estimate, the vehicle parc is over 5 million.

such it is prudent not to attempt to estimate vehicle stocks, but rather the annual flows of vehicles into SSA. Likewise the lack of domestic production in SSA means that the trade flows into the region are a good proxy for the total size of the market, as long as South Africa is treated differently. South Africa's market is well understood as a result of a well developed registration system and detailed reporting by the National Association of Automobile Manufacturers of South Africa (NAAMSA).

There are strong arguments that the free trade in used passenger cars creates substantial welfare gains (Grubel, 1980; Clerides, 2003). In a region where the 2013 GDP per capita was still only \$1 771, despite a decade of strong growth, capturing the welfare gains of free trade has historically been given priority (World Bank Group, 2015). Under SSA's 'structural adjustment' programmes of the 1980s the infant automotive sector was opened rapidly to free trade; unlike the Mercosur nations which exited structural adjustment with high levels of protection for vehicles and retained automotive industries (Pelletiere and Reinert, 2002; Beuving, 2006a: 24).

The passenger vehicles which were then able to flood into SSA are sourced from the wealthier vehicle producing nations. In many of these nations policies exist to encourage vehicle scrapping and concomitant new vehicle purchases. The most well known of these is the Japanese 'shaken' policy, where a car requires a costly examination after three years in order for it to be allowed to remain on the road (Clerides, 2008: 324). Many buyers instead opt to purchase a new car rather than paying for the inspection (Clerides, 2008: 324). Boosting domestic motor vehicle production is not the only motivation for scrapping policies. In the EU, Canada and US they have been a popular policy approach for encouraging consumers to replace older cars with less polluting new cars (Schiraldi, 2011: 287). The European Union, Japan and Korea, also have strict rules governing the disposal of end of life vehicles (ELVs) to limit environmental damage and dumping (Sakai et al., 2014). The safe dumping process is complex and costly, meaning the recycled materials extracted from the process do not usually cover the costs of their removal and the safe disposal of the unrecyclable materials (Schneider et al., 2010: 39). A more profitable exercise for many is to illegally dump ELVs by exporting them to SSA and other developing regions (Fuse, Nakajima and Yagita, 2008; Schneider et al., 2010: 8 & 39; Sakai et al., 2014: 3). These policies and limited domestic demand for older cheaper models creates huge supplies of used vehicles flowing out of the larger, higher income, vehicle producers.

When dealing with SSA it is best to view it as having de facto regional markets rather than individual national markets. This is because of the fluidity of many nations' borders, as a result of smuggling in some regions (Fadahunsi and Rosa, 2002; Golub, 2012). Importers bring used cars into the countries which have the lowest tariffs, shipping costs or where there are laxer age limits on used car imports (Beuving, 2004: 512; Brooks, 2012: 83). After arrival in SSA, the cars are transported to their actual sale destinations, which may involve the legal or illegal crossing of national borders (Fadahunsi and Rosa, 2002: 414 & 415; Brooks, 2012: 85). Bribes to customs officials and smuggling mean that much invoicing is inaccurate or missing creating problems with the trade data. However, most cars are imported into the

general region of their final destination nation, even if they are initially delivered into another country (Beuving, 2006a; Brooks, 2012).

The three general regions for imports are: Western, Eastern and Southern Africa. Each has developed their own networks of used and new car trade. In West Africa the imports are predominantly from Western Europe and to a lesser extent the United States (Beuving, 2006b). The imports are channelled through the major ports of Cotonou in Benin, Lome in Togo and Lagos in Nigeria (Beuving, 2004: 511–512, 2006a: 5).

In Southern Africa, Durban in South Africa is the main port used to supply the region, along with Walvis Bay (Brooks, 2012, p.83; Kaira, 2014). However, South Africa has banned used cars been driven through it destined for other nations and Botswana has done the same, requiring them instead to be transported on trucks which is more costly (Kaira, 2014). As such some Southern African nations are shifting to East African supply corridors (News Day, 2014). The imports for Southern Africa are sourced directly from Japan and to a lesser degree the Middle East (Brooks, 2012; Lester 2015)

The East African car trade has been comparatively less investigated by researchers. It appears this region also mainly relies on flows from Japan and the Middle East, possibly with the Middle East having a larger role than in Southern Africa (Sander, 2004; UN Comtrade, 2015). Unfortunately how passenger vehicles are channelled through East Africa has not been researched. Interestingly, Fuse et al (2009) estimate that Uganda accounts for around 1% of global used car exports in 2005 (Fuse, Kosaka and Kashima, 2009: 355). More recent trade statistics also rank Uganda as one of the larger SSA vehicle exporters, with exports predominantly flowing to its neighbours (UN Comtrade, 2015). Uganda, a landlocked nation, is possibly a surprising node in the used cars trade in East Africa. Research into smuggling in the region has focused more on vehicle parts than vehicles themselves but does show Uganda as a hub in that traffic, especially in moving goods to the Democratic Republic of Congo (DRC) and South Sudan (Ackello-ogutu, 1996; UBOS, 2012).

The flow of used cars into SSA is largely informal with significant trading networks involved in facilitating their import and sale, with many middle men along the way. These trading networks also often have more established connections with the used car exporters, having traded in their home nations before trading in SSA (Brooks, 2012: 83). In some cases these groups have been able to amass significant political power or wealth and capture the more valuable nodes in the trade of used cars, examples of this are Pakistani families who arrange logistics for cars out of Durban and Lebanese families controlling the shipping of vehicles in West Africa (Beuving, 2006a: 84; Brooks, 2012: 86).

Another important group are individuals from SSA who arrange for the import of cars from one of the used car export hubs of the US, Europe, Japan or Dubai. This group also often makes use of familial networks, with some members living in diaspora communities at the export hub, and sending cars back to family in their home country (Beuving, 2004, 2006a: 84–86). While some of these traders are also able to import substantial numbers of cars, it is

not limited to large scale operators as even students studying abroad commonly send a few cars a year home for their family to sell (Fadahunsi and Rosa, 2002: 413; Beuving, 2004: 524, 2006b). Though this group does not typically control the more profitable nodes of the trade outside of SSA, they may do so within SSA. In nations such as Benin, a Yoruba cartel controls the majority of the used car markets (Beuving, 2006a: 33).

The networks of smuggling and corruption along the used car trade are quite entrenched and contribute significant wealth to those involved<sup>3</sup>(Benjamin and Mbaye Aly, 2012). In West Africa the majority of smuggling is used to move cars into Nigeria from Benin and Togo where import costs and regulations are looser (Fadahunsi and Rosa, 2002; Beuving, 2006a; Golub, 2012). Fadahunsi and Rosa (2002) note that smuggling is so common that on Benin's border, workshops for producing forged Nigerian license plates and registrations documents are well established (Fadahunsi and Rosa, 2002: 421). In parts of Southern Africa, systems of high tariffs and duties allow corrupt border officials to subjectively price used cars below market values, and thus reduce import duties (Brooks, 2012: 86).<sup>4</sup>

The US, Japan and EU are the largest exporters of used cars<sup>5</sup> and all report used and new passenger cars separately in their export statistics and have taken active steps, since the early 2000s, to counter grey areas of trade (Fuse, Nakajima and Yagita, 2008: 2437; Fuse, Kosaka and Kashima, 2009: 355; Schneider et al., 2010). As such the Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission datasets present the best window to the majority of global used car flows. However, even these reliable datasets are still prone to the problems resulting from smuggling and valuation. As such it is best to still view SSA at the regional level and use trade statistics on a quantity not value basis. The most reliable data source for imports from nations other than Japan, the US or EU was to use the UN Comtrade database to get the trade statistics of nations exporting to SSA.

While the UN Comtrade dataset is by no means precise<sup>6</sup> it does allow for a general picture of the annual market for passenger vehicles in SSA to be established. Its greatest explanatory power is in identifying the general trends in the data. If there are large flows that are not accounted for and do not shrink or grow relative to other flows in SSA, then tracking the growth of the accounted for flows gives a good proxy for market growth rates.

An initial estimate suggests very rapid growth in the SSA market since 2000 of over 19% per annum, when South Africa is excluded. Focusing in on the 10 year 2003-2013 period,

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<sup>3</sup> Some estimates place the used car trade, with its illegal elements included, as contributing 10% of Benin's GDP (Benjamin & Mbaye Aly, 2012: 202–204).

<sup>4</sup> In Mozambique an attempt to challenge this system led to the murder of the government official spearheading the investigation into the corrupt elements of border control (Brooks, 2012: 87).

<sup>5</sup> They accounted for a minimum of 85% of all used car exports in 2005, the year for which the best estimate of global flows is available. Fuse et.al (2009) used multiple databases corrected for errors using methods established by Tsigas et.al (1992) to create a detailed account of used car trade for that year. (Fuse, Kosaka & Kashima, 2009: 355).

<sup>6</sup> For a full explanation see the Data Appendix.

average growth is lower primarily due to the impact of the global recession of the late 2000s, with SSA as a whole growing at compound annual rate of 12.2% and SSA excluding South Africa growing at 15.3%.

Table 1: Approximate Market for New and Used Passenger Vehicles

Year		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
SSA	Passenger Vehicles (000s)	579	698	872	1 055	1 246	1 169	1 107	1 124	1 457	1 643	1 829
Excl. South Africa	Passenger Vehicles (000s)	330	400	450	570	810	840	850	790	1 060	1 200	1 380
	Growth (%)	19.3	14.0	26.9	41.6	3.5	1.1	-7.3	34.8	13.4	14.6	

Source: UN Comtrade; Eurostat Comext Database; Japanese Customs and Tariff Bureau; US International Trade Commission and OICA

The widespread nature of vehicle smuggling alluded to in the literature is given credence by the fact that the top 10 list of importing destinations in 2013 includes small countries such as Benin and Togo. Benin, in particular imports far more vehicles than nations of comparable size and income. The major exporters to SSA are also as the literature suggests, with the EU, US and Japan accounting for on average 73.3% of exports. India has risen spectacularly as a source of cars for SSA, with exports to SSA growing at a compound annual rate of 50.4% or 5901% over the 2003-2013 period to account for 13.6% of all SSA imports.

