The Automotive Industry

The potential for sustainable regional cooperation

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Abstract

Regional integration has widely been accepted as a means for industrialisation in Africa, particularly in Sub-Saharan Africa (SSA). However, the standard approaches used by economists to assess the feasibility of regional cooperation fall short. The reciprocal relationship between market forces and politico-social institutions is too often assumed away. Further, the automotive industry has been acknowledged as an important sector that has the potential to drive industrialisation in SSA. However, in order for the automotive sector to be sustainable, regional cooperation is important. To this end, this paper attempts to assess whether regional cooperation in the automotive sector is feasible. The automotive industry is used as a vehicle to assess whether the demand and supply side conditions, set out by the dynamic model, are satisfied. It is concluded that, in Sub-Saharan Africa, there are regional actors who stand to gain from institutional reform, enhancing the prospects of sustained regional cooperation in the automotive industry. Further, it is concluded that, while the supply side conditions are unambiguously satisfied currently, there is potential for clear regional leaders to emerge in the future.

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Introduction

Regional integration (RI), the voluntary linking of economic and political domains of two or more independent states, has been a key objective of many African countries since the achievement of independence more than 50 years ago (Kayizzi-Mugerwa, Anyanwu and Conceição, 2014). Many politicians, technocrats, academics and private sector operators have supported the establishment of Regional Economic Communities (RECs) in Africa. In this paper this paper, regional cooperation is seen as a necessary but not sufficient step towards complete integration. Cooperation between states includes alignment on policy and the actualization of steps towards complete integration.

Despite broad consensus around the benefits of regional integration, the process of functional integration has been slow and episodic. While many countries have incorporated regional integration components into their development strategies, resulting in many regional integration arrangements, very few have succeeded (Hartzenberg, 2011). Functional integration (which involves the removal of traditional trade barriers, the elimination of tariff and non-tariff barriers and the harmonisation of economic policies and regulatory regimes) remains patchy.

In contrast to global developments, the commitment to regional integration in Africa remains steadfast and progress is being made. The recently ratified African Continental Free Trade Area (AfCFTA), which entered force on 30 May 2019 after the requisite number of member states had ratified the agreement, signals the region's willingness to pursue regional integration. The AfCFTA has the potential to serve as a major catalyst for regional trade—and, in turn, industrialisation—by establishing strategic trade links and value chains throughout the continent (Markowitz and Black, 2019).

Regional integration has many strategic advantages for Africa, a continent faced with extremely low levels of industrialisation and dismal intra-regional trade (Markowitz and Black, 2019). Through the establishment of regional economic communities (RECs), fewer restrictions on trade and an effectively enlarged market, there is more room for productive capacity and more scope for sustained industrialisation throughout the continent.

As it stands, African states are largely dependent on the developed world and Asian countries for manufactured goods. If Africa is to escape a cycle of dependence on commodities, it is important for countries to develop manufacturing industries of their own. Diversified productive capacity is key for sustained economic growth. Regional integration has been acknowledged as a foundational strategy to address concerns around how typically small and fragmented African economies can achieve the necessary levels of industrialisation (Hartzenberg, 2011).

A striking impression that emerges from the study of various integration schemes is the wide range of results. At one extreme, the highly successful European Union has managed to establish an array of institutions, policies and a clearly defined set of rules (Mattli, 1999). These institutions, policies and rules are hierarchically superior to domestic law and are directly applicable to member states of the Union. The European Union has boosted intra-regional trade and investment and has brought prosperity and stability to a region which had historically experienced economic crisis and internecine warfare (Mattli, 1999).

On the other extreme, many African regional blocks have failed to make any significant progress towards functional integration. The integration goals set out by many African states are subject to significant performance gaps (what has been achieved often falls short of what was intended). While this is concerning, it does not mean that functional regional integration and cooperation in Africa is impossible.

Understanding the variations between the two extremes is important. For policy makers, as well as the private sector, it is necessary to appreciate the factors that allow functional regional integration and cooperation to succeed. Only then can appropriate policy be established. While the realities of Europe, Asia, America and Africa are extremely different, there are some lessons that can be learned.

Successful regional integration projects such as the North American Free Trade Agreement (NAFTA), Association of Southeast Asian Nations (ASEAN) and the European Union (EU) can be used to establish conditions and methods for which regional integration in Africa might succeed. It must be noted, however, that even successful integration in the European Union have not fully solved divided and uneven development patterns within the continent. It is important to acknowledge this with a critical lens. It is interesting to note that, in these

regional integration projects, the automotive industry has typically played a catalytic role in driving and deepening regional integration arrangements (Mattli, 1999).

The automotive industry has played an important role in enabling regional cooperation because the sector has very strong forward and backward linkages, giving it the ability to drive manufacturing in a region. While it is true that the automotive sector will have a smaller effect in less developed economies where manufacturing productive capacity currently plays a marginal role, it still has potential to drive manufacturing and industrialisation if appropriate policy is implemented, enabling the industry to establish itself.

The automotive sector is an interesting case study because of the relationship it has with regional integration broadly. The scale-intensive nature of the automotive sector and the small size of many African economies mean that the establishment of regional markets is necessary for the sector's sustainability in Africa. Further, the automotive sector plays an important role in the industrialisation process because of its large contribution to manufacturing.

The associated benefits of establishing a regional automotive industry may, in fact, encourage governments to genuinely pursue a level of functional integration. The dynamic relationship it has with regional integration and intra-regional cooperation between SSA states makes the automotive sector an important case study to explore.

Regional integration is acknowledged as important for SSA development prospects. The automotive industry has the potential to drive regional integration while requiring sustainable regional cooperation. Thus, the automotive sector is an important strategic lever for economic development and industrialisation in SSA.

The purpose of this paper is to assess whether or not functional regional integration and cooperation between different SSA States is feasible within the automotive industry. If integration within the sector is possible, the establishment of an automotive industry is feasible, having positive consequences on economic growth for the region as a whole. However, some countries will not benefit equally from the establishment of an automotive sector and may need to be compensated in other industries. This is an intuitive assumption. This paper, however, will narrow the scope of assessment to the automotive sector only.

In order to assess the feasibility of the establishment of a regional automotive sector, it is important to understand both the industrial and automotive sector landscape in SSA countries as well as generally accepted strategies for the establishment of a regional automotive sector.

It is equally important to acknowledge that sustained cooperation between countries is difficult. The regional integration process creates winners and losers, and it is important to understand how cooperation can be sustained in such a scenario. Thus, it is crucial to establish the conditions that make regional integration and cooperation between states possible. Once this has been established, the conditions set out for feasible cooperation can be applied to SSA's regional automotive sector in an attempt to understand whether or not it is sustainable.

The first section of this paper will explore the industrial and automotive sector landscape in Sub-Saharan Africa. Opportunities for the establishment of an automotive industry will be acknowledged. Additionally, the Auto-Pact strategy (with the associated hub-and-spoke model of production) will be recognised as an important structure in which a regional automotive industry might function in SSA. This strategy is largely drawn from a report for Trade and Industrialisation Strategies (TIPS) and the African Association of Automotive Manufacturers (AAAM), completed in 2019, and compiled by the Sub-Saharan African Automotive Pact Task Team. This report was compiled by Justin Barnes (B&M Analysts), Alec Erwin (Ubu Investment Holdings) and Faizel Ismail (University of Cape Town).

The second section of this paper will set up a dynamic model of assessment for regional integration and cooperation. In doing so, traditional approaches to regional integration and cooperation will be critically assessed, important integration literature will be explored and a dynamic model of assessment for functional integration and cooperation established. Section two of this paper seeks to establish the necessary and sufficient conditions required for sustained regional integration and cooperation between countries in SSA.

The third section of this paper will apply the conditions set out in section two to the Auto-Pact's hub-and-spoke model of production set out in section one. This is to establish whether such a strategy is feasible. Where the conditions for functional cooperation/regional integration are met, the Auto-Pact has a higher chance of succeeding. Where they are not met, it is likely that any form of cooperation will unravel over time.

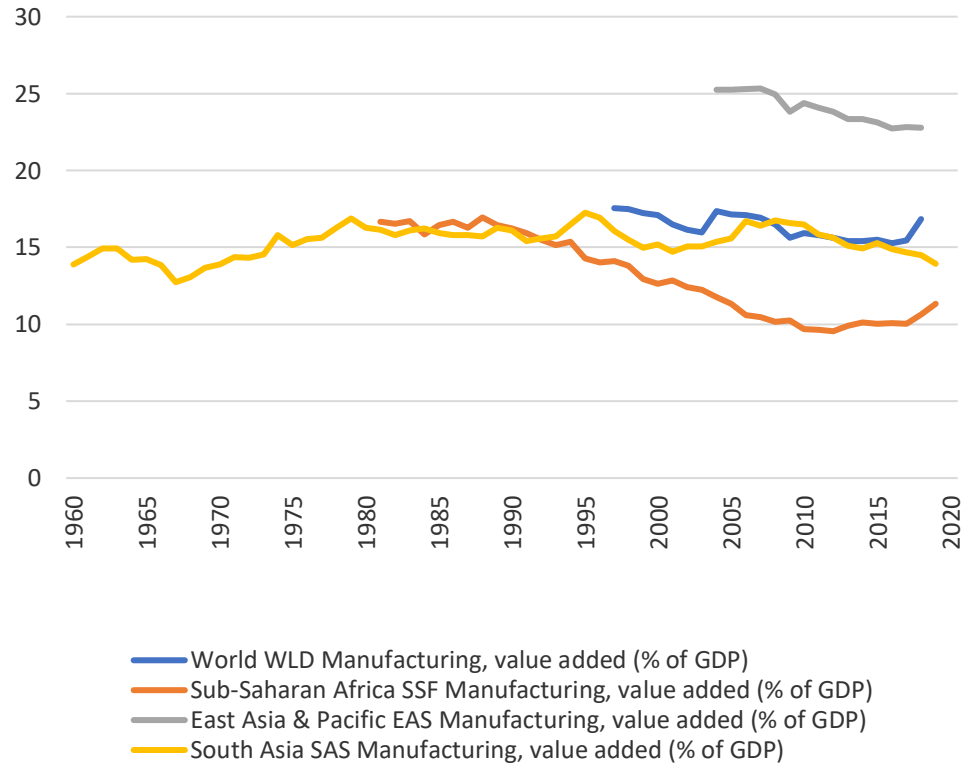
The fourth and final section of this paper will conclude and provide commentary on the potential for a regionally integrated automotive sector in Sub-Saharan Africa.

Section One: The Industrial and Automotive Sector Landscape of Sub-Saharan Africa.

1.1: Industrialisation in Africa

Limited industrialisation in Africa has been a significant hindrance to economic growth in the region. While growth rates in Africa have been impressive since 2000, the manufacturing sector has not grown at the same rate. This suggests that industrialisation has not been an engine of growth in SSA. The link between economic development and industrialisation is weaker in Africa than typically observed in other geographical regions. Evidence of this can be seen in the steady decline of manufacturing value added as a share of gross domestic product (GDP) in the region compared to others presented in figure 1.

Figure 1: *Manufacturing Value Added (% of GDP).*



Source: World Bank, 2020 (author's calculations).

A heavy reliance on commodities has been explored as a potential explanation for this trend. Wood and Mayer (2001) suggest that, because Africa has a comparative advantage in natural resources, it underperforms in establishing manufacturing sectors. It is also evident that inappropriate policies have resulted in inefficient industrialisation in a number of SSA countries. For example, Import Substitution Industrialisation (ISI) led to many problems in the early years of African independence.

The process of declining contributions of manufacturing to GDP is defined as a process of 'deindustrialisation' by the United Nations Economic Commission for Africa (UNECA) (UNECA, 2015). In Africa, manufacturing for export and manufacturing as a share of GDP has not kept pace with Asian countries or the world at large. The United Nations Industrial Development Organizations (UNIDO)'s Competitive Industrial Performance (CIP) Index, designed to determine long-run sustainable growth for manufacturing, suggests that Africa is performing poorly. This index is intended to measure the degree to which countries have upgraded technological capabilities, expanded production capacity, adopted suitable policies to improve manufacturing and invested in infrastructure to develop conducive manufacturing environments (UNIDO, 2015). Africa is largely dependent on the global North and increasingly dependent on Asian countries, especially China, for manufactured goods.

Slow levels of manufacturing development mean that countries are increasingly dependent on commodities, potentially resulting in low export growth and a failure to generate employment. While it is possible for a country to harness commodities to generate growth, it is important to diversify production at the very least (Walker & Jourdan, 2003). If Africa remains reliant on the global North and Asia for manufactured products, prospects for sustained economic growth are weak.