Table 2: Top 10 New and Used SSA Passenger Vehicle Importers 2013

	Number of Imported Passenger Cars
South Africa	407 370
Nigeria	400 124
Benin	330 868
Ghana	92 135
Kenya	62 751
Tanzania	36 191
Niger	34 581
Togo	33 676
Angola	33 156
Cameroon	30 622

Source: UN Comtrade, Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

Table 3: Top 10 New and Used Passenger Vehicle Exporters to SSA 2013

	Number of Passenger Cars Exported to SSA
EU	764 848
US	248 906
Japan	248 030
India	242 135
Korea, Rep.	71 305
Switzerland	47 712
Canada	36 688
South Africa	32 593
Australia	26 564
Thailand	16 150

Source: UN Comtrade, Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

The regional<sup>7</sup> market is dominated by West Africa (mainly Nigeria), and Southern Africa where South Africa accounts for the lion's share of the car market. East Africa as a whole accounts for less vehicles than Nigeria imports and Central Africa in turn imports around the same number as Kenya

Table 4: SSA Regional New and Used Passenger Vehicle Imports 2013

Region	Total Imports	Percentage Shares	Shares (Excluding South Africa)
West Africa	989 199	55.4%	71.7%
Southern Africa	558 437	31.3%	11.0%
East Africa	172 772	9.7%	12.5%
Central Africa	65 754	3.7%	4.8%

Source: UN Comtrade, Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

West African imports dominate EU and US exports into SSA. West Africa accounted for over 85% of the EU's used car exports and 95% of the US's in 2013. The US exports have also been growing with used cars exports growing at a compound annual rate of 41.2% per annum. Southern and Eastern Africa dominates Japan's used car exports, accounting for 48.1% and 43.2% respectively in 2013, with just 6 nations accounting for 81.1% of the trade. These nations, from largest to smallest importer, are: Kenya, South Africa, Tanzania, Uganda, Zambia and Mozambique. South Africa does not permit the import of used cars so these vehicles are all for re-export.

While these flows account for the general passenger car market in SSA, they do not give insight into the relative sizes of new and used passenger vehicle imports within the total amount. As the US, EU and Japan account for almost 75% of total imports they can give a fairly powerful insight into the trends in the proportionality of used and new passenger vehicle imports within total imports.

New car exports to SSA from Japan, the EU and US have been growing, but at a much slower rate than their exports of used vehicles and exports from other regions to SSA, with a compound annual growth rate of 5.2% for new versus 17.2% for used cars. South Africa also accounts for both the largest quantities and fastest growth in new car imports from these nations. Without South Africa, it seems that there is little growth in the new car market in SSA with a compound annual growth rate of only 1.6%. The biggest new car destinations are similar to the top export destinations with 6 nations appearing on both. The nations which are top new car importers but not overall importers are the relatively small, wealthy nations of Mauritius, Gabon and the major exporters of Senegal and Cote d'Ivoire.

<sup>7</sup> Nations are divided into their regions using the African Development Bank's classifications.

Table 5: New Passenger Vehicle Exports from the EU, US and Japan to SSA

Year	Exporter			Total Exports to SSA	Total Exports to SSA Excluding South Africa
	Japan	US	EU		
2003	40 554	11 269	91 448	143 271	54 993
2004	55 988	13 806	116 181	185 975	53 516
2005	78 210	18 305	135 856	232 371	53 172
2006	116 958	20 498	153 981	291 437	79 644
2007	130 515	29 206	137 542	297 263	97 042
2008	100 211	30 217	90 666	221 094	87 064
2009	44 420	25 555	71 713	141 688	51 027
2010	60 133	33 455	105 397	198 985	58 074
2011	41 230	36 659	128 393	206 282	58 160
2012	38 778	39 252	134 611	212 641	59 883
2013	40 543	43 056	150 258	233 857	64 496

Source: Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

Table 6: Top 10 SSA Importers of New Passenger Vehicles from the EU, US and Japan 2013

	Number of New Passenger Cars Imported
South Africa	169 361
Nigeria	19 671
Benin	8 014
Angola	7 683
Ghana	5 997
Mauritius	2 628
Senegal	2 136
Kenya	2 036
Cote d'Ivoire	2 009
Gabon	1 644

Source: Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

Table 7: Top 10 SSA Importers of Used Passenger Vehicles from the EU, US and Japan 2013

	Number of Passenger Cars Imported
Benin	303 395
Nigeria	223 608
Ghana	69 247
Kenya	57 036
South Africa	50 422
Tanzania	28 173
Guinea	27 585
Cameroon	26 848
Togo	24 119
Uganda	20 527

Source: Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

An alternate measure of the numbers of new cars in SSA is to use the data provided by OICA. Their figures are derived from sales or new registration data from their members. Most of their figures are estimates but they do suggest that the flow of new cars into South Africa, Nigeria, Botswana and Reunion are not fully accounted for by Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission databases. There are also relatively small and prosperous nations, like Mauritius and Gabon which appear as major SSA markets.

Table 8: Producer Figures of the Top 10 New Car Sales Nations in SSA 2013

	Passenger Cars Sales
South Africa	450 561
Nigeria	40 000*
Botswana	31 122
Angola	20 000*
Reunion	19 465
Mauritius	7 500*
Ghana	6 600*
Cote d'Ivoire	4 000*
Senegal	4 000*
Tanzania	3 500*

Source: OICA Sales Data, \*represents an estimate

While the three major exporters to SSA allow some illumination, it is not exhaustive as the OICA data suggests, the other top exporters to SSA must then not be ignored. Some of these nations, such as Canada, Switzerland and Australia mimic Japan, the EU and US quite closely with their export destinations and are not large scale domestic producers. As such they are expected to export mainly used cars. South Africa and Korea have exports which are more mixed. South African exports would mostly be re-exports from Japan but may include cars produced in South Africa, for example the cars destined for Nigeria and Ghana from South Africa are almost certainly new. Korea has become a source of used cars as it has developed and now ships these to SSA (Nieuwenhuis et al., 2007: 20). However, the sale of new Kia and Hyundai vehicles have also seen massive increase experiencing over 100% market share growth in some SSA markets (Parker, 2015).

The exports from India and Thailand are also considerable and suggest that there are actually much larger flows of new cars into SSA than previously thought. It seems unlikely that developing nations with highly productive automotive industries and protected used car markets, such as India and Thailand, would find it profitable to ship used vehicles to SSA (Pelletiere, 2003: 141–143; Clerides, 2008: 324). The scale of Indian exports to Nigeria is surprising and has grown at a staggering compound annual rate of 60.1% from just 852 cars in 2003 to the 94 084 in 2013. India's exports to other nations in SSA show a propensity for those with more restrictive used car policies, such as Ethiopia and Angola. This seems to support the suggestion made by some analysts that India has managed to successfully penetrate the passenger vehicle market in SSA and compete with used car imports better than other passenger car producers (Freemantle and Stevens, 2012).

In reality vehicles of a cylinder capacity not above 1000 cc capacity<sup>8</sup> account for nearly 95% of Nigeria’s imports from India. This category of passenger vehicles is one in which Indian firms have excelled. Additionally Hyundai was India’s largest vehicle exporter in 2013 and is a brand popular with SSA consumers (Parker, 2015; Chauhan, 2014). It locates all its production of compact cars in India and uses the country as an export base to emerging markets, explicitly targeting Africa (Thakkar, 2014). However, there is also booming market for auto-rickshaws in Nigeria and India reports these in the 1000 cc vehicle category.

Adding imports from Thailand, India, China, Turkey and Indonesia<sup>9</sup> to the known new car import numbers creates quite a different picture of the new car market in SSA. This is shown including and excluding South Korean exports to SSA, due to them including used and new vehicles in the UN Comtrade data but being an important source of new passenger vehicles for the region. Almost all the nations are importing above ‘official’ estimates. Most striking is Nigeria seems to be importing at least three times the 40 000 new passenger vehicles that industry estimates credit them with (OICA, 2014; Cockayne, 2014). However, if all below 1000 cc vehicles from India are auto-rickshaws Nigeria only imports 36 624 passenger vehicles from this group of nations, excluding South Korean exports and 47 344 including them. These figures are only marginally above and below the industry estimate.

Table 9: New Car Imports from Japan, EU, US and Total Imports from Thailand, India, China, Turkey, Indonesia and South Korea 2013

	Excluding South Korean Exports	Including South Korean Exports
South Africa	340 996	383 427
Nigeria	125 995	136 715
Angola	25 621	31 504
Ethiopia	12 506	13 075
Ghana	11 909	15 734
Benin	8 095	8 136
Tanzania	7 152	7 242
Mozambique	7 066	7 519
Mauritius	5 187	6 492
Kenya	4 585	4 757

Source: UN Comtrade, Eurostat Comext Database, Japanese Customs and Tariff Bureau and US International Trade Commission

Our focus above has been on motor vehicles and passenger cars in particular. But motorcycles have been the entry point into the automotive industry for many Asian countries. In SSA, the market for motorcycles than for cars and has been growing rapidly (Table 10). Again one can assume that the bulk of motorcycles imported into Benin and Togo are destined for Nigeria. If this is the case then Nigerian imports are in the region of 1.75 million motorcycles a year, a substantial market. Over 95% of motorcycles shipped to SSA come from either China or India, with China alone representing around 70% of imports.

<sup>8</sup> HS Code 870321

<sup>9</sup> China, Turkey and Indonesia are the 11<sup>th</sup>, 12<sup>th</sup> and 13<sup>th</sup> largest exporters to SSA and also do not have domestic used car surpluses.

Table 10: Total Imports of New and Used Motorcycles (000s)

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
SSA	1238	1428	1788	2052	2578	3199	2347	2708	4099	3250	3849

Source: UN Comtrade

Table 11: Top 10 New and Used SSA Motorcycle Importers 2013

	Number of Imported Motorcycles
Nigeria	1 370 177
Togo	474 237
Angola	343 102
Guinea	240 475
Kenya	173 147
Mali	161 277
Tanzania	158 775
Congo, Dem. Rep.	120 017
Ghana	104 164
Benin	99 531

Source: UN Comtrade

### *Future market growth prospects*

It is clear that the passenger car market in SSA is experiencing very rapid growth, albeit from a low base. Most of this growth is in used cars, but new vehicles, especially from developing country production locations are also experiencing strong growth.

But what of the future? Passenger vehicle demand will be driven by rising consumer incomes, with this effect being amplified as an increasing share of the population rises above the middle income threshold at which vehicle ownership becomes affordable (Chamon, Mauro & Okawa, 2008). Access to cheaper credit is likely to accelerate this trend (Sedzro et al., 2014: 304).

All major organisations predict rapid growth continuing into the future. From 2020-2030, the African Development Bank is predicting per capita growth in excess of 5% per annum for SSA excluding Southern Africa, which is being held back by slow growth in its largest economy (South Africa).

Consumer spending and the middle class are expected to continue to grow at a much higher rate than the per capita income of the nation as a whole (Deloitte, 2014). Consumer spending increased at an annual rate of 10.7% in the 2000-2012 period and by 2030 over half a billion Africans are estimated to be middle class (Deloitte, 2014: 2).<sup>10</sup> The demand for passenger

<sup>10</sup> This estimate is based on middle class status being attained at a relatively low income level.

vehicles has been outpacing growth rates in consumer spending over the past decade. If the growth in vehicle sales even just keeps pace with growing consumer spending, annual sales of passenger cars in SSA will surpass 10 million units by 2030.

### **3. An African automotive industry?**

As indicated above, the market for vehicles in SSA is growing very rapidly. While it is currently small, the region will become a significant global market over the next decade. This growing demand is for the most part being met by imports, especially of second hand vehicles, and the question that we now turn to is to assess the prospects for greatly increased production in SSA.

#### **Automotive production in Africa**

The level of industrialisation in SSA is currently very low. Manufacturing accounts for less than 10% of GDP, and this share has actually slightly declined during the period of rapid growth since 2000. Outside of South Africa and some countries in North Africa, vehicle production is almost non-existent in Africa. In North Africa, there is some assembly and the largest plant on the continent is in fact the 400 000 car per year capacity plant built by Renault in Morocco with a total investment of €1 billion. The scale of this investment has in turn attracted significant investment by multinational component suppliers. Egypt also has an industry which has been established for many years.

In SSA, production is dominated by South Africa but output is still small in global terms with some 533 000 light vehicles produced in 2014 (AIEC, 2015). The main focus of this paper, however, is on prospects in the rest of SSA. Small scale assembly was established in many countries after independence in the 1950s and 1960s. This included assembly plants in countries such as Nigeria, Ghana, and Kenya. There were also a number of small scale plants in white ruled Rhodesia. The scale of these plants was tiny and they assembled imported CKD kits with minimal use of domestic content. Arguably these industries added very little value. In addition, there was some production of peripheral and aftermarket parts in many countries. The parts manufacture that existed was for the most part of similarly small scale, imposing a large burden on consumers with little economic benefit. Much of this small scale industry was swept away by a combination of economic decline since the early 1980s as well as ‘structural adjustment’ policies imposed by the IMF and World Bank.

The situation is now somewhat different. First, there has been sustained economic growth in SSA since 2000 and as indicated in the previous section, there has been phenomenal growth in African car markets. Secondly, levels of protection are much lower than they were and regional integration has made some progress in reducing tariff barriers within the region. In a continent made up mainly of small economies this is of great importance. Thirdly, there is a desire on the part of some larger countries in SSA to re-establish domestic production and in order to achieve this objective, a number of countries are putting the necessary policies in place.

## Production and Policy

According to the OICA, Africa as a whole accounted for less than 1% of global vehicle production (831 000 units) in 2014.<sup>11</sup> South Africa accounted for 68% of this output, Morocco 28% and the remainder was produced in Egypt. These figures exclude nascent assembly operations in a number of countries in SSA, but it is clear that South Africa is the only producer of any significance in the region.

Vehicles were first assembled in South Africa in the 1920s and as was typically the case in developing countries, the South African automotive industry grew under high levels of protection. Considerable diversified development took place under this protective regime, which included a series of increasingly stringent local content requirements introduced from the early 1960s. But the industry was also afflicted by the common ailment of a high cost production structure exacerbated by excessive proliferation apparent in the large number of models and makes being domestically assembled in low volume. As a result, the industry was highly inward oriented (Black, 2001).

In a process, which began in 1989 and accelerated with the introduction of the Motor Industry Development Programme (MIDP) in 1995, the automotive industry has become increasingly exposed to international competition as government has sought to make it more competitive and also to encourage exports and a more rational industry structure. Lower tariffs in the automotive industry were accompanied by import-export complementation arrangements, which enabled firms to rebate import duties by exporting. The MIDP was replaced in 2013 by the Automotive Production and Development Programme (APDP) which provides a production incentive together with stable tariffs of 25% on imported vehicles. As a result of these measures, the industry has been through a period of rapid international integration and structural change. Imports account for approximately 50% of the light vehicle market but 52% of output is exported with the EU and US being the major markets.

In the rest of SSA, a number of countries have started small scale assembly operations. These include Nigeria, Ethiopia, Kenya and Angola and a number of other countries (Table 12). Most of these operations are not only small scale but involve minor semi-knocked down (SKD) assembly<sup>12</sup> with minimal or no local content. Automotive policies are also being developed and Nigeria in particular has signalled its intention to launch its automotive industry following the introduction in 2013 of the National Automotive Industry Development Plan (NAIDP).<sup>13</sup> The new policy ambitiously aims “to move as rapidly as is feasible to balance of payments neutrality and then into surplus” (NAC, 2014:5). Tariffs have been set at 70% for built up cars consisting of a 35% duty as well as a 35% levy. But local assembly operations can import cars without the levy and require minimal initial investments

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<sup>11</sup> Cited in AIEC (2015: 38).

<sup>12</sup> SKD assembly involves final assembly of partly assembled vehicles.

<sup>13</sup> This draws on an interview with Alec Erwin, former South African Trade and Industry Minister and advisor to the Nigerian government on its automotive industry.

as vehicles can be assembled on a semi-knocked down basis for five years before moving to CKD production. The result is that by early 2015, as many as 23 firms had signed up to assemble vehicles under the programme (Furlonger, 2014). But the difficulties in imposing order in a free import market have also been apparent as the due date to increase tariffs has been delayed by 6 months. Also, this is not assembly in the usually understood sense, but involves minor finishing activities. While it is stipulated that firms should move towards CKD assembly within five years, there seems to be some flexibility in this regulation as well.

Kenya also has small scale assembly mainly of light commercials, trucks and motor cycles. General Motors East Africa (GMEA) assembles Isuzu commercial vehicles and exports small volumes to the region. Foton, Mercedes-Benz and Nissan commercial vehicles are also assembled but again this is minor, final assembly. Other small scale activities include Mobius Motors which assembles small volumes of a sturdy, basic light vehicle. In east Africa, Ethiopia is another country with ambitions in vehicle production. The country imposes a range of non-tariff barriers and all cars must be imported in Ethiopian flagged vessels. Lifan, the Chinese manufacturer of cars and motorcycles has embarked on a modest expansion to its tiny assembly plant in the country.<sup>14</sup>

In southern Africa outside of South Africa, assembly activities are very small scale, consisting of licensed operations assembling low volumes of imported CKD kits. Original equipment (OE) component production is also very limited. In Zimbabwe, there was at one stage capacity to produce a range of components in addition to small scale assembly. In the early 1990s, amid mounting social and economic pressure the government launched the Economic Structural Adjustment Programme (ESAP) which led to the relaxation of government controls in various sectors of the Zimbabwean economy and the liberalisation of the trade environment. Imports of both vehicles and components increased rapidly (Black and Muradzikwa, 2004). With the extreme political and economic instability prevailing since 1999, the vehicle market has all but collapsed as have plans for investment.

In Botswana, assembly of Hyundai vehicles under licence began in 1998 for the SADC market.<sup>15</sup> The plant with an initial investment of approximately R300 million and a capacity of 40 000 vehicles per year was the largest automotive investment in SADC outside of South Africa but ceased production in 2000 as a result of financial problems in its holding company. The establishment of the Hyundai factory resulted in a few component investments in the country. Some of these continue to supply export markets (Black and Muradzikwa, 2004).

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<sup>14</sup> See 'Ethiopia sets sights on Full-Car production by 2015' (Wards Auto, 3 December, 2012).

<sup>15</sup> The origins of this investment are unusual in that it resulted in part from a trade policy wrangle within the Southern African Customs Union. As a member of SACU, Botswana was subject to the provisions of the Motor Industry Development Programme. When this was introduced in 1995, Hyundai Motor Distributors had been operating a semi knocked down operation supplying vehicles to the South African market. The plant was given a temporary special concession to continue with this operation subject to moving to full CKD assembly within a specific timeframe.

Table 12: Markets and production in SSA

Country	Vehicle parc 2013 (000s)	Passenger vehicle parc 2013 (000s)	Estimated domestic passenger vehicle market 2013 (000s) <sup>16</sup>	Passenger vehicle production 2013 (000s)	Policy	Producers	Notes
South Africa	9 526	6 377	450	265.3	Import tariff of 25%; APDP	Toyota, Nissan, GM, Ford, BMW, Mercedes, VW assemble light vehicles. Many truck makers assemble with very low local content	Globally integrated industry exporting to the EU, North America and other markets; Large exports into SSA; now benefitting from market access via membership of SACU, SADC.
Nigeria	3 440	2 700	706.6 <sup>17</sup>	0	Import tariff of 35% and levy of 35%; NAIDP.	Nissan, Peugeot, Hyundai Renault and Kia all assembling SKD kits. Ford, Tata, Toyota and Volkswagen all investigating feasibility. Innoson is a local company rebadging and assembling Chinese cars with some local content.	Has the capacity to produce 108,000 passenger vehicles a year. Currently experiencing interest and small scale investment from around 30 OEMs. Assembly is mainly of light commercial vehicles; Nissan-Renault and Hyundai all partnered with Stallion Group which has a plant with capacity to assemble 45,000 SKD kits. Kia's plant will assemble 25 000 kits and Peugeot's 3 000.
Kenya	1 060	620	62.8	0	Import tariff of 25%, 20% tax and 10 year age limit on used vehicle imports.	Mobius Motors is producing locally made vehicles.	Kenyan Vehicle Manufactures (KVM), General Motors East Africa (GMEA) and Associated Vehicles Assemblers Ltd (AVA assembles for Toyota Kenya Ltd) assemble around 6000 light and heavy commercial vehicles and busses. GMEA has an assembly plant with capacity to assemble 30 000 vehicles a year and wishes to export to the EAC. Toyota has established a training academy.  There are two motor cycle assemblers in the country: Honda Motorcycle Kenya Ltd and TVS Motors Kenya.
Ivory coast	860	390	21.4	0	Import tariff of 20%		
Zimbabwe	853	750	20	0	Import tariff of 60%		Mazda has a plant at Willowvale but it is not in production. Interest from China to revitalise flagging Zimbabwean manufacturer Quest Motors.
Ghana	820	510	92.1	0	Import tariff of 20%; age		Mahindra & Mahindra are building an assembly plant for West

<sup>16</sup> The estimations are drawn from the trade flows presented in Section 2.