Additionally, insufficient and stagnant interlinkages between African economies have restricted growth in the region (World Economic Forum, 2021). This has negatively impacted regional value and supply chains throughout the continent, limiting industrialisation.

Intra-African trade is marginal when compared to intra-continental trade in North and South America, Asia and Europe. In 2019, intra-African trade was equal to $137.6 million (World Economic Forum, 2021). 16% of total African exports and 12% of total African imports were

to and from African countries in 2019 (World Economic Forum, 2021). Low levels of intra-African trade indicate the limited production capability of African countries to meet demand of the continent.

Further, African countries predominantly export primary goods. To ensure an environment in which intra-African trade can be deepened, heads of state throughout the continent must make a deliberate effort to strengthen and align industrial policies in order to improve Africa's manufacturing capability and produce more diversified exports.

Manufacturing is expected to become a vital component of African economic development. Over three quarters of the expected world population increase by 2100 is expected to take place in Africa, yet Africa is the least urbanised continent in the world. Urbanisation is rapidly expanding, with the urban population growing at 4% per annum over the period 2007-2019 (World Bank, 2020). However, urbanisation is not accompanied by industrialisation. Gollin, Jedwab and Vollrath (2016) argue that, as a consequence, many African cities are 'consumption cities' and not 'production cities' and will therefore perform significantly worse on welfare measures. It is essential that Africa explores ways in which divergent industrialisation and population growth indicators can be addressed to ensure that these cities are resilient and have room to develop.

The COVID-19 pandemic has affected economies on a global scale. Countries in the global South have been hit hardest. African countries, already minor players in global trade terms, are in danger of further marginalisation as a consequence of sustained economic stagnation. It is timely that the African Union launched the African Continental Free Trade Area (AfCFTA) on the 1st of January 2021. The AfCFTA is one of the most ambitious free trade projects since the World Trade Organization. It is argued that, by significantly reducing trade barriers between African states with a population of over 1.3 billion people and a combined GDP of $2.5 trillion, economic prospects will be strengthened (OUSTR, 2021).

If Africa were to increase its share of global trade by one percentage point, approximately $70 billions of additional income per annum could be generated for the continent (OUSTR, 2021). While Africa is unable to do much to counter global forces moving towards deglobalisation, it can embrace a self-supportive regional strategy through enhanced intra-African trade. Here, deglobalization is taken to reflect the process of diminishing interdependence between African countries and the global north. Proactively promoting

trade liberalisation to encourage new areas of growth in Africa would be a sensible response to the reduction in global trade and would undoubtedly enhance investment from multinational corporations in the region.

Since the industrial revolution, the establishment of a manufacturing sector has typically been the engine for economic growth. The success of many Asian economies, including China, can be juxtaposed with Africa where manufacturing has failed to play a similarly uplifting role.

Based on the current industrial landscape in Africa, it is important for countries to pursue development strategies that support the establishment of manufacturing sectors. The automotive industry plays an important role in this regard. Strong forward and backward linkages in the sector position it as an industry that can drive industrialisation. Historically, the automotive sector played an important role in the industrialisation processes of the Association of South East Asian Nations (ASEAN), the North American Free Trade Agreement (NAFTA) and the European Union (EU) (Mattli, 1999). Thus, the automotive sector is an important case study for assessing the prospects of establishing manufacturing sectors in Africa. It is equally important to understand the constraints of the sector and the functional requirements required to establish a sustainable automotive industry.

In the following sub-section, the state of the automotive industry in SSA will be explored. It is clear that regional market access and cooperation is required to establish a sustainable automotive industry. The Auto-Pact and hub-and-spoke model of automotive production proposed by Justin Barnes (B&M Analyst), Alec Erwin (Ubu Investment Holdings) and Faizel Ismail (University of Cape Town) (Barnes, Erwin & Ismail, 2019) is acknowledged as one way in which this can be achieved.

It must be noted, however, that the Auto-Pact and hub-and-spoke model of automotive production require regional cooperation. Thus, it is important to keep in mind that conditions for sustainable cooperation between countries need to be met. This will be explored further in section two and three of the paper.

1.2: Sub-Saharan Africa automotive sector

1.2.1: The automotive sector as it stands

The automotive industry can be used as an important case study to understand the feasibility of establishing an important manufacturing sector in SSA. If an automotive sector can be established, there will be positive consequences for industrialisation.

With the emergence of a substantial middle class in SSA, the market for vehicles is rapidly growing. However, the demand for vehicles is currently being met by imports. Outside of South Africa, the production of vehicles is almost non-existent (Black, Makundi & McLennan, 2017). Structural adjustment programmes in the 1980s meant that protection of infant automotive industries was demolished, rendering the industry uncompetitive globally. Liberalisation associated with structural adjustment programmes allowed second-hand vehicles from more advanced economies to proliferate the SSA market. Vehicle imports can be used as a good proxy for assessing the market size in Sub-Saharan Africa and understanding the potential of the industry.

Barnes, Black, Markowitz and Monaco (2020) argue that the SSA automotive market has potential. Omitting South Africa, imports into SSA of light vehicles (new and used) grew at a compound rate of 14% per annum from 2003 to 2013 (Black et al, 2017). However, it is important to note that, since the commodity price collapse in large markets such as Nigeria and serious economic problems exacerbated by COVID-19 in 2020-21, demand for vehicles has undoubtedly diminished throughout SSA. Table 1 below depicts the estimated vehicle demand from 2007 to 2017.

Table 1: Estimated vehicle demand 2007-2017

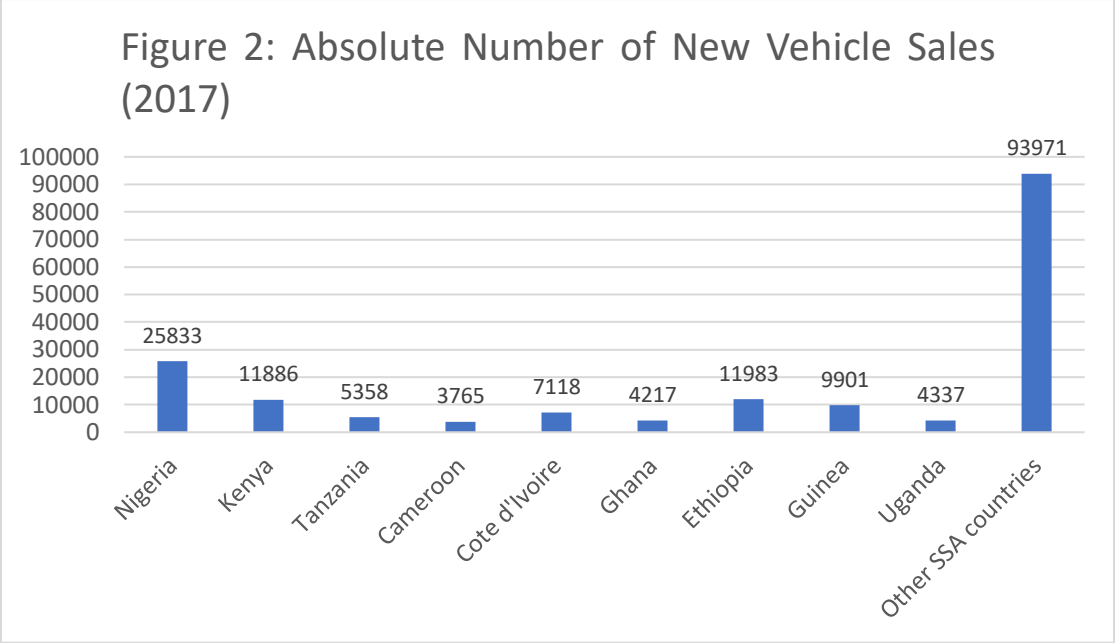
Country	2007	2009	2011	2013	2015	2017	Share of New Vehicle sales 2017	Share of New Vehicle sales 2017
South Africa	676108	395222	572241	650745	617749	555716	100%	555716
Nigeria	237760	225708	364027	757215	456807	229197	11%	25833
Kenya	78522	55511	67874	87691	132750	74519	16%	11886
Tanzania	49236	39096	49283	62799	69325	54282	10%	5358
Cameroon	9375	10115	20948	32402	31553	52429	7%	3765
Côte d'Ivoire	13286	10087	10348	27734	32965	51561	14%	7118
Ghana	30274	2083	61789	68582	45048	47969	9%	4217
Ethiopia	11603	7904	9643	26205	42253	38965	31%	11983
Guinea	10678	5799	11451	33815	32494	35833	28%	9901
Uganda	21764	23763	28281	31657	30563	33346	13%	4337

Other SSA countries	333448	309630	404515	601546	428414	327668	29%	93971
Total SSA	**1472055**	**1084918**	**1600399**	**2380390**	**1919921**	**1501484**	**49%**	**734084**

Source: Barnes et al, 2020 (author's calculations).

It is evident that, from 2013, vehicle demand began to fall in SAA. It is also clear that the number of new vehicle sales as a share of most SSA markets is very small. All countries in SSA, excluding South Africa, predominantly fulfil vehicle consumption demand by importing secondhand vehicles. Barnes et al (2020) acknowledge that the prevalence of used vehicle imports is increased by the discounting of used vehicle exports into SSA. This is tied to end of life vehicle legislation in the EU and vehicle taxes on ageing vehicles in Japan. Secondhand vehicle exports into SSA are cheap, making the price even more attractive relative to new vehicle prices. This highlights the first major obstacle in establishing an automotive industry in Africa. It would be hard to convince consumers to buy regionally produced new vehicles that are significantly more expensive than secondhand vehicles. Additionally, if governments limit imports of cheap secondhand vehicles, it will have negative welfare effects on consumers. This would only be justifiable if there are tangible benefits of doing so, such as increased employment.

Excluding South Africa, the demand for new vehicles in SSA countries is very low. The demand for new vehicles for the period 2007-2017 for selected SSA countries is presented in figure 2 below. South Africa is included in other SSA countries.



Source: B&M Analysts and authors calculations.

This is important because the automotive industry is scale intensive. Vehicle production volumes of around 60,000 to 150,000 units per annum are required to justify investment in a single assembly plant. In 2017, no individual SSA country, with the exception of South Africa, met the market size requirements to justify automotive sector investment.

At a domestic level, the small, fragmented nature of SSA economies makes the establishment of isolated automotive sectors near impossible. At a regional level, SSA has a significant GDP, and the demand for new vehicles was 734,084 per annum in 2017. This suggests that the possibility of establishing an automotive industry in SSA rests on the potential for supply to a regional market.

A brief comparison between India and SSA's respective markets supports this sentiment. Table 2 below depicts India's and SSA's respective markets.

Table 2: SSA and India Market Comparison

	SSA	India
GDP 2017 (Current US$ trillion)	1.649	2.597
Population 2017 (billion)	1.061	1.339
GNI per capita 2017 (Current US$)	1,453.79	1.820
New Passenger Vehicle Market, 2013 (million)	1.84	2.5
Passenger Vehicle Production, 2013 (million)	0.265	3.2
Tariff Level	No Unified Tariff	Unified Tariff
Direct Employment in Industry	<500 000	> 1000 000
2013 Net Automotive Trade Balance (2013 US$ bullion)	-16.34	8.27

Source: Black et al, 2017. Pg. 7.

In 2017, the total GDP, per capita GDP and the population size of each region was comparable. Further, the market size for vehicles in each region was similar. The major difference between SSA and India was the level of production. While India produces its own vehicles for its domestic market, SSA relied on imports (Black et al, 2017). Consequently, India was a net exporter with a net automotive trade balance value of $8.3 billion in 2013. SSA, on the other hand, was a net importer with an automotive trade deficit of $16.34 billion in 2013.

The major difference between the two markets, in terms of automotive production, is that India is a single integrated market protected by high common tariffs, while SSA is made up of fragmented markets with high transaction costs (Black et al, 2017). India is therefore better positioned to meet domestic demand for vehicles through endogenous supply, contributing to the growth of the manufacturing sector. It can be argued that there is potential for the establishment of an automotive industry in SSA if regional markets can be integrated and benefit from the protection of higher common tariffs. Again, it is important to acknowledge that this will come at a cost to welfare because consumers would be restricted from buying cheap secondhand vehicles. Thus, if a regional strategy were to be pursued, it is important for gains to be captured equitably to justify these negative welfare effects.