<sup>17</sup> This is a combination of the recorded imports to Nigeria, 85% of those going to Benin and 75% of those going to Togo. Golub (2012) finds that at least 95% of Benin's imports are reported and 85% of Togo's (Golub, 2012: 1155). The vast majority of these are destined for Nigeria, but others do also go to Niger, Mali and Burkino Faso. The estimates that 85% and 75% of Benin and Togo's imports respectively go to Nigeria may well be less than reality and these numbers do not include completely unrecorded smuggled vehicles suggesting this figure is a conservative estimate of the Nigerian market (Beuving, 2004; Assamoi & Liousse, 2010; Golub, 2012).

					limit of 10 years on used vehicle imports		Africa in Ghana. There is also artisanal production by ASSTRC and SMIDO, they currently produce negligible numbers but are looking to expand.
Angola	803	670	33.2	0	Import tariff of 20%, VAT of 10-30% and a ban on vehicles older than 3 years.		Volkswagen Group has a plant under construction but subject to delays.
Senegal	570	270	13.7	5	Import tariff of 20%	Iran-Khodro (IKCO) assembly plant of cars, under Peugeot license, assembling 5 000 SKD kits.	
Uganda	430	130	21.1	3	Import tariff of 0%, EAC CET of 25% not applied in 2013.	Geely has constructed a SKD assembly plant with a capacity of 3 000 SKD kits assembled a year. Foton are currently setting up production.	Also local artisanal production with some seeking to expand. Kiira Motor Corporation KMC is supported by the state and partnered with RLE and possibly Foton. KMC which is looking to produce electric and hybrid cars by 2018
Tanzania	360	220	36.2	0	Import tariff of 0%, EAC CET of 25% not applied in 2013.		Have a Tanzanian Automotive Technology Centre which is looking to promote self-sustainability. It is funded by the government, notably the military, has produced negligible numbers of cars and trucks, and is mainly a standards body. Geely is planning an assembly plant.
Zambia	343	230	20.6	0	Import tariff of 25%		There used to be CKD assembly in the 1980s which has since ceased. Higer China is now assembling buses.
Botswana	330	210	21.3	0	Import tariff of 25%, SACU regulations		Hyundai plant was broken up and auctioned off in 2001. Still assemble some buses and tractors.
Cameroon	322	240	30.6	0	Import tariff of 30%		Foton setting up a \$500 million assembly plant. However, it is beset with delays.
Ethiopia	151	90	15.7	4.5	Imports subject to a 35% tariff on the value of the vehicle including transport and insurance. There is then an excise tax of 30-100% on the total cost of goods and duty. The total cost of good, duty and excise amount is then subject to 15% VAT. That new amount is subject to 10% sur tax. The final amount then pays 3% withholding tax. This can lead to a consumer cost of 3 times the vehicle, freight and insurance cost. Must be transported on Ethiopian licensed transport to enter Ethiopia.	Yangfan Motors assembles Lifan SKD kits, up to 3000 a year. Betret International Trading Plc runs a plant assembling 1000 SKD BYD cars a year. Mesfin Industrial Engineering Plc assembles 1000 CKD Geely cars a year. Jonny General Auto Car Maintenance and Assembly assemble 100 Fiat and 130 FAW CKD cars a year. Solaris Elettra assembles 30 electric cars a week, from Korean, Singaporean and Chinese parts.	Global Electric Transportation Ltd hopes to open an electric car assembly plant in late 2015. IVECO and Fiat truck assembly exists in tiny numbers. Large numbers of assemblers have appeared but few have managed to sustain themselves. Holland Car PLC (2005 -2014) BH Trading and Manufacturing assembles Great Wall trucks Belayab Enterprises assembles Dongfeng light commercial vehicles Marathon Motors Engineering looking to SKD assemble 1000 Hyundai's a year. Metal and Engineering Corporation is a state owned firm which is also assembling a broad range of vehicles, mainly commercial or military in purpose. Nyala Motors will assemble Nissan vehicles.

Sources: Lamprecht (2015); OICA; WITS Database; WardsAuto; Various sources.

The other member states of SADC have for the most part small-scale component sectors catering primarily for the aftermarket. Mozambique, for example, has firms producing exhausts, batteries, tyres, radiators, brake shoes and springs. Many of these plants struggle to compete against South African firms in the tiny home market or in the region.

### **A viable automotive space and regional integration**

As indicated above, one of the conditions for vehicle production is a viable ‘automotive space’. An ‘automotive space’ could take the form of a large emerging market area (LEMA), the periphery of large emerging market area (PLEMA), or a regional market where regional trade agreements grant easier market access to member states and effectively enlarge the market (Humphrey and Oeter, 2000). Nigeria has now overtaken South Africa as the largest market in SSA. But even these markets lack sufficient scale for a self-sustaining industry. If these two countries and Benin and Togo, which form part of the Nigerian market, are stripped out, the average market in the six next largest SSA markets is only 48 239 passenger vehicles per annum.

The reality is that SSA consists of a large number of mostly small economies. The combined SSA market is however quite large with a GDP of \$1.8 trillion and a passenger vehicle market of 1.83 million units per annum. A comparison with India indicates the extent of the opportunity (

Table 13). The total GDP of SSA and India as well as average per capita GDP and population are of the same order. Market size is also similar. The major difference comes in production. India produces its own vehicles while Africa imports. As indicated above, India has far larger production but the most striking difference is in the trade balance where India imports relatively little and has a large positive trade balance (\$6.1 billion). It also has its own brands such as Tata. SSA on the other hand, consists of a large number of mainly very small markets. It is heavily reliant on imports and apart from South Africa, exports very little. As a result, the region has a large automotive trade deficit, amounting to \$11.3 billion<sup>18</sup>. A similar comparison can be made between ECOWAS and Indonesia.

There are, of course, limitations to these rather simplistic comparisons. SSA is well endowed in resources, which implies a resource based comparative advantage. India has very limited resources in relation to its population size. But neither region has particularly strong manufacturing capabilities. The key difference is that India has an integrated single market and this market is protected by a high, common external tariff. ECOWAS is dominated by Africa’s largest economy, Nigeria, which relies on oil exports and has failed to develop a significant manufacturing sector.

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<sup>18</sup> These figures exclude motorcycles for which India is also a large net exporter and SSA a large net importer.

Table 13: Comparison of Asian and African markets, production and trade 2013

	India	SSA	Indonesia	ECOWAS	South Africa
GDP (Current \$ bn)	1875	1659	868	675	366.06
Population (million)	1252	937	250	326	53.16
Per capita GDP (Current \$)	1498	1771	3475	2072	6886.29
New Passenger Vehicle market (000s)	2554	+/- 1 829 new and used	871	+/- 900 new and used	450
Passenger Vehicle production (000s)	3 139		925		265
Tariff Level for Passenger Vehicles - HS87.03	100%	No Unified Tariff	50%	CET of 20% (Nations can add an additional Import Adjustment Tax)	25%
Employment	270000		64000		72000
Passenger Car Imports – HS87.03 (\$ million)	276.54	11419.97	2231.10	3638.08	5492.51
Passenger Car Exports – HS87.03 (\$ million)	5556.47	4344.9	2116.01	5.58	3666.83
Kits Imports – HS87.06 & HS87.07 (\$ million)	120.89	241.03	41.23	33.07	12.86
Kits Exports – HS87.06 & HS87.07 (\$ million)	271.69	11.48	4.49	0.02	18.37
Parts Imports – HS87.08 (\$ million)	3479.12	4796.54	3218.17	784.79	1261.76
Parts Exports – HS87.08 (\$ million)	3912.79	726.39	1417.76	7.57	918.31

Sources: World Development Indicators; UN Comtrade; OICA

There is little in the way of regional value chains in SSA. The only significant automotive trade within the region consists of exports from South Africa to other African countries. Rapid growth in the rest of the region together with closer regional integration arrangements means that the continental market is of major importance to South Africa, second only to the

European Union. But this is one way trade. In 2014, South Africa’s automotive exports to the rest of Africa amounted to R31.6 billion, equivalent to 27.3% of total automotive exports and an increase from 22.3% in 2010. SADC alone accounted for 22.2% of South African automotive exports in 2014 (Table 14). On the other hand, South Africa imported less than R200 million worth of automotive products from the rest of the continent in 2014.

Table 14: Major regional markets for South African automotive exports, 2008 - 2014

Market	SACU automotive exports (Rbn)		
	2010	2012	2014
European Union	33.1	34.0	43.8
Rest of Africa	17.7	25.9	31.6
NAFTA	16.5	20.9	18.7
SADC only	13.9	17.5	25.8

Source: Automotive Industry Export Council (2015)

Regional integration is making slow but steady progress in SSA. The five main overlapping trade agreements, the Southern African Customs Union (SACU), the Southern African Development Community (SADC), the East African Community (EAC), the Common Market for East and Southern Africa (COMESA) and the Economic Community of West African States (ECOWAS) are well established and offer a degree of favourable market access amongst member states.<sup>19</sup> The Tripartite Free Trade Area (TFTA) officially launched in June 2015 and comprising SADC, COMESA and the EAC is a further important step in this direction.

The biggest obstacle facing integration of the industry within the regions is that of the costs of trade diversion, which are particularly high given the large presence of low priced second hand cars in most national markets. Why, for instance, would Ugandans want to buy (expensive) cars made in Kenya, rather than cheap, imported second hand cars from Japan? While some progress has been made to resolve this, it is still a pressing issue. Kenya, which has over 25 000 units surplus capacity, managed to negotiate a common external tariff (CET) of 25% in the EAC for vehicles, a relatively large increase from Tanzania and Uganda’s 0%. They also managed to get VAT in EAC members charged on the price of the vehicles at the factory exit in Kenya and not after transport (Ligami, 2014). However, the CET came to nothing as the member nations were granted a stay on the CET, meaning assemblers face 25% duties for Rwanda and Burundi and unconstrained competition in Tanzania and Uganda (Oligo, 2014). CKD assemblers also face bureaucratic hurdles with kits needing to be imported under the individual tariff lines of the components in the kits as well as a vague duty remission scheme (Oligo, 2014).

ECOWAS has also established a CET in 2015 which sets passenger vehicle tariffs at up to 20% depending on the size of engine. However, countries are able to add an Import Adjustment Tax (IAT), which Nigeria uses to raise the tariffs by up to 50% and they also

<sup>19</sup> See appendix B for the membership of various agreements.

charge a levy on these imported vehicles. Nigerian auto assemblers therefore face uneven levels of protection across ECOWAS and smuggling is expected to intensify through other ECOWAS nations (Adeniyi, 2015).

We have argued above that regional integration is critical to the development of the car industry. The car industry could also be a driver of regional integration as vehicle producers place pressure on governments to increase market access and improve cross border infrastructure (Lung and van Tulder, 2004). But it is also possible that it has the opposite effect in the short term as countries raise special tariffs to protect their industries. For example, Toyota South Africa has seen a decline in exports to the rest of the continent as a result of higher tariffs in Nigeria, Algeria and Angola (TNT News, 2015).

### **Manufacturing capabilities**

The second requirement for vehicle production is that manufacturing needs to become more competitive and the reality is that most African countries suffer from weak manufacturing capabilities and poor infrastructure. In a detailed benchmarking exercise of manufacturing costs in Africa, Iarossi (2009) distinguishes between direct, indirect and invisible costs. Direct costs, which include capital, labour and electricity, are not the major cause of the region being uncompetitive. The main cost differences arise in indirect and invisible costs, which arise outside of the factory (Iarossi, 2009).

Nevertheless, while wages in Africa are generally low, when one controls for factors such as per capita income, living costs, firm size and sector this is not the case and South Asia and East Asia respectively have a 60% and 25% labour cost advantage. Table 15 demonstrates that manufacturing wages are high in Africa compared to Asia and in many cases are a multiple of per capita incomes. Labour costs are however substantially lower than in Latin American and Eastern Europe.

Capital costs are also high in Africa with firms having to pay higher interest rates than is the case in Asia, for instance. While there is substantial variation between countries, electricity costs are also relatively high in Africa.

Indirect costs include transport costs and the regulatory environment and these are again higher in most African countries. But the biggest cost penalties arise in the areas of invisible costs which take account of the quality of the business environment. They include, for example, the high collateral requirements of securing loans, and losses due to unreliable infrastructure services. Poor electricity supply is a major constraint and apart from the disruption to production, it leads to firms having to invest in private generation equipment. Corruption also features as a heavy cost burden. In all, invisible costs in Africa accounted for 13% of sales compared to less than 8% in the next highest region (South Asia) and below 3% in East Asia (Iarossi, 2009).

Table 15: Wages in manufacturing, compared to GDP

	Annual wages \$ (2007)	GDP per capita 2007 (real)*	GDP per capita 2007 (current US\$)
South Africa	13 380	5 894	6 154
Turkey	10 209	7 776	9 312
Brazil	9 216	5 121	7 194
Morocco	7 263	2 116	2 416
Malaysia	6 277	6 008	7 218
Russia	6 042	6 311	9 146
Tunisia	5 659	3 543	3 806
Mauritius	5 022	5 580	6 286
Kenya	2 905	565	848
China	2 899	2 203	2 651
India	2 352	864	1 069
Malawi	1 885	225	266
Tanzania	1 709	405	538
Indonesia	1 667	1 389	1 871
Lesotho	1 586	764	817
Sri Lanka	1 529	1 400	1 614
Vietnam	1 339	784	919
Ethiopia	1 090	190	245

Source: UNIDO Statistics; World Development Indicators; \*at constant 2005 US\$

Barnes et al (2015) compare automotive production in Africa's most advanced auto industry, South Africa, to that of Thailand which is one of Asia's lowest cost producing countries. The results are salutary. On most indicators Thailand has a substantial advantage. Table 16 indicates the wage differences between component suppliers in both countries. They are particularly large for certain skilled categories such as artisans although the higher cost of artisans in South Africa might be partly due to higher skill levels. Thai component firms also recorded slightly higher scores on shop floor productivity measures such as quality, flexibility and inventory levels. With the exception of land costs, Thai firms also had an advantage in terms of utility and logistics costs.

Table 16: Labour and employment costs: South Africa and Thailand

Employment category	Avg. number of employees	Median cost per employee in South Africa	Median cost per employee in Thailand	Ratio; SA to Thailand median costs per employee
Management	18	R 428 500	R 158 148	2.7:1
Professional	17	R 275 500	R 47 520	5.8:1
Supervisors	44	R 122 000	R 29 946	4.1:1
Artisan	40	R 267 000	R 22 080	12.1:1
Production	613	R 53 334	R 19 320	2.8:1
Apprentices	37	R 38 448	R 16 560	2.3:1
Total	769			

Source: Barnes et al (forthcoming)

## **Appropriate policy**

Set out above is an implicit case for developing the automotive industry in Africa. But the obvious retort is that Africa lacks comparative advantage in the sector. Surely, it could be argued, if MNCs see the opportunity they will make the investment. The fact that they have not done so is an indicator that the region lacks comparative advantage and efforts to promote it would be premature. This is an important point. A number of countries have had a costly experience with the industry with small, highly protected investments which imposed high costs but brought little lasting benefit.

As mentioned above, the level of industrialisation in SSA is very low, as is the level of manufacturing capability. The argument about lack of comparative advantage applies at two levels. The first is that SSA lacks comparative advantage in manufacturing in general and will follow a more resource based development path along Latin American lines (Wood and Mayer, 2001). But Latin America has a large automotive industry and as Chang (2013) points out, Africa appears to be rich in resources partly because it is so poor. On a per capita basis, resource endowments are not that large. The second argument relates to the type of manufactured product. The bulk of manufacturing in Africa consists of three types of product categories – the processing of primary products including agro industries, mass consumer goods and labour intensive industries producing for export. It could be argued that Africa should stick to these more basic industries.

These are important arguments but there are some counterpoints. Firstly, automotive assembly and the production of basic components are not high tech industries. There are many examples of successful automotive industries, which started when countries were at a lower level of development than many SSA countries currently. India is one obvious example but this category would include many other producers in Asia.

Secondly, there are no examples of automotive industries in developing countries which got off the ground without tariff protection and other forms of support. This was the case, for instance, in countries such as diverse as Thailand, Brazil and Turkey, which all continue to receive large scale state support.

Thirdly, as indicated above, Africa's high manufacturing costs are primarily a function of factors external to the firm – weak infrastructure and regulatory impediments. This means that production costs in Africa are likely to fall quite rapidly relative to competitor countries as these basic infrastructure and regulatory issues are addressed. There is significant evidence that this is happening although serious problems remain. Costs will also fall as domestic supplier networks evolve. In the short term, these obstacles can be overcome by locating in special economic zones, which are being developed in many countries.

Fourthly, progress with regional integration will greatly increase the attractiveness of the region as a site for manufacturing investment which in turn could lower production costs. For

instance, the 14 member states of the TFTA have a combined GDP of \$1.2 trillion and between 2010 and 2013 grew at an average rate of over 5% per annum.

### *Protection*

The issues facing the industry in Africa are somewhat different to elsewhere because of the huge trade in imported used cars. As indicated earlier, exports to Africa from Western Europe have increased rapidly since the 1980s (Beuving, 2004: 511-512). In East Africa the main source of vehicle imports are used cars from Japan. Japan imposes strict measures on three year old cars as an industrial policy measure to boost domestic consumption and encourage emission efficient vehicles. The result is that these older vehicles have little value inside the country and are exported at low cost. There is no way in which a large scale assembly industry could get off the ground with this kind of import competition. Used car imports would therefore have to be controlled along with imports of new vehicles. The huge range of used cars imported also make it difficult for the local parts industry to develop because of the wide range of parts required. But protection will raise costs to consumers and has to be within limits. Restricting imports will impose challenges in countries such as Nigeria, where there is already a thriving trade in illegal imports. For instance, Nigeria has for some time prohibited imports of used cars over seven years old. These imports have been routed through the free port of Cotonou in Benin (Beuving, 2004). Even with current barriers, there is a massive illegal trade although traders importing cars from Benin to Nigeria still have to pay bribes which also act as form of import barrier (Fadahunsi and Rosa, 2002).

### *The question of scale*

The automotive industry remains scale intensive. In such industries, tariff protection in small domestic markets is likely lead to the establishment of plants operating at below minimum efficient scale. Small scale assembly raises costs and adds little value. Low volume vehicle plants mean that investment in component production is uneconomic beyond a low level of local content. In turn, low volume component production in cases where the parts industry is protected, means that input costs will be high for assemblers.

There is some debate as to the level of minimum efficient scale in vehicle assembly and also about the extent to which this may have changed with the introduction of new forms of production organization. Modern plants have a capacity of at least 150 000 vehicles per annum usually with just one model. Estimates also vary regarding minimum efficient scale in the production of major components, but it is clear that this point is only reached at very high output volumes, significantly higher than apply to vehicle assembly. Minimum efficient scale also varies according to the type of component. Generally, capital-intensive plants and processes (for example the stamping of body panels), where fixed costs are high, reach optimal scale only at very high levels of output.

In a market with high effective rates of protection for vehicle assembly it is clearly economic for producers to build a wide range of models even in low volumes in order to be able to supply a full model range to the domestic market. However, the implications for the component sector are highly adverse. The cost premium incurred by component makers for producing a wide range of products at low volume is considerable. It is clear that the decision taken by assemblers to operate low volume plants, perhaps also producing many models within these plants, generates greater diseconomies external to the assembly process than internally. So suppliers are severely disadvantaged by the decision of assemblers to proliferate production.

Table 17 presents the position in a number of developing countries that prevailed in the mid-1990s. Many countries at that time produced a number of very low volume models, a situation that was most evident in China, Malaysia, Indonesia and South Africa. These countries have now all moved on with most of their industries now dominated by large scale, modern plants.

Table 17: Production volumes for models at a single plant

Country	Vehicle type	Production volumes (000s)				Year
		>100	50-100	20-50	<20 <sup>a</sup>	
China	Cars	1	1	2	7	1995
China	Pickups, utility vehicles, vans	0	1	8	19	1995
India	Cars	1	1	1	9	1995
Malaysia	Cars	1	1	1	14	1995 <sup>b</sup>
Malaysia	Vans	0	0	0	5	1995
Mexico	Cars	3	3	5	1	1997
Mexico	Pickups, utility vehicles	2	2	1	1	1997
Argentina	Cars	0	1	6	4	1997
Brazil	Cars	5	3	4	3	1997
Indonesia	Cars	0	0	1	13	1995
Indonesia	Vans, utility vehicles	0	1	2	10	1995
Thailand	Cars	0	1	3	7	1995
Thailand	Pickups	0	4	1	1	1995
S. Africa	Cars	0	0	4	17	1995
S. Africa	Pickups, utility vehicles	0	0	1	7	1995

Notes: <sup>a</sup> Excludes models with production of under 1000 units in the relevant year.

<sup>b</sup> Data for Proton refers to 1997

Sources: Humphrey and Oeter (2000:61), DTI (1997:12), NAAMSA.

While it is unrealistic to expect that new plants in Africa should be at world scale, this evidence cannot be ignored. What is now happening in many African countries is that assembly plants are being established that are so far from world scale that they could best be described as ‘screwdriver plants’ with minimal final assembly. In fact, this seems to be the modus operandi of the new, small scale investments pouring into countries such as Nigeria in spite of claims that vehicles are ‘made in Nigeria’ or ‘made in Kenya’.

The purpose of such investments is questionable. They add little value and in some cases even involve dis-assembling fully built up vehicles in the country of origin. These dis-assembled vehicles are then re-assembled in countries such as Nigeria to meet the policy requirements for domestic SKD assembly. There are two possible reasons for encouraging such superficial forms of investment. One is that the manufacturing capability does not exist for more sophisticated production. This is a highly tenuous argument as these countries had CKD plants back in the 1960s. A more valid reason would be that it allows for the gradual phase in of protection, which will restrict imports of cars. Clearly, a more rapid introduction of such a policy could be problematic if new supply has not been established. And firms will tend to hold back from major investments until they are sure that protection will, in fact, be imposed. Certainly, there is a large industry involved in the import of new and used cars, which is strongly opposed to these new policies.