One viable way to develop a sustainable automotive industry throughout Africa is through the establishment of regional value chains. Regional value chains would ensure that each country could participate in the automotive industry to the extent that there are benefits to

be gained. This is due to the fact that automotive production requires economies of scale (EOS) to compete at global unit cost benchmarks. Markowitz and Black (2019) have explored value chains in Africa in theory, first through a situational analysis and then a comparative analysis against the backdrop of the Association of Southeast Asian Nations (ASEAN), India and Mercosur. Markowitz and Black (2019) conclude that there are three essential prerequisites for the establishment of a regional value chains network in the automotive industry:

1) A viable 'automotive space' where the regional market is large enough for smaller countries to integrate production and participate in the value chain. This helps smaller economies meet EOS requirements and benefit from the establishment of a regional automotive industry.
2) A competitive manufacturing capacity. This is often a challenge in Africa, where the continent has experienced a degree of deindustrialisation and where labour costs are typically higher than in Asia.
3) A supportive policy environment. For an industry to be established, it is important that there are certain degrees of protection to ensure competitiveness.

Not all countries in SSA will benefit equally from the establishment of a regional automotive industry. It is therefore important to pursue strategies that create a viable automotive space which draws countries on the periphery into regional value chains. This is necessary to ensure sustained cooperation and market access. A country level overview of the automotive sector's potential in considered SSA countries is presented below.

1.2.2: Country level overview

According to Organisation International des Constructeurs d'Automobiles (OICA), Africa accounted for less than 1% of global vehicle production in 2014 (AIEC, 2015). Of this production, South Africa accounted for the majority, followed by Morocco and Egypt respectively. Outside of South Africa, as acknowledged above, vehicle production is extremely limited in SSA.

Vehicle production was first established in South Africa during the 1920s. Similarly to other developing countries, the automotive industry grew under high levels of protectionist policy. In 1995, the Motor Industry Development Program (MIDP) exposed the industry to

international competition. Import-export complementation arrangements were accompanied by lower tariffs. This allowed automotive firms to rebate import duties by exporting automotive products.

The MIDP was replaced by the Automotive Production and Development Program (APDP) in 2013 (NAACAM, 2021). The MIDP aimed to provide production incentives and tariffs of 25% on imported vehicles. These measures have incorporated South Africa into international production networks. Imports account for around 57.1% of the light vehicle market, and 64.1% of production is exported, with Germany and the rest of the EU being major trading partners (AIEC, 2020).

The establishment of an automotive industry in other African countries tells a somewhat different story. After independence in the 1950s and 1960s, many countries established small scale assembly plants. The majority of these assembly plants imported completely knocked down (CKD) kits that contained very little domestic content. Production of aftermarket parts also emerged but at no significant scale. Through a combination of economic stagnation in the 1980s and structural adjustment policies, most of these small-scale assembly plants shut down (Black et al, 2017). Structural adjustment programmes implemented by the International Monetary Fund (IMF) and the World Bank required lower tariffs on imports. As a result, small plants struggled to be efficient and competitive in global markets.

The situation has changed. Sustained economic growth since 2000 has resulted in increased demand for vehicles. Additionally, tariffs between African countries have been lowered in pursuit of regional integration. For the automotive industry, which requires scale, this is important. Further, some countries in SSA have indicated a desire to re-establish domestic automotive production and have implemented appropriate policy frameworks.

Below, the opportunities for the automotive sector in key SSA countries are explored. The intention is to understand whether the necessary demand required to establish an automotive industry is met at domestic and regional levels.

In the report, 'Realising the potential of the Sub-Saharan African automotive market: The importance of establishing a sub-continental Automotive Pact', compiled by Justin Barnes (B&M Analysts), Alec Erwin (Ubu Investment Holdings) and Faizel Ismail (University of Cape

Town), a projection model is developed to assess the number of new vehicles that would be demanded in each country if imports of secondhand vehicles were banned. This helps one understand the opportunity of the automotive sector in SSA.

The model equation is established as:

$$New\ vehicle\ demand$$
$$= New\ vehicle\ demand$$
$$+ (Secondhand\ imported\ vehicle\ demand)(New\ to\ used\ subsitution\ loss)$$

The new to used substitution loss is established as 20% (Barnes, Erwin & Ismail, 2019).

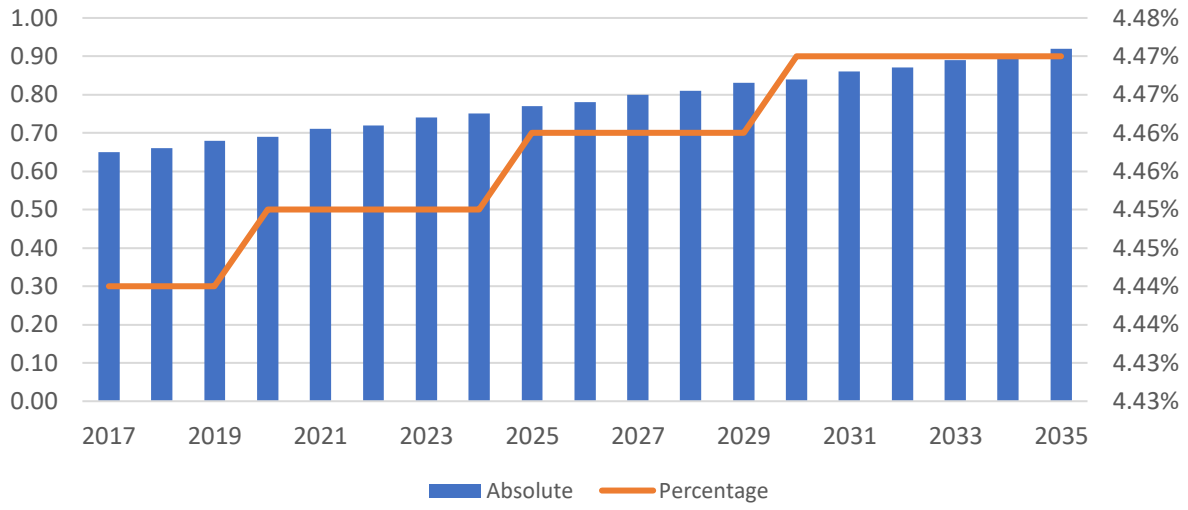
In essence, it is assumed that the demand for new vehicles, when imports of secondhand vehicles are banned, is equal to new vehicles demanded in the status quo, plus the number of new vehicles that would be purchased in the absence of secondhand vehicles once banned in any given year. This model is used in the country level overview below. Four major SSA economies are explored: Ghana, Nigeria, Kenya and South Africa.

1.2.2.1: ECOWAS region

Ghana's GDP grew by an average rate of 6.47% in 2019 (World Bank, 2021). This is higher than the SSA average of 2.3% in the same year (World Bank, 2021). In 2017, 4.44% (650,000 individuals) of Ghana's population earned more than US$10,000 per annum (Barnes et al, 2019). US$10,000 per annum is an estimated income that would allow an individual to purchase a new vehicle.

Figure 3 below depicts the projected proportion of Ghana's adult population earning more than US$10,000 in 2035. While there is little change in the proportion of adults earning more than US$10,000, there is an absolute increase in the number of individuals from 650,000 people to 920,000 people. This will have positive results for overall demand of new vehicles in Ghana.

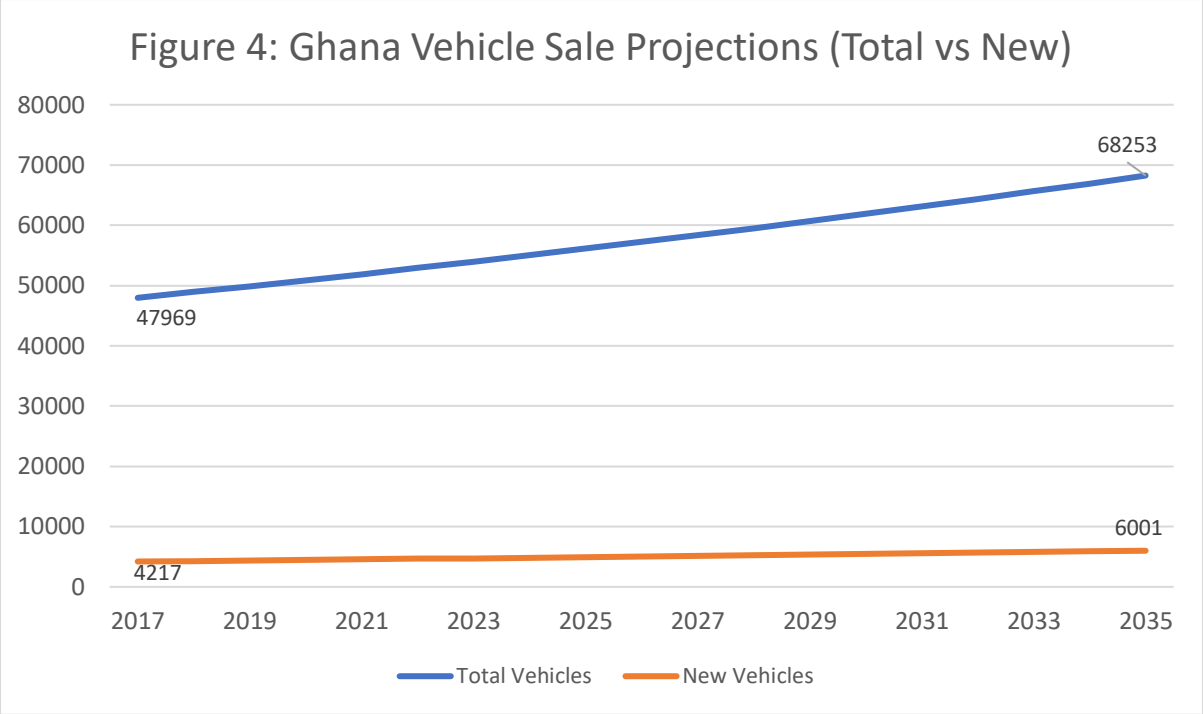
Figure 3: Projected Proportion of Ghana's Adult Population Earning > than US$10,000 (millions and % of population)



Source: B&M Analysts (2019) and authors calculations.

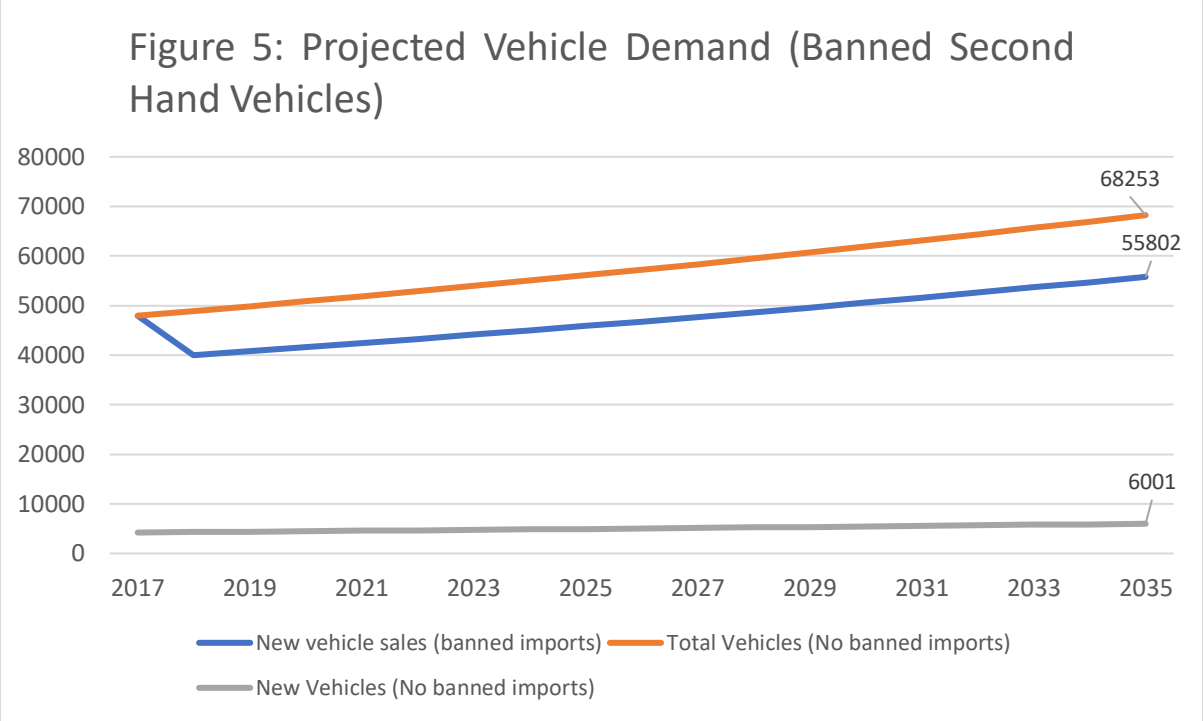
Ghana has a very small new vehicle market. Evident in table 1, only 4,217 new vehicles were sold in 2017. This can be attributed to the availability of cheap secondhand vehicles dominating the market. 43,752 secondhand vehicles were imported in the same year, capturing 90% of domestic demand.