There are, however, three main problems with these new investments. Firstly, value added is negligible. Secondly, the tiny volumes offer minimal prospects for component supplier investment. Thirdly, the policy offers very high effective rates of protection on assembly. This is the reason that, according to the National Automotive Council, as many as thirty firms have either signed up to assemble vehicles in Nigeria or are considering doing so.<sup>20</sup> This then creates another problem, which is that these newly established operations are likely to resist the tightening of assembly requirements and shift from SKD to CKD production. In many cases, foreign car firms are setting up joint ventures with domestic business groups so it is quite likely that these political interests could stymie the proposed rationalisation of the industry.

It would be better to impose a medium tariff on imported vehicles together with a low tariff on components ensuring that effective rates of protection on assembly are not excessive. The idea would be to attract a smaller number of reasonably large scale investments in CKD assembly, which would then seek to localise some components. These assembly plants would compete with imports and as efficiencies improved along with the growing market, volumes would increase encouraging more component production.

Given the current small market for new vehicles, it might make sense to first focus on motorcycle production where the domestic market is already large in countries such as Nigeria. This is a strategy that has been used in a number of Asian countries, where motorcycle industries also stimulated general industrialisation (Ohara & Sato, 2008: 11&12). The core technology for the commercial 'workhorse' motorcycles which dominate the market in developing nations has not advanced since Honda released the 'Super Cub' in 1958 (Ohara & Sato, 2008: 4). This means the production technology is mature. In addition, production of motor cycles is simpler than cars and they comprise of only 10% of the parts needed for a passenger vehicle (Ohara & Sato, 2008: 3&4).

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<sup>20</sup> See '30 vehicle manufacturing plants to start operations in Nigeria' *Business Day (Nigeria)* 22 July, 2014.

## **5. Conclusion**

Sub-Saharan Africa represents a rapidly growing market which could exceed 10 million passenger vehicles by 2030. It is inconceivable that all these vehicles will continue to be imported and this market represents an opportunity which could play a major role in the industrialisation of the continent. The production of vehicles and components could have important spill overs to other industries as well.

There are many pitfalls, however. Firstly, this growing market is divided among nearly 40 countries, only a few of which have sufficient size to sustain an industry on the basis of the domestic market. Regional markets and therefore regional integration are essential. Secondly, manufacturing capabilities are weak and there are serious infrastructure constraints. A limited supply base, shortages of skills and the poor supply of prerequisites such as power and transport links need to be addressed. Third, there is the question of national automotive policy. This needs to be balanced to provide a measure of protection without allowing for excessive effective rates of protection on assembly. It is all too easy to establish minor assembly operations which add little value but at a large cost to consumers and firms. In some countries, the market for motor cycles is already large. This may represent a more appropriate entry point for automotive industry investment.

African countries need to learn from the experience of earlier industrialisers. From the start, the type of investments that are encouraged need to be at reasonable scale in order to achieve basic efficiencies. An equally important conclusion is that the market is growing extremely rapidly. Whether these vehicles are imported or locally produced, large scale investment in mass transit systems from an early stage is of prime importance to ameliorate the massive congestion that is already apparent in many African cities.

## **Appendix A: Data sources and problems**

### *Passenger Car Definitions*

The categories included in the Harmonised System (HS) code 8703, motor cars and other motor vehicles principally designed for the transport of persons, were used to define passenger vehicles for the trade data. The data was accessed at the six digit level for UN Comtrade, so as to exclude non-passenger car vehicles used for carrying people, and the 8-10 digit level for the US, EU and Japanese sources to be able to specify used and new passenger vehicles.

For UN Comtrade database the following HS codes were included:

870321; 870322; 870323; 870324; 870331; 870332; 870333 and 870390

For the Eurostat Comext Database the following HS codes were included

New passenger vehicles: 87032110; 87032210; 87032211; 87032219; 87032311; 87032319; 87032410; 87033110; 87033211; 87033219; 87033311 and 87033319

Used passenger vehicles: 87032190; 87032290; 87032390; 87032490; 87033190; 87033290 and 87033390

For the Japanese Customs and Tariff Bureau database the following HS codes were included

New passenger vehicles: 870321919; 870321929; 870322920; 870323919; 870323929; 870324920; 870331900; 870331920; 870332919; 870332929; 870333920 and 870390900

Used passenger vehicles: 870310000; 870321910; 870321915; 870321920; 870321925; 870322900; 870322910; 870323910; 870323915; 870323920; 870323925; 870324900; 870324910; 870331910; 870332910; 870332915; 870332920; 870332925; 870333900; 870333910; 870390000 and 870390100

For the US International Trade Commission database the following HS codes were included

New passenger vehicles: 8703330030; 8703330010; 8703240030; 8703230010; 8703900000; 8703330045; 8703320010; 8703310000; 8703240075; 8703240060; 8703240050;

8703240010; 8703230075; 8703230060; 8703230020; 8703220000 and 8703210000

Used passenger vehicles: 8703230090; 8703240090; 8703320050 and 8703330085

### *Challenges of Data in Collection*

To track the flows of used cars is a significant challenge. An immediate administrative issue is that generalised customs coding does not require for vehicles to be classed as new or used. It is up to individual nations' customs agencies to require the classification and not all do (Fuse et al. 2009, p.349). What used cars are road worthy or what their value is are also subjective, to a degree, which allows nations to disagree on classifications, meaning one nation's export-barred ELV may be another's legitimate import (Schneider et al. 2010). Even within nations there is invoice manipulation and freight fees are not applied in the same manner universally, sometimes passenger vehicles are recorded at "free on board" values and at other times at a "cost, insurance and freight" value (Fuse et al. 2009, p.349)(Brooks 2012).

In addition to these administrative issues there is widespread smuggling and grey importing in SSA. This also occurs on a massive scale in intra-EU car movements and beyond (Brooks

2012; Beuving 2004; Golub 2012; Fadahunsi & Rosa 2002; Schneider et al. 2010). Russian sailors who carried cars as cargo on their return journeys from delivering their Russian timber, and Pakistani diasporas who sent used cars back to Pakistan and avoided a used car import ban, are both examples outside of SSA (Fuse et al. 2009, p.349; Brooks 2012, p.83; Fuse et al. 2008, p.2437). These unrecorded flows mean that even trade statistics are not very capable of accounting for the used car trade. Nor can they account for the flow of new passenger vehicles particularly accurately as these also suffer from parallel imports where surplus passenger vehicles from dealers outside the region are moved into SSA. As such even the producer organisations are only able to give estimated figures for the numbers of new passenger cars they are supplying to almost all of SSA (OICA 2014).

The lack of concrete figures leads to nations having multiple different estimates attached to it. An example of this mixed message effect is Nigeria. A governmental source claimed in 2011 that demand for passenger vehicles was 75 000 new and 100 000 used passenger a year (Jalal 2011). In that same year the very same government source said in a different forum that that the numbers were in fact 80 000 new and 200 000 used (Opara 2011). Counter to this, industry sources project a different picture claiming 500 000 cars were imported in 2014, of which 40 000 or 50,000 were new, depending on which industry representative you are asking (Cockayne 2014; OICA 2014).

#### *UN Comtrade Issues*

The most problematic element of this data is that the UN Comtrade database does not consistently take into account the flows of cars out of the Middle East, with patchy or just absent data entry. Tracking these flows is of utmost importance as anecdotally they are viewed to be very large when talking to those involved in the SSA vehicle trade (Lester, 2015). In the years of UN Comtrade data that they are reported in, exports are indeed quite significant. For example Oman only has data for 2001 available and in that year it is the largest exporter to SSA by a long way, with huge exports to the former Sudan. However, even excluding Sudan it is second only to the whole EU. Likewise when the United Arab Emirates and Saudi Arabia do supply data they are amongst the top non-EU, US and Japan exporters (UN Comtrade, 2015).

Where UN Comtrade data is available there are some other issues. One is the possibility that double counting exists if the exports from non-producing SSA nations are included. This occurs where cars have been imported to a nation due to its good ports or low duties and then are counted as exports of that nation to its neighbours. As such these entries are dropped. There are also a few nonsensical entries in the UN Comtrade data, most notably; entries showing all of SACU registering impossibly high imports from South Africa in 2010<sup>21</sup>. These are adjusted so as to instead be representative of the trends in the data.

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<sup>21</sup> It is highly unlikely that Botswana, Lesotho, Namibia and Swaziland each imported in (000's) 3 212; 242; 1785 and 985 passenger cars respectively in 2010 and then 8.9; 3.3; 15.7 and 3.1 in 2011. Especially since if viewed as percentages of their populations the 2010 imports represent 160% of Botswana getting cars, 12% of Lesotho, 82% of Namibia and 83% of Swaziland.

## Appendix B: Membership of key African Regional Economic Communities

Country	SACU	SADC	EAC	COMESA	ECOWAS
Angola		x			
Benin					x
Botswana	x	x			
Burkina Faso					x
Burundi			x	x	
Cape Verde					x
Comoros				x	
Cote d'Ivoire					x
Democratic Republic of Congo		x		x	
Djibouti				x	
Egypt				x	
Eritrea				x	
Ethiopia				x	
Gambia					x
Ghana					x
Guinea					x
Guinea-Bissau					x
Kenya			x	x	
Lesotho	x	x			
Liberia					x
Libya				x	
Madagascar		x		x	
Malawi		x		x	
Mali					x
Mauritius		x		x	
Mozambique		x			
Namibia	x	x			
Niger					x
Nigeria					x
Rwanda			x	x	
Senegal					x
Sierra Leone					x
Sudan				x	
Seychelles		x		x	
South Africa	x	x			
Swaziland	x	x		x	
Tanzania		x	x		
Togo					x
Uganda			x	x	
Zambia		x		x	
Zimbabwe		x		x	

Note: The Southern African Customs Union (SACU) comprising South Africa and its small neighboring countries economies is not listed above.