Ghana's economic trajectory suggests that vehicle sales will increase to 68,253 units in 2035 (Barnes et al, 2019). Assuming that 9% of those sales are new vehicles (as was the case in 2017), 6,142 of those are expected to be new vehicle purchases. This is shown graphically in figure 4 below.



Source: B&M Analysts (2019) and authors calculations.

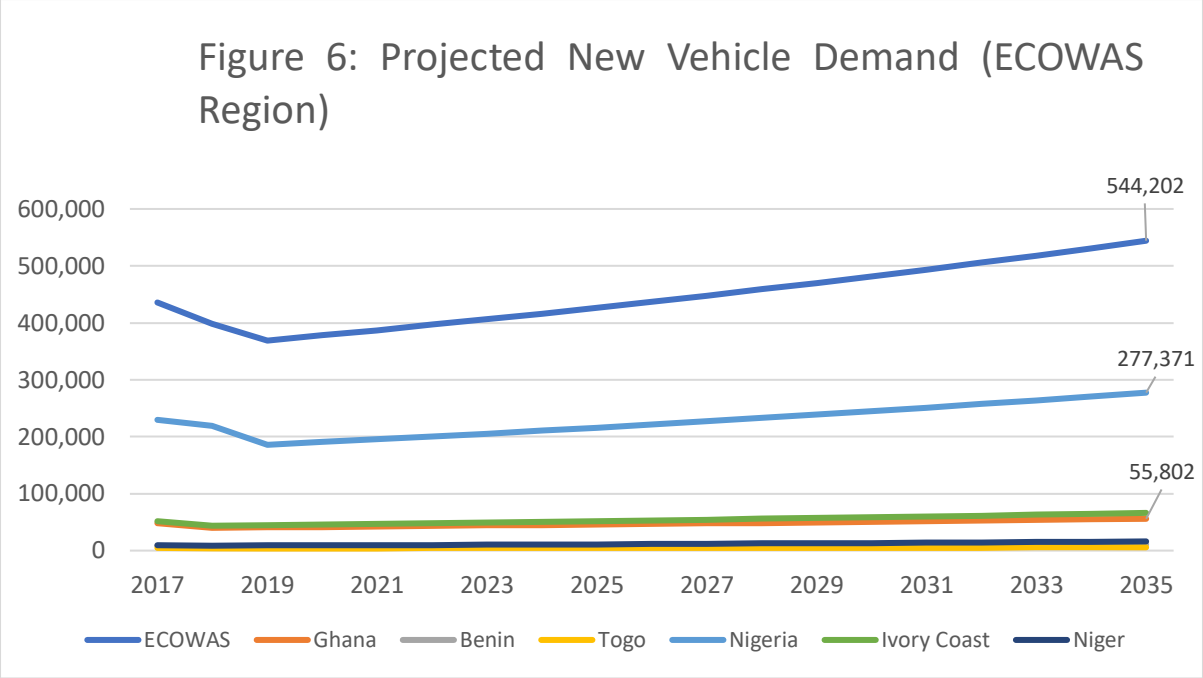
Ghana's projected number of new vehicle demand in 2035 is not large enough to justify the establishment of an automotive sector. However, it is important to understand the opportunities that might exist in the absence of imports of secondhand vehicles. Figure 5 explores projected demand for new vehicles in Ghana where secondhand vehicles are banned. This is a strong assumption because, in all likelihood, secondhand vehicles would be restricted and not banned. However, assessing the prospects of banned secondhand vehicles gives a good indication of potential opportunity.



Source: B&M Analysts (2019) and authors calculations.

If Ghana banned secondhand vehicle imports, it is estimated that the demand for new vehicles in the domestic market would reach 55,802 units annually by 2035. Acknowledging the fact that the automotive industry is scale intensive and a minimum of 80,000 units produced annually is required to justify the establishment of a production plant, Ghana's domestic market could not support the automotive sector alone.

However, at a regional level, this outcome is different. Figure 6 below depicts the projected new vehicle demand where imports of secondhand vehicles are banned in selected ECOWAS countries and ECOWAS as a region (Barnes et al, 2019).



Source: B&M Analysts (2019) and authors calculations.

If all ECOWAS countries banned the imports of secondhand vehicles, it is projected that new vehicle demand for the region would reach 546,188 units by 2035. Thus, at a regional level, there is scope for the establishment of an automotive sector. It is clear that it is only feasible for Ghana to establish an automotive sector if it adopted a regional strategy. Regional cooperation is required to secure access to a larger market and incentivise investment from automotive firms.

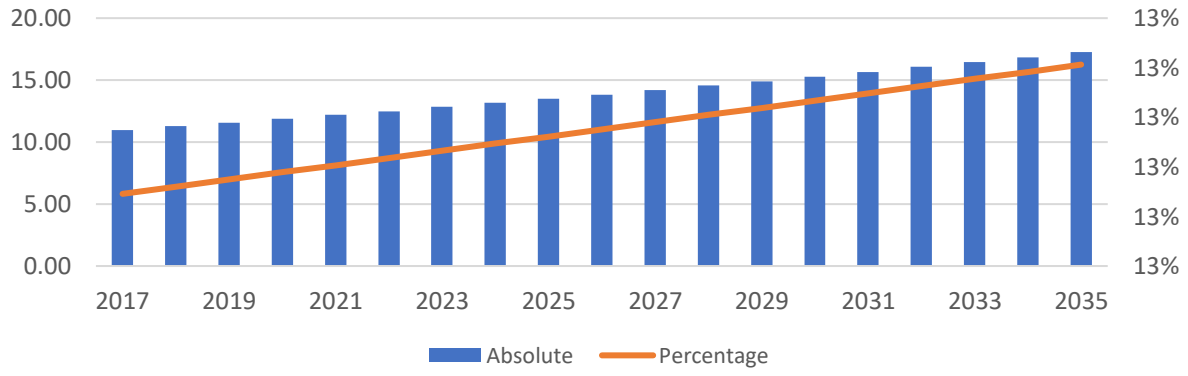
The Ghanaian government has recognised Vehicle Assembly and Automotive Component Manufacturing as an important and strategic industry. It has been stated that the government of Ghana will support the industry as part of their Ten Point Plan for industrial development (Ministry of Trade and Industry, 2021). The Ministry of Trade has developed a comprehensive package, including both policy measures and incentives, to promote the establishment of an automotive assembly and component manufacturing industry. The initial scope of the Automotive Development Policy acknowledges the importance of establishing a "fully integrated and competitive industrial hub for automotive manufacturing in collaboration with the private sector - global, regional and domestic" (Ministry of Trade and Industry, 2021). Consequently, Ghana has attracted investment in vehicle assembly from leading automotive manufacturers and investment partners. Several vehicle assemblers announced plans to establish plants in Ghana, including Suzuki and Toyota in a joint venture.

In Nigeria, the automotive industry has been acknowledged as a "cornerstone for establishing a self-sufficient economy and upgrading the standard of living" by the National Automotive Design and Development Council (NADDC) of Nigeria (NADDC, 2021). Further, a key objective of the NADDC is to position Nigeria as one of the leading automotive manufacturing nations in the world (NADDC, 2021). Historically, the automotive sector's importance in establishing a manufacturing sector and promoting industrialisation supports this sentiment.

In 2019, Nigeria's GDP grew 2.2%. This is lower than SSA's GDP growth rate of 2.3% in the same period (World Bank, 2021). While Nigeria has a population of over 180 million people, only 12.8% (11 million adults) received an annual income of more than US$10,000 in 2017 (Barnes et al, 2019). While the population of Nigeria is massive, the portion of the population who can afford new vehicles is significantly smaller.

Figure 7 below depicts the projected proportion of Nigeria's adult population earning more than US$10,000 from 2017 to 2035. While there is little change in the proportion of adults earning more than US$10,000, there is an absolute increase in the number of individuals from 11 million to 17.2 million adults.

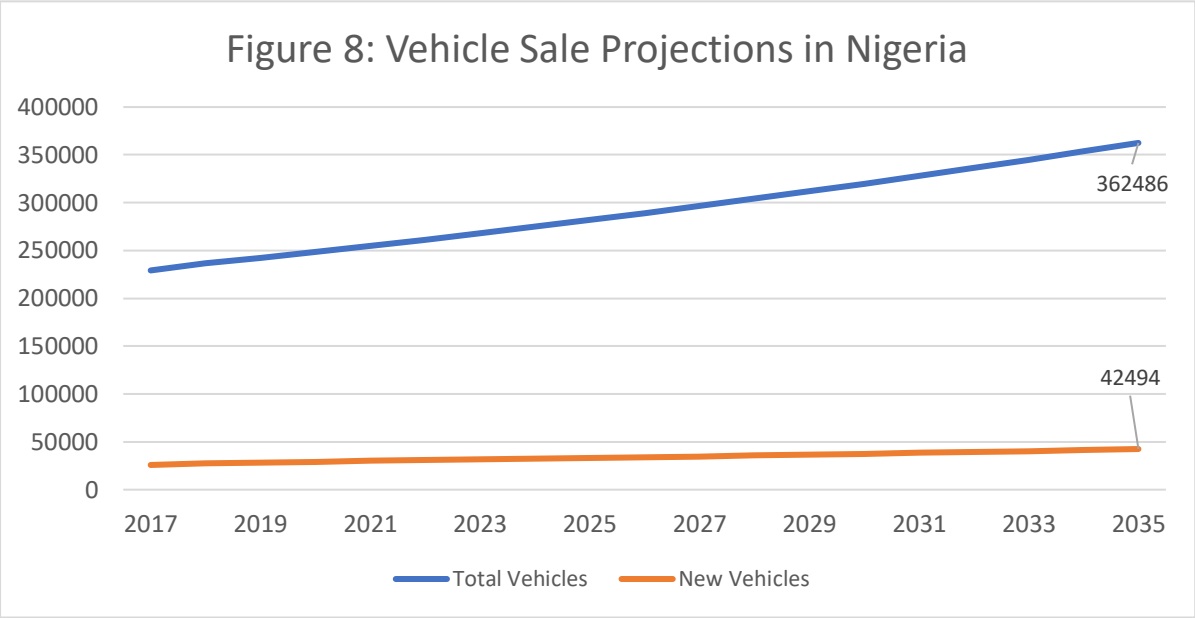
Figure 7: Projected Proportion of Nigeria's Adult Population Earning > than US$10,000 (millions and % of population)



Source: B&M Analysts (2019) and authors calculations.

Relative to Nigeria's market for vehicles, the market for new vehicles is small. In 2017, 229,197 vehicles were sold in Nigeria, of which only 25,833 were new vehicles. This is presented in table 1. This accounted for 11% of total automotive sales. 203,364 secondhand vehicles were imported in the same year, capturing 89% of domestic demand.

The economic trajectory of Nigeria suggests that vehicle sales will increase from 229,197 vehicles per annum in 2017 to 362,486 units per annum in 2035 (Barnes et al, 2019). It is also expected that new vehicle sales will increase from 25,833 units per annum in 2017 to 42,494 units per annum in 2035 (Barnes et al, 2019). This is shown graphically in figure 8 below. The projected demand for new vehicles in Nigeria is not large enough to support a domestic automotive industry if secondhand vehicles are not banned. At the very least, imports of secondhand vehicles would need to be restricted.



Source: B&M Analysts (2019) and authors calculations.

If Nigeria banned imports of secondhand vehicles (illustrated in figure 6 above), it is estimated that domestic demand for new vehicles would reach 277,371 units per annum by 2035. Further, if other ECOWAS countries did the same, as noted above, the region would demand 544,202 units per annum. Nigeria would be a major consumer in the region. While Nigeria alone would constitute a large enough market to justify automotive production and investment, it may not be possible because of the availability of cheap secondhand vehicles in neighbouring countries. To justify the establishment of an automotive sector and the associated welfare losses that would occur from higher priced vehicles, a larger market may be required. The increase in new vehicle demand would undoubtedly spur both vehicle assembly and associated component parts production in Nigeria and ECOWAS countries more generally.

It is important for the Nigerian government to take proactive policy steps if it would like to establish a regional automotive market. The Nigerian government has expressed support for the automotive sector. In 2014, the Automotive Industrial Development Plan (NAIDP) was established to create supplier parks and industrial clusters (Rundell, 2017).

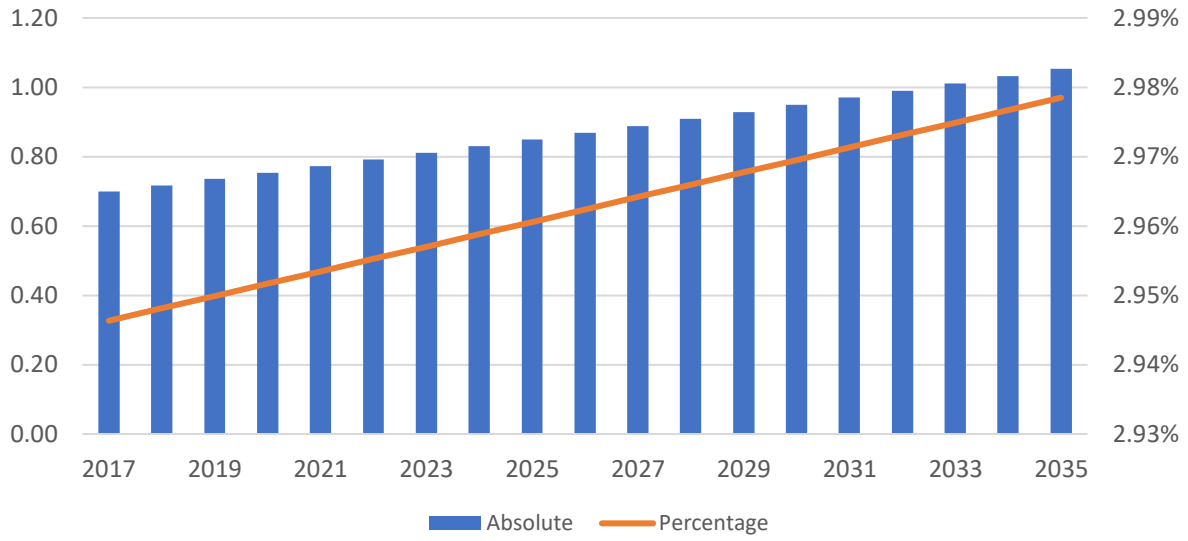
It is clear that there is an opportunity for both Ghana and Nigeria to access larger regional markets and justify the establishment of an automotive sector. Both countries could justify setting up production capacity if they were able to ban (or heavily restrict) the imports of secondhand vehicles and participate in regional markets. It is also evident from figure 6 that, excluding Nigeria, Ghana and the Ivory Coast, no other market in ECOWAS has any significant demand for automotive vehicles. In order to develop a viable automotive space, it is necessary for ECOWAS periphery markets to join larger markets such as Nigeria, Ghana or the Ivory Coast. This supports the sentiment that regional cooperation and integration is necessary for the establishment of an automotive industry in SSA for both large and small economies.

1.2.2.2: EAC region

Kenya's GDP grew by 5.4% in 2019. This is slightly higher than the SSA average of 2.3% in the same period (World Bank, 2021). In 2017, 2.95% (700,000 adults) of Kenya's population earned more than US$10,000 per annum (Barnes et al, 2019).

Figure 9 below shows the projected proportion of Kenya's adult population earning more than US$10,000 in 2035. There is little change in the proportion of adults earning more than US$10,000. However, in absolute terms, there is an increase in the number of individuals from 700,000 people to 1,053,695 people. This will have positive consequences for the demand for vehicles, particularly new vehicles, in Kenya and the EAC region as a whole.

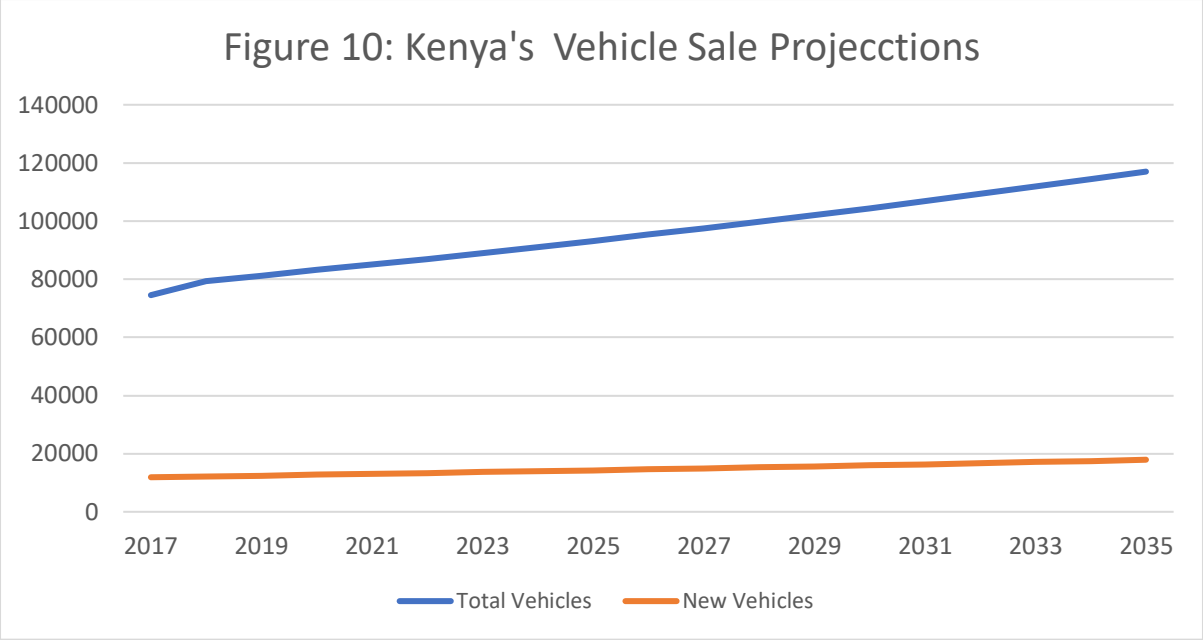
Figure 9: Projected Proportion of Kenya's Adult Population Earning > than US$10,000 (millions and % of population)



Source: B&M Analysts (2019) and authors calculations.

Historically, Kenya has experienced strong GDP growth which contributed to a growing demand for both secondhand and new vehicles. However, 2016 and 2017 saw major declines in aggregate demand which negatively impacted both new and secondhand vehicle sales. Evidence of this can be seen in table 1. Between 2015 and 2017, total annual vehicle demand fell from 132,750 units to 74,519 units.

However, Kenya's economic trajectory suggests that vehicle sales will increase significantly in the period 2017 to 2035 (Barnes et al, 2019). Total vehicle sales are expected to increase from 74,519 units in 2017 to 117,008 units in 2035. New vehicle sales are expected to increase from 11,886 in 2017 to 17,911 in 2035. These figures are presented in figure 10 below.

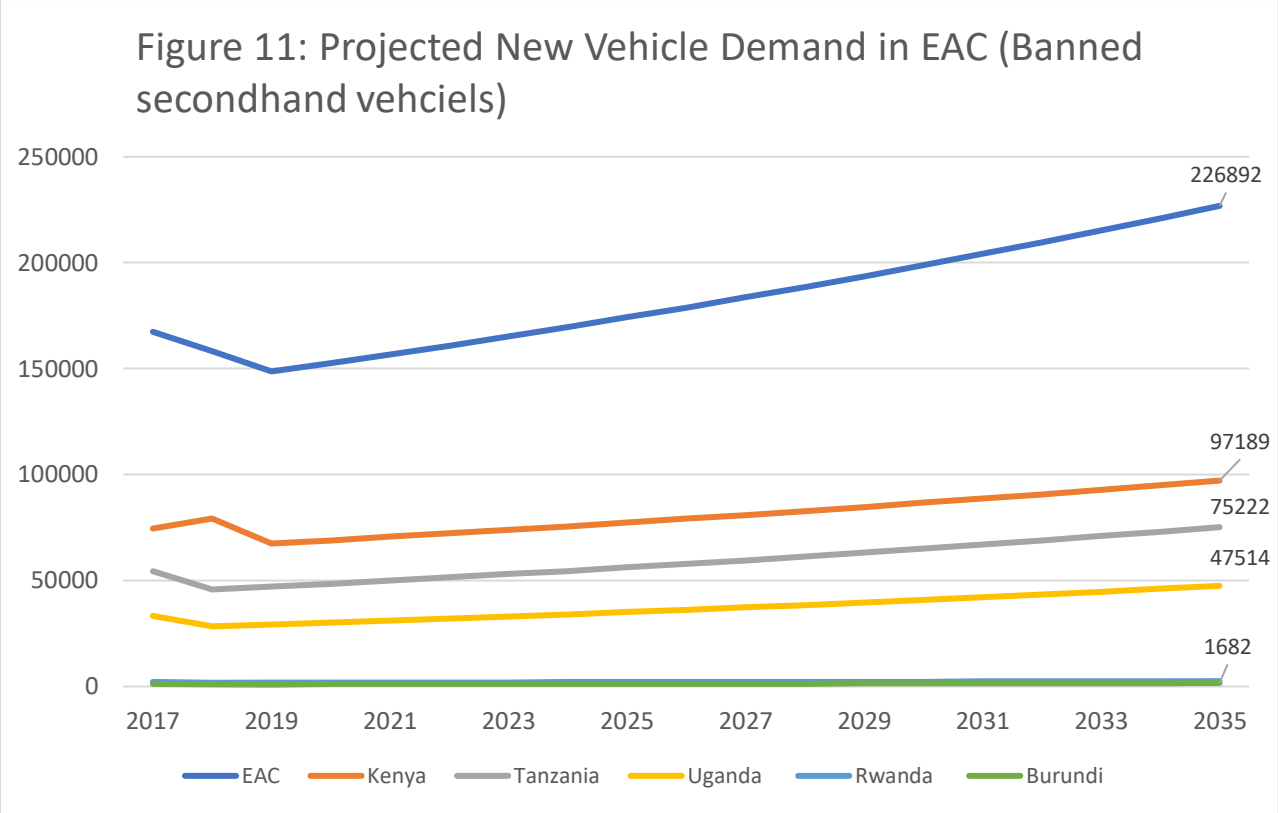


Source: B&M Analysts (2019) and authors calculations.

Opportunities for the establishment of an automotive sector are heavily restricted by imports of cheap secondhand vehicles in Kenya. In 2017, 11,886 new vehicles were sold. In the same year, 62,633 secondhand vehicles were sold, accounting for 84% market.

It is important to understand what the market would look like if secondhand vehicles were banned. If Kenya effectively banned secondhand vehicle imports, it is estimated that the demand for new vehicles in Kenya's domestic market would reach 97,189 units annually by 2035. This can be seen in figure 11 below. Acknowledging the fact that the automotive industry is scale intensive and a minimum of 60,000 to 150,000 units produced annually is required to justify the establishment of a production plant, Kenya would just satisfy the scale required. This would be unlikely, as this scale applies to one vehicle model of production. It is important to note that a country like Kenya, which relies heavily on commodities for export, would not give automotive manufacturers enough confidence to justify investment.

If one was to assess the EAC region holistically, the sentiment is different. Figure 11 below explores the projected vehicle demand where imports of secondhand vehicles are banned in selected EAC countries and EAC as a region.



Source: B&M Analysts (2019) and authors calculations.

Uganda and Tanzania have substantial markets for new automotive vehicles. However, neither country has the scale required to justify the establishment of an isolated domestic automotive industry. Interestingly, the EAC community as a whole has a significant market. If secondhand vehicles were banned in all EAC countries, it is projected that there would be a demand for 226,892 new vehicles per annum in the region by 2035.

For the establishment of an automotive industry in the EAC, a regional strategy is required. At a regional level, the market is arguably large enough to justify production. Countries like Kenya, Tanzania and Uganda need access to regional markets to ensure the scale required to justify the establishment of an automotive sector.