Sources: Lamprecht (2015)

## Appendix C: Rand / Dollar Exchange Rate 2000 - 2013

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Year	Official exchange rate (Rands per US\$, period average)
2000	6.94
2001	8.61
2002	10.54
2003	7.56
2004	6.46
2005	6.36
2006	6.77
2007	7.05
2008	8.26
2009	8.47
2010	7.32
2011	7.26
2012	8.21
2013	9.66

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Source: World Development Indicators

## References

- Ackello-Ogutu, C. 1996. *Methodologies for Estimating Informal Crossborder Trade in Eastern and Southern Africa: Kenya / Uganda Border; Tanzania and its Neighbors; Malawi and its Neighbors; Mozambique and its Neighbors*. Regional Trade Agenda Series (29).
- Adeniyi, R., 2015. "ECOWAS CET: FG smuggles 70% duty, tax on used, new vehicles". *National Daily*. 27 April. Accessed on 10 May. Available at: <http://www.nationaldailyng.com/business/maritime/3736-ecowas-cet-fg-smuggles-in-70-duty-tax-on-used-new-vehicles>.
- African Development Bank Group. 2011. Africa in 50 Years ' Time. The Road Towards Inclusive Growth. (September):72. Available: [http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Africa in 50 Years Time.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Africa%20in%2050%20Years%20Time.pdf).
- African Review. 2015. "RLE and KMC to begin Manufacturing cars in Uganda". *African Review*. 30 April. Accessed: 11 May 2015. Available at: <http://www.africanreview.com/manufacturing/industry/rle-and-kmc-to-begin-manufacturing-cars-in-uganda>
- Asfaw, A. 2013. "Nyala Motors to assemble Nissan vehicles". 12 August. Accessed: 11 May 2015. Available at: [http://capitalethiopia.com/index.php?option=com\\_content&view=article&id=3408:nyala-motors-to-assemble-nissan-vehicles&catid=35:capital&Itemid=27](http://capitalethiopia.com/index.php?option=com_content&view=article&id=3408:nyala-motors-to-assemble-nissan-vehicles&catid=35:capital&Itemid=27)
- Assamoi, E.M. & Liousse, C. 2010. A new inventory for two-wheel vehicle emissions in West Africa for 2002. *Atmospheric Environment*. 44(32):3985–3996. DOI: 10.1016/j.atmosenv.2010.06.048.
- Automotive News Europe. 2013. "Renault-Nissan plans production in Nigeria". *Automotive News*. 09 October. Accessed: 11 May 2015. Available at: <http://europe.autonews.com/article/20131009/ANE/131009859/renault-nissan-plans-production-in-nigeria>
- Automotive World. "Uganda: Geely announces assembly plant." *Automotive World*. 26 November. Accessed: 11 May 2015. Available at: [http://global.factiva.com/aa/?ref=AUTOW00020071126e3bq00002&pp=1&fcpil=en&napc=S&sa\\_from=](http://global.factiva.com/aa/?ref=AUTOW00020071126e3bq00002&pp=1&fcpil=en&napc=S&sa_from=).
- Barnes, J, Black, A, Tekachanont, K. Industrial policy, multinational strategy, and domestic capability: A comparative analysis of the development of South Africa's and Thailand's automotive industry.
- Benabedjil, N. Bounya, N. Layan, J-P. Lung, Y. and Piveteau, A. (2015) Renault in Northern Morocco: The emergence of an automotive cluster in Tangier. Paper presented at the 23<sup>rd</sup> International Colloquium of Gerpisa, Paris.

Benjamin, N. & Mbaye Aly, A. 2012. *The Informal Sector in Francophone Africa: Firm Size, Productivity and Institutions*. (Africa Development Forum Series). Washington, DC.

Beuving, J.J. 2004. Cotonou's Klondike: African traders and second-hand car markets in Bénin . *The Journal of Modern African Studies*. 42(4):511–537. DOI: 10.1017/S0022278X04000382.

Beuving, J.J. 2006a. Cotonou's klondike : a sociological analysis of entrepreneurship in the Euro-West African second-hand car trade. University of Amsterdam.

Beuving, J.J. 2006b. Nigerien second-hand car traders in Cotonou: A sociocultural analysis of economic decision-making. *African Affairs*. 105(420):353–373. DOI: 10.1093/afraf/adi106.

Black, A. 2001. Globalisation and restructuring in the South African automotive industry. *Journal of International Development*, Vol. 13, No. pp. 779-796.

Black, A. and Muradzikwa, S. 2004. The limits to regionalism: The automotive industry in the Southern African Development Community, in Carrillo, J., Lung Y. and van Tulder, R. (eds.) *Cars....Carriers of Regionalism?* Palgrave Macmillan, 2004.

Brooks, A. 2012. Networks of power and corruption: The trade of Japanese used cars to Mozambique. *Geographical Journal*. 178(1):80–92. DOI: 10.1111/j.1475-4959.2011.00410.x.

CAR magazine. 2001. “Botswana Car Plant Goes Cheap”. *CARmag.co.za*. 13 September. Accessed: 11 May 2015. Available at: <http://www.carmag.co.za/news/botswana-car-plant-goes-cheap/>

Chamon, M., Mauro, P. & Okawa, Y. 2008. Mass car ownership in the emerging market giants. *Economic Policy*. 23(54):243–296. DOI: 10.1111/j.1468-0327.2008.00201.x.

Chang, H-J. 2013. Industrial policy: Can Africa do it? In Stiglitz, J., Lin. J. and Patel, E. *The Industrial Policy Revolution II*. Palgrave McMillan

Chauhan, C. 2014. “Maruti Suzuki loses No 2 slot to Nissan in car exports; Hyundai still numero uno”. *The Economic Times*. 23 April. Accessed: 10 May 2015. Available at: [http://articles.economictimes.indiatimes.com/2014-04-23/news/49347793\\_1\\_nissan-india-hyundai-motor-india-rakesh-srivastava](http://articles.economictimes.indiatimes.com/2014-04-23/news/49347793_1_nissan-india-hyundai-motor-india-rakesh-srivastava)

Clerides, S. 2008. Gains from trade in used goods: Evidence from automobiles. *Journal of International Economics*. 76(2):322–336. DOI: 10.1016/j.jinteco.2008.07.009.

Clerides, S.K. 2003. The Welfare Effects of Trade Liberalization : Evidence from Used Automobiles. (July).

Cockayne, R., 2014. “Import duties dent new vehicle exports into Africa ”. *Business Report*. 22 August. p. 1

Deloitte. 2014. *The Deloitte Consumer Review Africa : A 21st century view*. London.

- Dyson, J. 2012. "Ethiopia Sets Sights on Full-Car Production by 2015". *WardsAuto*. 03 December. Accessed: 11 May 2015. Available at: <http://wardsauto.com/africa-middle-east/ethiopia-sets-sights-full-car-production-2015>
- Emorut, F. 2013. "Chinese car maker enter Uganda market". *New Vision*. 15 June. Accessed: 11 May 2015. Available at: <http://www.newvision.co.ug/news/643977-chinese-car-maker-enters-uganda-market.html>
- Eurostat Comext Database. 2014. *Easy Comext* [online]. Available online at: <http://epp.eurostat.ec.europa.eu/newxtweb/>
- Fadahunsi, A. & Rosa, P. 2002. Entrepreneurship and Illegality. *Journal of Business Venturing*. 17(5):397–429. DOI: 10.1016/S0883-9026(01)00073-8.
- Fikade, B. 2013. "Chinese Automaker, Build Your Dreams Auto, Opens A New Assembly Plant In Ethiopia". *The Reporter*. 27 January. Accessed: 11 May 2015. Available at: <http://www.meleszenawi.com/chinese-automaker-build-your-dreams-auto-opens-a-new-assembly-plant-in-ethiopia/>
- Freemantle, S. & Stevens, J. 2012. *Africa Macro - India leads in unlocking new vehicle demand in Africa*. Johannesburg.
- Furlonger, D., 2014. "Nigeria joins race to expand motor industry". *Business Day Live*. 27 October. Accessed: 10 May 2015. Available at: <http://www.bdlive.co.za/africa/africanbusiness/2014/10/27/nigeria-joins-race-to-expand-motor-industry>
- Fuse, M., Kosaka, H. & Kashima, S. 2009. Estimation of world trade for used automobiles. *Journal of Material Cycles and Waste Management*. 11(4):348–357. DOI: 10.1007/s10163-009-0263-3.
- Fuse, M., Nakajima, K. & Yagita, H. 2008. Outflow of resources from Japan focusing on end-of-life vehicles. *Nippon Kinzoku Gakkaishi/Journal of the Japan Institute of Metals*. 72(8):557–564. DOI: 10.2320/jinstmet.72.557.
- Golub, S.S. 2012. Entrepot Trade and Smuggling in West Africa: Benin, Togo and Nigeria. *World Economy*. 35(9):1139–1161. DOI: 10.1111/j.1467-9701.2012.01469.x.
- Grubel, H.G. 1980. International trade in used cars and problems of economic development. *World Development*. 8(10):781–788. DOI: 10.1016/0305-750X(80)90005-4.
- Humphrey, J. and Oeter, A. 2000. Motor industry policies in emerging markets: Globalisation and the promotion of domestic industry. In Humphrey J., Lecler, Y. and M. Salerno (eds.) *Global strategies and local realities: The auto industry in emerging markets*, London: MacMillan.
- Iarossi, G. 2009. Benchmarking Africa's costs and competitiveness. In *The Africa Competitiveness Report 2009*. World Economic Forum, World Bank and African Development Bank.

Jala, A. 2011. "Investment Opportunists Within Nigeria's Automotive Industry". NAC White Paper. Available at:  
[http://issuu.com/henleymedia/docs/nac\\_ebook\\_01\\_2011?e=1254810/5197917#search](http://issuu.com/henleymedia/docs/nac_ebook_01_2011?e=1254810/5197917#search)

Japanese Customs and Tariff Bureau. 2014. *Trade Statics of Japan*. Ministry of Finance,

Japanese Customs and Tariff Bureau. Tokyo: Japan. Available online at:  
[http://www.customs.go.jp/toukei/info/index\\_e.htm](http://www.customs.go.jp/toukei/info/index_e.htm)

Juma, V. 2013. "GM doubles production in shift to locally assembled cars". *Business Daily*. 30 January. Accessed: 11 May 2015. Available at:  
<http://www.businessdailyafrica.com/Corporate-News/GM-doubles-production-in-shift-to-locally-assembled-cars/-/539550/1680230/-/12iixns/-/index.html>

Kaira, C. 2014. "Corridor group says Botswana car import ban illogical". *The Namibian*. 14 January. Accessed: 26 April 2015. Available at:  
[http://www.namibian.com.na/indexx.php?archive\\_id=118419&page\\_type=archive\\_story\\_detail&page=1](http://www.namibian.com.na/indexx.php?archive_id=118419&page_type=archive_story_detail&page=1).

Karombo, T. 2014. "Zimbabwe sees to promote local assembly of vehicles". *Buisness Report*. 11 August. Accessed: 11 May 2015. Available at:  
<http://www.iol.co.za/business/news/zimbabwe-seeks-to-promote-local-assembly-of-vehicles-1.1733193#.VWJyx0-qkqp>

Lester, M. 8 May 2015. *Interview with author*. Chair Africa Export Forum. Johannesburg, South Africa.