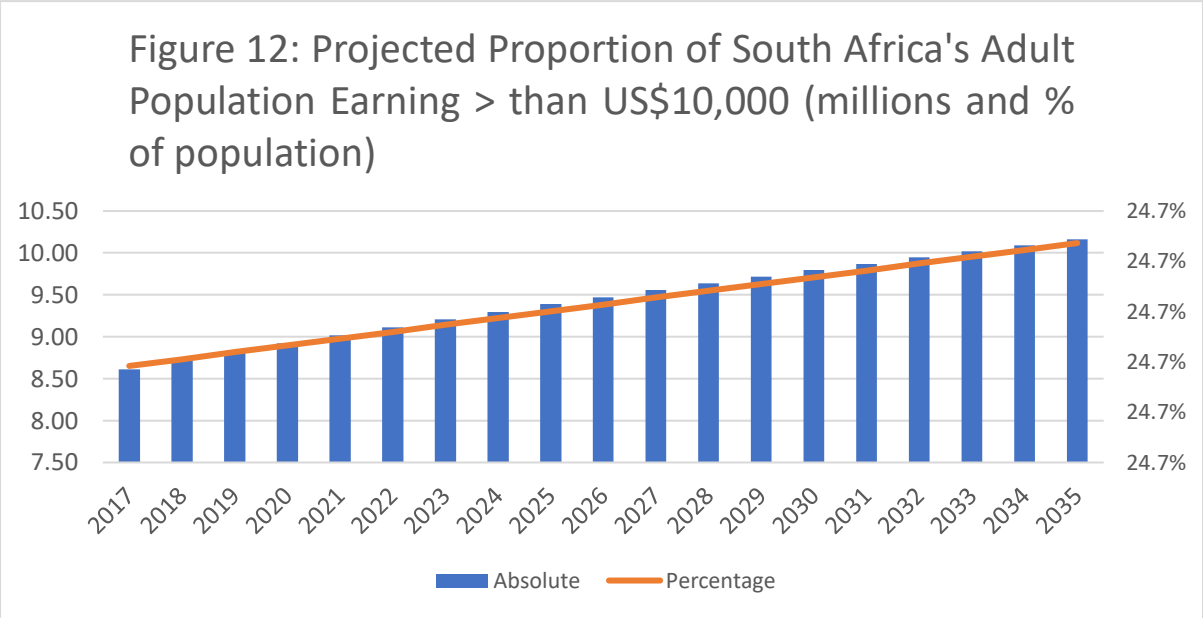
The Kenyan government identified the automotive and auto parts industry as an important economic driver. In 2019, the Kenyan National Automotive Policy argued that Kenya's vision is to "be a world class competitive automotive products manufacturing hub". However, the National Automotive Policy placed little importance on policy targeted at regional cooperation and market expansion. Currently, Kenya has no substantial automotive policy,

nor does it have a regional market or production dynamic. It is important for Kenya to consider regional strategies to achieve its automotive industry vision.

1.2.2.3: SADC

South Africa's GDP grew by 0.2% in 2019. This is lower than the SSA average of 2.3% in the same period. In 2017, 24.73% (8,610,000 adults) of South Africa's population earned more than US$10,000 per annum (Barnes et al, 2019).

Figure 12 below illustrates the projected proportion of South Africa's adult population earning more than US$10,000 in 2035. There is little change in the proportion of adults earning more than US$10,000. However, in absolute terms, there is an increase in the number of individuals from 8,614,308 in 2017 to 10,162,922 in 2035. This will have positive consequences for the demand for vehicles.

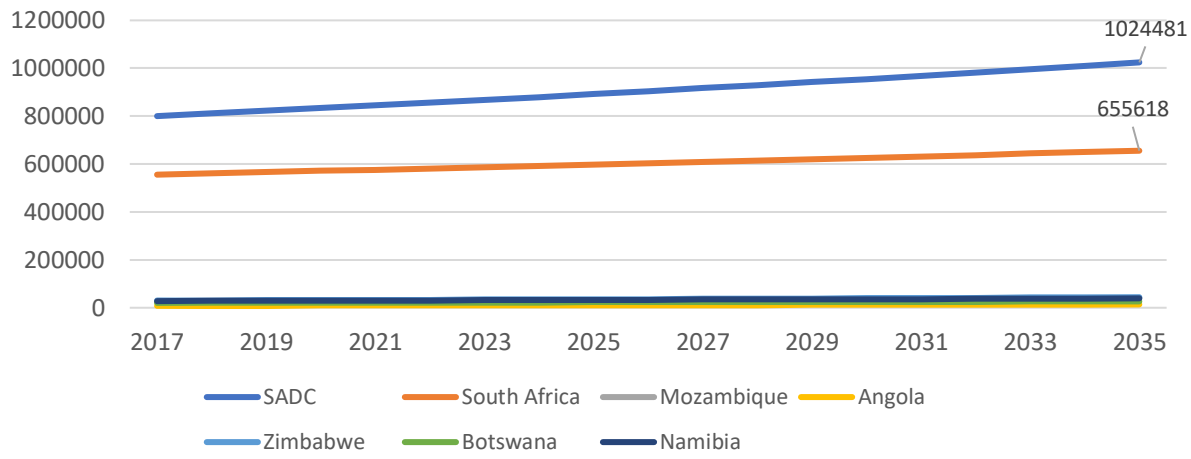


Source: B&M Analysts (2019) and authors calculations.

South Africa experienced strong GDP growth in the early 2000s which contributed to a growing demand for both secondhand and new vehicles. However, 2005 to 2007 saw major declines in aggregate demand for vehicles, both secondhand and new. In this period, demand fell from 676,108 to 395,222 new vehicle units demanded annually. However, since 2009, demand has steadily increased. In 2017, 555,716 new vehicle units were purchased. Evidence of this can be seen in table 1.

South Africa's economic trajectory suggests that vehicle sales will increase marginally in the period 2017 to 2035. Total new vehicle sales are expected to increase from 555,716 units in 2017 to 655,618 units in 2035. Acknowledging the fact that South Africa has an established automotive industry, 100% of these sales are recorded as new vehicle sales. It is clear that the projected growth in new vehicle sales between 2017 and 2035 is not large. However, if the demand for vehicles in neighbouring SADC countries is taken into account and South Africa is able to supply these markets, the regional base provides an opportunity for further expansion. Figure 13 represents regional demand for vehicles in some SADC countries and SADC as a region.

Figure 13: Regional demand for vehicles in some SADC countries and SADC as a region.



Source: B&M Analysts (2019) and authors calculations.

Although other countries within SADC do not have a significant projected demand for vehicles in 2035, it is clear that the SADC region as a whole is substantial. It is projected that, in 2035, 1,024,481 units will be demanded annually. This drives home the point that regional markets are important, even in SADC where South Africa has a substantial automotive sector.

Developing a regional market and associated production dynamics is important for South Africa. This is echoed in the South African Automotive Master Plan which includes a regional market development strategic pillar (Automotive Masterplan report, 2018).

1.2.3: Moving forward

A growing middle class, rapid urbanisation and a relatively young population suggest that Africa has the potential to become an automotive production stronghold. The low motorisation rate in Africa, 42 vehicles per 1000 individuals, is significantly lower than the global average of 182 vehicles per 1000 people (Deloitte Africa Automotive Insights, 2016). Thus, there is room to grow. Through well-coordinated policies and the establishment of ecosystems, this can be achieved.

In order to enable a sustainable automotive industry in SSA, it is important for key minimum requirements to be met, namely policy stability and access to larger regional markets.

In terms of policy stability, the automotive sector requires long-term planning. Vehicle manufacturers need to have a degree of confidence that supportive automotive policies will be implemented in the long term. Original equipment manufacturers (OEMs) in SSA are currently encouraged by policies. Ghana, for example, has included a time-horizon of 20-30 years in its automotive strategic planning (Ministry of Trade and Industry, 2021).

In terms of market size, regional integration is important. As indicated above, most SSA markets are not large enough to sustain an automotive industry alone. Integration into a regional or continental market can increase the size of the market and make the establishment of an automotive industry feasible. Vehicle manufacturers have acknowledged this and seek to deepen regional cooperation that facilitates trade within SSA. The recently ratified AfCFTA, which seeks to liberalise trade, is encouraging in this regard.

1.2.4: Unlocking Africa's automotive potential

Although there is potential for an automotive industry to be established in SSA, it requires regional cooperation. Larger economies such as South Africa, Nigeria, Ghana and Kenya require access to regional markets to justify investment and production capacity.

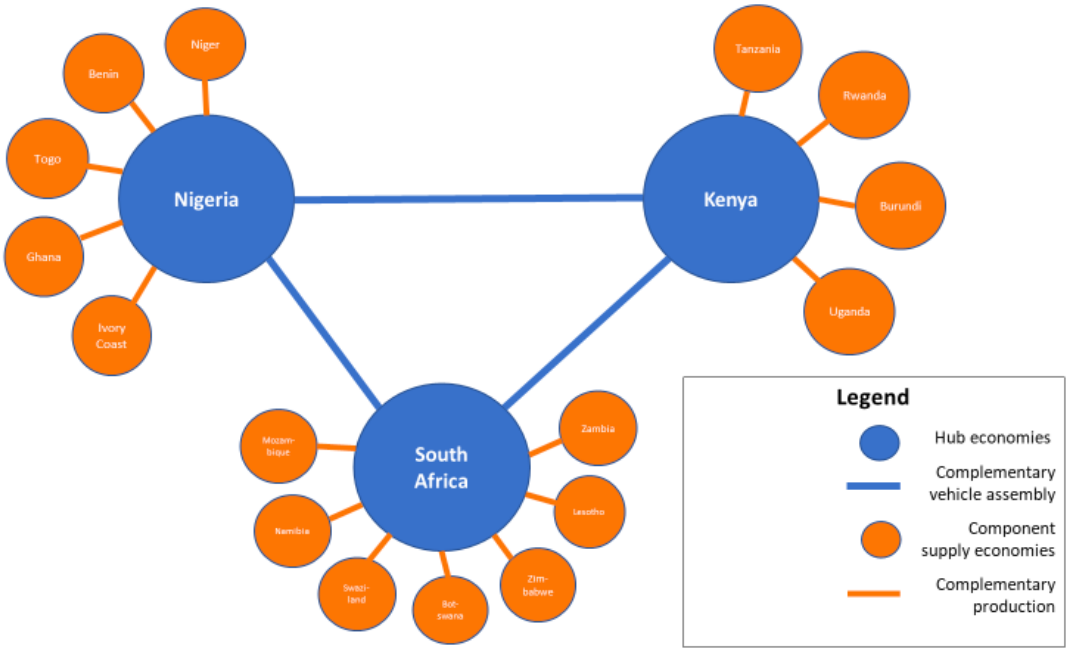
One condition for the establishment of an automotive industry is a viable 'automotive space'. For countries who do not have a large enough market nor adjoin such markets, an 'automotive space' could take the form of a regional market. Here, regional trade agreements grant easier access to member states, effectively removing tariff barriers and enlarging the size of the market for domestic firms (Humphrey and Oeter, 2000).

Drawing on consultations with government and industry leaders in Nigeria, Ghana, Kenya and South Africa, Barnes, Erwin and Ismail (2019) have put forward a detailed proposal to establish an Automotive Pact in SSA. Centrally, the purpose of the Auto-Pact is to promote the establishment of a number of regional production hubs that would draw on regional supply chains, including a network of suppliers located in neighbouring countries. Doing so would provide the scale required to justify automotive industry investments and production capacity. This strategy would also draw peripheral markets into the value chain.

A hub-and-spoke model of automotive production has been suggested as a way to enable multiple countries in one region to share the benefits of having an automotive industry. Assembly hubs would include major economies such as South Africa, Ghana, Nigeria and Kenya. The idea is that each African region would embed a hub-and-spoke production model where vehicle components are manufactured in different countries across a particular region (spokes) and are then shipped to the assembling country in that region (hub). The hub economy would then sell new, fully assembled vehicles to the regional market.

It has been argued that a hub-and-spoke model would ensure that there is a degree of industrial development in all participating countries. Further, the economic benefits associated with establishing an automotive sector can be distributed across participating countries in the form of job creation and intra-regional trade. If each participating country is effectively able to enjoy the benefits of the hub-and-spoke model, it is envisioned that participating countries' interests will be aligned, and they will therefore refrain from opening their markets to secondhand imported vehicles. The AAAM has endorsed the hub-and-spoke model. AAAM's executive director expressed that "the goal for the next two to three years is to develop a sustainable vehicle manufacturing hub in West and East Africa, supported by spoke component manufacturing in the respective regions". Figure 15 depicts the structure of a possible hub-and-spoke model.

Figure 15: Hub-and-spoke model of production



Source: Barnes et al, 2019.

The establishment of the automotive sector in ASEAN is a good example of a hub-and-spoke model for automotive production. Vehicle component parts were manufactured in five of the member states of ASEAN. Component parts manufactured in Indonesia, Malaysia, Philippines, Vietnam and Singapore were exported to Thailand where vehicles are assembled. The associated gains from this process are captured by all participating countries. This has developed into a stronger automotive industry where spoke economies actually produce vehicles.

Intuitively, the hub-and-spoke model develops a way in which regional value chains could be established. This, in turn, would further integrate the automotive market in SSA and provide the rationale for establishing regional automotive industries. However, it is not likely that spoke economies will realise short term gains. If large scale assembly plants were to develop in hub economies, prospects for supply chains being established across the region and across national boundaries are limited. This is because, firstly, rail density throughout Africa is very low (Hartzenberg, 2011). Secondly, there are still infrastructure barriers in many countries that may limit their ability to slot into the value chain. Without industrial and trade policy interventions that support both technical infrastructure and skills development, it is unlikely that spoke economies will capture the gains of regional automotive participation.

In order to establish regional value chains in the SSA automotive industry, a coordinated, aligned, continent-wide approach, which acknowledges the existing strengths and limitations of each country, needs to be established.

While the importance of establishing an automotive industry in SSA has been acknowledged, it is important to consider whether strategies proposed for the establishment of such an industry are feasible. For the Auto-Pact and hub-and-spoke model to be successful, it requires hub-and-spoke economies to coordinate policy and cooperate effectively over an extended period of time. Regional cooperation is complicated and has largely been overlooked in analyses of the automotive industry in SSA. It is clear that regional integration and cooperation is required for the sustainability of the automotive sector in SSA and for the establishment of a hub-and-spoke model of production, but questions around whether this can be achieved in SSA are pressing.

It is important to understand the conditions that make functional regional cooperation feasible. The next section of this paper will explore regional integration and cooperation more broadly and highlight the conditions required for the Auto-Pact and hub-and-spoke model to succeed.

Here, a dynamic model of assessment for the sustainability of regional cooperation will be established. The conditions set out can then be applied to the hub-and-spoke model to assess whether the conditions in SSA are conducive for the required levels of sustained cooperation between different countries in the development of an SSA automotive industry.

Section Two: A Dynamic Model of Assessment for Regional Cooperation

This section of the paper will explore regional integration and cooperation. Here, the conditions that need to be satisfied in order for countries in any given region to cooperate with one another sustainably are established. It is important to understand why spoke economies might still cooperate with hub economies in an Auto-Pact if the distribution of gains is not equitable. If the conditions for regional cooperation are satisfied in the automotive sector, we expect sustained cooperation and participation in regional agreements aimed at promoting the development of the automotive industry is feasible. Where they are not, it is likely that any agreement requiring regional cooperation will unravel over time.

2.1: Understanding the literature

Regional integration in Africa is not a new phenomenon. Regional integration arrangements are scattered through history at a local, regional and global level. Some arrangements succeed, while others never materialise into anything of consequence, despite formal commitments.

When exploring the process of regional integration, economists often under-prioritise political and institutional factors. In doing so, economists primarily focus on market interactions in a particular region through the lens of welfare implications and assume that, where welfare gains are present, integration will persist.

A more nuanced approach is required to understand the prospects for successful regional integration and cooperation. In this section of the paper, it is argued that the institutional landscape and political power of any region cannot be neglected. Traditional economic approaches to regional integration fall short in their explanation of the conditions (theoretical, political, social) that must be satisfied for functional regional integration and cooperation to persist.

2.1.1: Traditional economic approaches to regional integration

Two economic approaches to regional integration have dominated much of the literature. The first is customs union theory. The second is optimal currency area theory.

Customs union theory is traditionally concerned with the welfare effects of regional economic integration. Customs union theory focuses on the establishment of Preferential Trade Agreements (PTA) (Mansfield & Solingen, 2010). Preferential trade agreements aim to liberalise trade amongst member states, guaranteeing preferential market access. On the other hand, preferential trade agreements discriminate against states that are not included in the regional agreement. Considerable effort has been devoted to determining whether the benefits of regional liberalisation outweigh the costs of third-party discrimination.

Viner (1950), in a seminal study, explored the distinction between 'trade-creating' and 'trade-diverting' customs union arrangements. Trade-creating arrangements enhance welfare. Liberalised trade amongst member states results in the shift of imports from less efficient producers outside of the arrangement to more efficient producers within the arrangement (Viner, 1950). Trade-diverting arrangements limit welfare gains. The preferences afforded to producers within the arrangement shift imports from more efficient producers outside of the arrangement to less efficient producers within.

Viner (1950) and other scholars have demonstrated that it is close to impossible to make any generalised claim as to whether preferential trade agreements are trade-creating or trade-diverting. The regional realities and endowments are too diverse. This ambiguity has spawned huge amounts of literature on the appropriate conditions required for a net welfare gain in a regional integration agreement. Some of these conditions are noted as follows:

- Regional integration is likely to succeed where intra-regional trade is already high.
    - It seems obvious that, if there is already high intra-regional trade, then the barriers to functional integration are lower, as stable value chains may have already been established. As indicated above, intra-regional trade in the SSA automotive industry is very low.
- Trade-creation resulting from regional integration is more likely where tariff and non-tariff barriers of member states are high prior to integration.
    - Where trade barriers are high, welfare gains are lost to obstacles that limit firms' ability to exploit larger markets and are forced to provide goods at higher costs. Limiting those barriers will likely result in a welfare gain. In SSA, this was the case, but progress has been made in reducing trade barriers.

- If tariff and non-tariff barriers to extra-regional trade after regional integration are low, the likelihood of trade-diverting activity is reduced.
    - While this is true (because it still allows member states to access excluded, efficient markets), it may not be possible. When states enter regional agreements, it may be important for a level of protection to be implemented that allows fledgling industries to develop without excessive external competition.
- Welfare gains from regional integration are more likely when countries are geographically close to one another, reducing transaction costs.
    - This seems probable, as many successful regional integration arrangements operate in close geographical proximity. However, it is also important to consider the level of infrastructure between geographically close countries which may act as an additional barrier. For example, low railway density in SSA may make transport of goods difficult, despite short distances.
- Where member states have complementary economic structures making inter-industry specialization possible, successful regional integration is more likely to result in trade-creating activity.
    - When assessing the prospects for regional integration, it is important to explore different ways in which industries can develop mutually beneficial value chains. However, it must also be noted that, in the absence of complementary industries, it is still possible for regional leaders to act as pay masters and ease welfare tensions.

Economists have also addressed the effects of preferential trade on economies of scale. Krugman (1993) notes that the establishment of preferential trade agreements typically improves the terms of trade of member states vis-à-vis the rest of the world. This might enhance welfare. It is also possible that preferential trade agreements expand the market size to which firms in member states have access (Mattli, 1999). Here, preferential trade agreements may facilitate economies of scale and promote member welfare.

Alternatively, preferential trade agreements might lead to ‘beggar thy neighbour’ policies. This refers to a situation in which one country attempts to remedy its economic problems by means that tend to worsen the economic standing of other countries. One can conceive of a

situation in which the distribution of welfare between countries in a preferential trade agreement is not equal, and a large economy exploits smaller ones.

The welfare effects established in customs union theory identify potential costs and opportunities to regional integration and cooperation. However, it fails to account for any political or social conditions that may constrain or support functional integration. This results in a static account of the conditions that are required for functional regional integration to succeed.

While a country may satisfy the conditions in which net welfare implications are positive, it does not necessarily mean that the pursuit of functional integration will be successful. Political leaders may be unable or unwilling to provide functional integration (Mattli, 1999). In terms of an automotive regional strategy in SSA, political will has been highlighted as an important prerequisite to implement effective policies aimed at developing automotive manufacturing (AAAM, 2020). The conditions set out by customs union theory may be necessary, but they are not sufficient.

The second major economic theory governing regional integration analysis is optimal currency area theory. Optimal currency area theory acknowledges the necessary conditions under which it is economically efficient to adopt a currency union (Mundell, 1961). Mundell (1961) develops a cost-benefit analysis which highlights the advantages of a unified currency area. Here, Mundell (1961) argues that the reduction in transaction costs associated with common currency would stimulate trade, enhance the mobility of labour and increase capital flows. On the other hand, common currency eliminates exchange rates between member states, negating the ability to absorb economic shocks.

Much of the work around optimal currency area theory attempts to identify regional zones that can benefit from regional integration by using game theory. This is a valuable approach that will be explored in this paper. It can be argued that, because of the disparity between economies of member states in a regional agreement, some states will inevitably carry a larger burden in the integration process. Similarly, some states will not benefit as much as others from the integration process. Cooperation between states would therefore be difficult. In the automotive industry, this disparity must be acknowledged between potential hub-and-spoke production countries.

However, the disparity in welfare achieved through integration is only one aspect of the integration process. There are factors that might offset these outcomes, making integration and cooperation stable. Some literature argues that the disparity in member states' economic strength and the associated burden they carry may even be a requirement for functional integration (Mattli, 1999). Optimal area currency theory does not account for social or political factors, resulting in a potentially static approach of analysis.

2.1.2: Flaws in traditional economic approaches to regional integration

As indicated above, regional integration incorporates more than the removal of trade barriers. To achieve sustained cooperation in a regional integration agreement, it is important to have integrated, consistent governance structures and accountability mechanisms. Regional partners need to adopt a common set of policy procedures, regulations and institutional structures. While the market conditions acknowledged by traditional economic theory are important and necessary, a more nuanced framework of assessment is required.

De Melo, Pangariya and Rodrik (1993) acknowledge the fact that market integration operates within a framework where political, social and cultural structures are important. Economic and political spheres do not operate in isolation; they are integrated, inseparable systems (de Melo, Pangariya & Rodrik, 1993). Therefore, a theory that only accounts for market factors falls short in any analysis that needs to account for both. The dynamic relationship that exists between market factors and socio-political institutions is too often neglected in traditional economic approaches, resulting in a need to develop a dynamic framework.

Lawrence (1996) argues:

> *"[Most] theorizing about regionalism [in economics] consider[s] these arrangements in the context of a traditional paradigm in which trade policy is characterized by changes to barriers at the border. Regional arrangements are modelled either as customs unions . . . or as free trade areas ... But although the removal of internal border barriers is certainly an important feature, focusing only on these barriers overlooks much of what regional arrangements are about. The traditional perspective is at best*

incomplete and at worst misleading. . . Once tariffs are removed, complex problems remain because of differing regulatory policies among nations."

Any analysis of regional integration must acknowledge the dynamic relationship between economic, political, social and cultural spheres. The analysis cannot be one dimensional. In this context, the patchy and complicated history of the success and failure of regional integration schemes throughout Africa makes more sense. This section will explore a dynamic framework of assessment to determine the conditions that contribute to the success or failure of regional integration and cooperation projects. The dynamic model of assessment is established in the following sections.

2.2: Conditions for functional regional integration

2.2.1: The demand for institutional change

Regional integration is the process of changing or adapting a common set of rules, regulations or policy structures in any defined region. Member states opt-in to institutional restructuring when they agree to participate in a regional integration project. It is therefore important to understand how and why the process of institutional change occurs.

Institutional theories—such as property rights theory, economic history and new institutional economics (NIE)—provide valuable insights into the process of institutional change. Traditionally, these theories are concerned with the evolution of domestic institutional arrangements. However, the same logic can extend to the dynamics of regional institution building.

A common definition of institutions across all three schools of thought is expressed as follows:

> [A] set of formal or informal rules, regulations and compliance procedures designed to constrain and shape human interaction and structure the incentives of actors involved in an exchange relationship in order to maximize the wealth or utility of [those] actors (Yarbrough & Yarbrough, 1992).

Property rights theory suggests that the motivation for institutional change is derived from those who experience the largest opportunity cost in established institutional structures.

A study conducted by Gary Libecap (1978) exemplifies this point. Libecap (1978) found that United States laws related to mineral resources changed in correlation to their economic significance. As the value of mineral resources increased, actors who were claimants of those resources were increasingly incentivised to request greater precision in the definition of property rights so that they could capture the gains of the increased value more effectively. As the value of mineral resources increased, so did the opportunity cost of the claimants. Demand for institutional change (the rules that govern exchange) was directly attributable to opportunity costs experienced.

A similar sentiment is echoed by Lance Davis and Douglas North. Davis, North and Smorodin (1971) argue that, when the possibility of profit cannot be captured within an existing institutional arrangement, it will lead to the formation, or transformation, of new institutional structures.

From a different, yet consistent, perspective, Mattli (1999) argues that "property rights develop to internalize externalities when the gains of internalization become greater than the cost of internalization". It is reasoned that increased internalisation (institutional restructuring) is the result of a change in economic value. Changes that occur due to technological improvements, lower transaction costs or the opening of new markets may result in a situation where the opportunity costs to externalised structures of exchange are insufficient for actors to capture welfare. Thus, as the opportunity costs to externalised institutions increase, so too does the demand for institutional restructuring.