Ligami, C., 2014. "Kenya looks to increase duty on EAC car imports". *The East African*. 14 June. Accessed: 10 May 2015. Available at: <http://www.theeastafrican.co.ke/business/Kenya-looks-to-increase-duty-on-EAC-car-imports/-/2560/2348246/-/8jf0qc/-/index.html>.

Lung, Y. and van Tulder, R. 2004. Introduction: In search of a viable automotive space, in Carrillo, J., Lung, Y. and R. van Tulder (eds.) *Cars, carriers of regionalism?* Hampshire: Palgrave Macmillan.

Lusakatimes. 2011. "China auto firm to establish assembly plant in Zambia". 07 May. Accessed: 10 May 2015. Available at: <http://www.lusakatimes.com/2011/05/07/china-auto-firm-establish-assembly-plant-zambia/>

Madera, B. 2011. "Quest to assemble Chinese cars in Zimbabwe". *Nehanda Radio*. 10 November. Accessed: 11 May 2015. Available at: <http://nehandaradio.com/2011/11/10/quest-to-assemble-chinese-cars-in-zimbabwe/>

Mahindra Cars India. 2013. "Mahindra & Mahindra launches XUV500, Genio and Xylo in Ghana". *Mahindra Cars India*. 27 August. Accessed: 11 May 2015. Available at:  
<http://www.mahindracarsindia.com/2013/08/mahindra-mahindra-launches-xuv500-genio-and-xylo-in-ghana.html>

Mensah, K. 2014. "Ghana's talented but ignored inventors". *Aljazeera*. 24 August. Accessed: 11 May 2015. Available at: <http://www.aljazeera.com/news/africa/2014/08/ghana-talented-but-ignored-inventors-2014823191921173432.html>

Mwanza, K. 2014. "Indian Auto Giants Plan To Build Assembly Plant In Nigeria". *AFK Insider*. 15 January. Accessed: 11 May 2015. Available at: <http://afkinsider.com/38118/indian-auto-giants-plan-build-assembly-plants-nigeria/>

National Automotive Council. 2014. Information Document on the Nigerian Automotive Industry Development Plan. Federal Ministry of Industry, Trade and Investment. June.

Nene, M. 2014. "Uganda Set To Start Commercial Production Of Cars In 2018".

*Chicamod*. 15 July. Accessed: 11 May 2015. Available at: <http://www.chicamod.com/uganda-set-start-commercial-production-cars-2018/>

News Day. 2014. "Botswana ban Zimbabwe bound unregistered cars". *News Day*. 03 January. Accessed: 26 April 2015. Available at:

<https://www.newsday.co.zw/2014/01/03/botswana-bans-zimbabwe-bound-unregistered-cars/>

Ngugi, K. 2013. "Tanzania Automotive Technology Centre 28 Years Later". *Afroautos*. 05 July. Accessed: 11 May 2015. Available at: <http://www.afroautos.com/african-autos/tanzania-automotive-technology-center-28-years-later/>

Nieuwenhuis, P., Beresford, A., & Choi, K., 2007, "Shipping air?; Tracking and forecasting the shipments of new and used cars. *Journal of Maritime Research*. 4(3). pp 17-36.

Ogunlami, T. 2014. "Peugeot Nigeria Bounces Back". *Sunday Trust*. 10 August. Accessed: 11 May 2015. Available at: <http://dailytrust.com.ng/sunday/index.php/business/17801-peugeot-nigeria-bounces-back>

Ohara, M & Sato, Y. 2008. Asian Industrial Development from the Perspective of the Motorcycle Industry. Institute of Developing Economies (IDE) Discussion Paper No 182. Chiba.

OICA (International Organization for MOTOR Vehicle Manufacturers). 2014. *2013 Production Statistics*. . Accessed: 12 April 2015. Available at: <http://www.oica.net/category/production-statistics/2013-statistics/>

OICA (International Organization for MOTOR Vehicle Manufacturers). 2014. *Auto Jobs*. . Accessed: 12 April 2015. Available at: <http://www.oica.net/category/economic-contributions/auto-jobs/>

OICA (International Organization for MOTOR Vehicle Manufacturers). 2014. *New PC Registrations or Sales*. Accessed: 12 April 2015. Available at: <http://www.oica.net/wp-content/uploads//pc-sales-2014-2.pdf>

OICA (International Organization for MOTOR Vehicle Manufacturers). 2014. *PC World Vehicles In Use*. Accessed: 12 April 2015. Available at: <http://www.oica.net/wp-content/uploads//pc-inuse-2013.pdf>

Olingo, A., 2014. "Mobius faces hurdles in EA motor market". *The East African*. 25 October. Accessed: 10 May 2015. Available at: <http://www.theeastafrican.co.ke/news/Barriers-put-the-brakes-on-car-assembly-in-EA/-/2558/2498772/-/142b93ez/-/index.html>.

Oluka, B. H. 2007. "Uganda: China to Build U.S. \$10 Million Car Assembly Plant". *The East African*. 26 November. Accessed: 11 May 2015. Available at: <http://allafrica.com/stories/200711260481.html>

Onyedimmakachukwu. 2014. "Stallion Group Rolls out First Made-in-Nigeria Hyundai Vehicles". *Ventures Africa*. 11 August. Accessed: 11 May 2015. Available at: <http://www.ventures-africa.com/archives/47147>

Opara, T., 2011. "NAC seeks 35% duty differential between FBU and locally assembled units". *Vanguard*. 01 November. Accessed: 25 April 2015. Available at: <http://www.vanguardngr.com/2011/11/nac-seeks-35-duty-differential-between-fbu-and-locally-assembled-units/>.

Organisation Internationale des Constructeurs d'Automobiles (OICA). 2014. *Sales Statistics*. Accessed: 22 April 2015. Available at: <http://www.oica.net/category/sales-statistics/>

Parker, C. 22 May 2014. *Interview with author*. Senior Economic Consultant, Frost & Sullivan. Cape Town, South Africa.

Payvand News. 2008. "Iran-Khodro Starts Samand Assembly in Senegal". *Payvand Iran News*. 04 October. Accessed: 11 May 2015. Available at: <http://www.payvand.com/news/08/apr/1101.html>

Pelletiere, D. & Reinert, K. a. 2002. The political economy of used automobile protection in Latin America. *World Economy*. 25(7):1019. Available: <http://www.scopus.com/scopus/inward/record.url?eid=2-s2.0-0036650660&partner=40&rel=R4.5.0>.

Pelletiere, D. 2003. *Why Do Countries Restrict Used Good Imports? An Inquiry into the International Political Economy of Used Automobiles*. Dissertation Submitted to the Graduate Faculty of George Mason University in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy. Fairfax: George mason University.

Rhys, D.G. 1996. The Automotive Industry Sector in Africa, United Nations Industrial Development Organisation, Interregional Expert Group Meeting on the Automotive Industry, Tunis.

Sakai, S.I., Yoshida, H., Hiratsuka, J., Vandecasteele, C., Kohlmeyer, R., Rotter, V.S., Passarini, F., Santini, A., et al. 2014. An international comparative study of end-of-life vehicle (ELV) recycling systems. *Journal of Material Cycles and Waste Management*. 16(1):1–20. DOI: 10.1007/s10163-013-0173-2.

Sander, C. 2004. *Passing the Buck in East Africa The Money Transfer Practice and Potential for Services in Kenya , Tanzania , and Uganda*. Nairobi.

Schiraldi, P. 2011. Automobile replacement: A dynamic structural approach. *RAND Journal of Economics*. 42(2):266–291. DOI: 10.1111/j.1756-2171.2011.00133.x.

Schneider, J., Karigl, B., C., N., Tesar, M., Oliva, J. & Read, B. 2010. End of life vehicles: Legal aspects, national practices and recommendations for future research. 77.

Sedzro, K.M., Amewu, G., Darko, J., NORTEY, E.N.N. & DASAH, J.B. 2014. Determinants of Automobile Purchase and Brand Choice in Ghana : Multinomial Logit Approach. *Journal of Transnational Management*. 19:303–317. DOI: 10.1080/15475778.2014.948791.

Thakkar, K. 2014. “Hyundai to increase focus on exports to emerging markets”. *The Economic Times*. 21 October. Accessed: 10 May 2015. Available at: <http://economictimes.indiatimes.com/industry/auto/news/passenger-vehicle/cars/hyundai-to-increase-focus-on-exports-to-emerging-markets/articleshow/44894554.cms>

The World Bank, World Development Indicators. 2014. *GDP per capita (constant 2005 US\$)* [Data file]. Retrieved from <http://data.worldbank.org/indicator/NY.GDP.PCAP.KD>

The World Bank, World Development Indicators. 2014. *GDP per capita (current 2005 US\$)* [Data file]. Retrieved from <http://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

The World Bank, World Development Indicators. 2014. *Official exchange rate (LCU per US\$, period average)* [Data file]. Retrieved from <http://data.worldbank.org/indicator/PA.NUS.FCRF>

The World Bank, World Development Indicators. 2014. *Population, total* [Data file]. Retrieved from <http://data.worldbank.org/indicator/SP.POP.TOTL>

Tsigas, M. E., Hertel, T.W. & Binkeley, J.K. 1992. Estimates of systematic reporting biases in trade statistics. *Econ Syst Res*. 4:297-310.

UBOS. 2012. *The Informal Cross Border Trade (ICBT) Survey Report 2011*. Available: [http://www.bou.or.ug/bou/publications\\_research/icbt.html](http://www.bou.or.ug/bou/publications_research/icbt.html).

United Nations Industrial Development Organization. 2012. *INDSTAT4, Industrial Statistics Database at the 3- and 4-digit level of ISIC code* [online]. Available online at: <http://data.un.org/Explorer.aspx?d>

United Nations Statistics Division. 2014. *UN COMTRADE*. International Merchandise Trade Statistics, United Nations Statistics Division. New York: USA. Available online at <http://comtrade.un.org/>

US International Trade Commission. 2014. *USITS Interactive Tariff and Trade DataWeb* [online]. Available online at: <http://dataweb.usitc.gov/>

Weihua, C. 2014. “Lifan set to put its foot to the floor”. *China Daily*. 22 August. Accessed: 11 May 2015. Available at: [http://africa.chinadaily.com.cn/weekly/2014-08/22/content\\_18466172.htm](http://africa.chinadaily.com.cn/weekly/2014-08/22/content_18466172.htm)

Wood, A. & J. Mayer. 2001. Africa’s Export Structure in a Comparative Perspective. *Cambridge Journal of Economics*. 25. 369-394.