Economic history theories address the influence of new technology on institutions and markets through transaction costs. Transaction costs are costs associated with enforcing contracts that underpin exchange. They extend from negotiating trade terms to the final delivery of a product. Douglas North's (1985) account of the industrial revolution expresses this idea well. During the industrial revolution, new technology eased communication and expanded the scope of delivering products. In essence, this expanded the size of the market. Larger markets caused a shift from vertically integrated production to specialised production which, in turn, catalysed organisational innovation to reduce transaction costs. New technology served as the impetus for institutional restructuring that aimed to limit or reduce associated transaction costs.

Transaction costs play an important role in New Institutional Economic (NIE) literature too. NIE takes production technology and the political structures in a market as given. NIE then seeks to explain the transition from straightforward market exchange to vertically integrated exchange by only considering transaction costs. NIE postulates that "transaction costs are economized by assigning transactions to governance structures in a discriminating way" (Mattli, 1999). It is argued that, the higher the degree to which durable investments are made to support a particular transaction, the greater the complexity of the organisational structure required to promote efficient exchange. If there is an organisational structure that is able to limit transaction costs, that institutional structure will be pursued. So, in this case, if vertically integrated production limited transaction costs, it would be preferred to straightforward market exchange.

The key ideas outlined above can be used to understand the demand side conditions required for regional cooperation. Institution building at a regional level can be viewed as an attempt to internalize externalities incurred by firms in member states. As new technology increases the possibility of market exchange and expands the size of potential markets, the opportunity costs of firms increase. With reference to the above, these actors are expected to demand institutional change.

More precisely, as technology allows firms to 'shorten distances' (or where the potential of larger markets exist), actors who face opportunity costs in the status quo (no integration) will demand institutional change as a way to minimise transaction costs or to take advantage of larger markets. In both cases, the higher the opportunity cost faced by firms, the stronger the call for institutional change.

Within the automotive industry in SSA, it is clear that there is an opportunity cost to automotive manufacturers in the status quo because domestic markets are not large enough. It is important for OEMs to have access to larger regional markets and to have confidence that policies aimed at promoting the automotive industry are reliable. It is not surprising that such actors would demand institutional restructuring in SSA to capture potential gains.

2.2.2: The demand side conditions for regional integration

Section 2.2.1 presents the first building blocks for understanding the establishment of functional regional integration and cooperation. The argument can be stated as follows:

As conditions change which allow the size of the market to expand beyond the confines of a single country, regional actors who stand to gain from wider market access will seek to adapt the institutional and governance structures that exist to realise these gains more fully.

International trade and investment theories have acknowledged the benefits associated with international exchange. Trade theorists contend that enlarged market access will allow firms to achieve EOS in production. As production increases in response to enlarged markets, the average cost of output per unit will fall (Mattli, 1999). Additionally, regional trade allows countries to exploit comparative advantage (Mattli, 1999). A country has the potential to produce and export goods that it is able to produce at a relatively cheaper cost compared to other countries, ultimately benefiting that country. Acknowledging this provides the rationale for establishing regional value chains in the SSA automotive sector. While not all countries can act as hub production countries, there may be room for spoke economies to focus on producing components such as leather seats or radiators.

It is also evident that the implementation of regional integration and cooperation would result in lower transaction costs as transport and trade barriers are removed. Additionally, it is clear that, without regional integration, opportunity costs for regional firms are higher, as they are unable to access larger markets. Firms who stand to benefit from larger markets (typically scale intensive producers) would therefore pursue institutional restructuring to capture these gains. This is particularly relevant in the automotive industry which is scale intensive.

Furthermore, there are benefits associated with attracting foreign direct investment. Firms may accumulate production advantages by producing goods in foreign states instead of domestic markets (Mattli, 1999). These advantages may include access to finance, an appropriate skill base or an otherwise patented technology. Firm specific intangible assets incentivise firms to move production abroad. They are often attracted by specific advantages in a given location, such as cheaper labour, cheaper material costs, market proximity or investment incentives (Mattli, 1999). Here too it is evident that firms may face high opportunity costs when access to regional markets is restricted. The demand for institutional restructuring would therefore be a pragmatic strategy.

It is important to note that the costs of international trade and investment can also be prohibitive, eroding the potential gains of production and exchange. There are many risks involved in this process. However, integrated governance structures can address these issues.

Uncertainty is one major risk. Civil instability or economic issues may result in foreign assets or trade-related investments becoming worthless. In Africa, this is particularly relevant, as the continent consistently struggles with political instability and corruption.

A second major risk is firm-level or government-level opportunism which can hinder the profitability of international exchange (Mattli, 1999). Late deliveries, unexpected price hikes, tariff changes, foreign exchange restrictions or devaluations render the reliance on foreign markets precarious. In a worst-case scenario, a country may even revert to nationalisation of foreign assets. Examples of forced sales, local equity obligations or export requirement obligations also bring to light the possibility of creeping expropriation that limits the full value of contracts.

International firms can minimise guard against excessive transaction costs that arise from opportunism through implementing private agreements. For example, firms can establish long-term licensing agreements as a way to internalise externalities. However, this may be costly, and firms may be restricted from achieving economies of scale.

These issues make external safeguards, such as an integrated governance structure, alluring. External safeguards address both firm-level and government-level opportunism. By implementing external safeguards in the form of cooperative or integrated government institutions, market actors are able to optimise trade and investment as well as reduce transaction costs. If regional integration (a governance structure that provides external safeguards) reduces transaction costs associated with uncertainty and opportunism, firms will demand institutional change (from a structure in which no protection exists to one in which it does).

The interests important for spurring deeper regional integration are the same ones economic theories of institutional change identify. Actors who stand to gain from institutional change (where transaction costs are high or where opportunity costs are present) will demand institutional restructuring. Regional integration expands market access and reduces transaction costs associated with uncertainty and opportunism through external safeguards.

Thus, firms who would benefit from economies of scale or lower transaction costs associated with regional integration will call on governments to pursue institutional change.

The demand side conditions for regional integration can be stated as follows:

> *Regional actors who face high transaction and opportunity costs in an institutional status quo will demand institutional change. If regional integration addresses these concerns, it will be pursued as a viable strategy.*

2.2.3: The supply side conditions for regional integration

The demand for regional integration and cooperation will not automatically translate into functional regional cooperation. Where demand for institutional change is not met with the willingness or ability of it being pursued, no change will occur. The supply side conditions for regional integration and cooperation are the conditions under which political leaders are both *willing* and *able* to accommodate the demands for functional regional integration and cooperation. As noted above, the political dimension of functional regional integration and cooperation cannot be overlooked.

Willingness depends, to a large extent, on payoffs to political leaders. Where leaders value political autonomy (the absence of interference by supranational agents) and political power, it is less likely that governments will seek deeper levels of integration. Here, the expected marginal benefit of integration in terms of re-election chances or maintaining power is not worth the costs (Mattli, 1999).

This insight is consistent with rent-seeking literature. Here, it is argued that political leaders value independence but can be influenced by organised lobby groups who stand to gain from either integration or protectionism (Krueger, 1974). Intuitively, this makes sense. Political leaders in an economy should want to maintain a degree of autonomy in political decisions. Where governments have committed to supranational, hierarchical structures, a degree of this autonomy is lost.

It can be argued, however, that in times of economic hardship, political actors will be increasingly concerned with securing political survival or re-election. Thus, political leaders might be willing to cede a degree of political autonomy and pursue economic policies that enhance overall efficiency, a factor that has typically influenced voting behaviour and re-election prospects in the past. In times of economic distress, distributional considerations

hold second-order importance, thus limiting entrenched interest groups who might resist regional integration. It is also possible that, in times of economic calamity, political leaders revert to protectionism and nationalism. However, empirically, it has been observed that, in times of economic difficulty, political leaders are more willing to engage in the demands for regional integration and institutional change more generally.

For example, the adoption of the Single European Act was a response to slow economic growth in the early 1980s (Mattli, 1999). In a similar context, Canada and Mexico turned to the USA when economic performance was in trouble, leading to the establishment of NAFTA. Additionally, Latin American countries liberalised in part through regional agreements in the face of the Latin American debt crisis. This seems to suggest that economic distress may increase the willingness of political leaders to engage functional regional integration. However, it is important to note that willingness is not sufficient. Political leaders who are willing may still find it difficult to provide regional integration because of collective action problems which limit or disrupt cooperation. This is a consideration that this paper emphasises.

Collective action problems may constrain functional integration and regional cooperation if distributional concerns between countries are present (Snidal, 1985). In the case of the automotive industry in SSA and the hub-and-spoke model of production, this would be an important concern. It is unlikely that the gains from regional cooperation would be distributed evenly across hub and spoke economies.

The prisoner's dilemma and the coordination game have been used in international cooperation literature to explore this sentiment. For regional cooperation to be successful, collective action is imperative. The nature of regional integration and cooperation, established above, requires the adoption of a common set of policies and regulations as new institutions are established. Thus, cooperation and coordination of member states is necessary. To better understand the conditions that need to be met for willing political leaders to have the ability to supply regional integration and cooperation, the prisoner's dilemma and coordination game are evaluated below. Understanding the way in which cooperation between states in any region is established will help ascertain the conditions within the automotive industry that need to be met to ensure sustainable regional cooperation.

2.2.3.1 The Prisoner's Dilemma

The normal strategic form of the prisoner's dilemma is presented in figure 16 below. The prisoner's dilemma game consists of two players, State A and State B. Each State has a policy option, P1 and P2. Each cell represents the respective ordinal payoffs for each State. Payoff 4 is the highest, while payoff 1 is the lowest. The first number in each cell corresponds to State A's payoff. The second number in each cell corresponds to State B's payoff. If both States choose policy option P1, the payoff will be 3 for state A and 3 for State B. If State A chooses policy option P1 while state B chooses policy option P2, the payoff structure will be 1 for State A and 4 for State B.

Figure 16: Prisoner's Dilemma Game

State B

		P1	P2
State A	P1	3\3	1\4
	P2	4\1	2\2

The prisoner's dilemma depicts cooperative issues that may arise because of externalities. As each State attempts to secure the highest level of welfare (payoff), costs are imposed on the other State. For example, if State A chooses policy option P1, State B maximises welfare by choosing policy option P2. A payoff of 4 is greater than the alternative payoff of 3 where P1 is chosen. In this context, State A would prefer state B to choose policy option P1 because the payoff of 3 is greater than the associated payoff of 1 when State B chooses P2.

Similarly, if State A chooses policy option P2, State B will choose policy option P2 because the payoff of 2 is greater than the payoff of 1 if policy option P1 were chosen. It is clear that in response to State A's policy choices, State B will always choose policy option P2. The same holds true for State A responding to any of State B's choices. Each State's action is independent of the other State's policy choice because, in any scenario, it is beneficial for State B and State A to choose policy option P2. Further, the costs imposed on each state are independent of their respective actions (Snidal, 1985).

In the context of the automotive industry, it may be beneficial to think about policy options P1 and P2 above as a State choosing to ban/restrict the imports of secondhand vehicles in the Auto-Pact's hub-and-spoke production structure.

If P1 is banning secondhand vehicle imports, and P2 is allowing imports of secondhand vehicles, it is clear that, if State A banned secondhand vehicles and attempted to develop an automotive industry, they would, in all likelihood, fail. State B would always choose strategy P2 in this scenario. Thus, State A would not be able to access a larger market because of the prevalence of cheap secondhand vehicles in State B. This would negatively impact State A's payoff structure. For State B, the hub-and-spoke model would draw their productive capacity into a larger regional base, but the population would still benefit from cheap secondhand vehicles. Once State A recognises this strategy, State A will also choose policy option P2.

By identifying the Nash equilibrium in the prisoner's dilemma game, one can understand what cooperation would look like. As we have noted above, whether State A chooses policy option P1 or P2, the optimal policy for State B is to choose policy option P2 because a payoff of 4 is greater than a payoff of 3 and a payoff of 2 is greater than a payoff of 1. State B has a dominant strategy of policy option P2. The same holds true for State A who also has a dominant policy option of P2. Whether State B chooses policy option P1 or P2, State A will always choose policy option P2 because 4 is greater than 3 (State B choosing P1) and 2 is greater than 1 (State A choosing P2).

Each State will therefore choose policy option P2 and a Nash equilibrium of (P2;P2) (2,2) will be achieved. This outcome is important because it is not welfare maximising. If both State A and State B could coordinate and choose policy option P1, an outcome of (P1;P1) (3,3) could be achieved, which is welfare enhancing. Because both states have an independent incentive to defect from cooperation, the outcome of (P1;P1) is not a stable equilibrium and will ultimately unravel. For sustained cooperation (at a Pareto optimal[1] equilibrium) to be established in this context, an external structure is required to either monitor and enforce cooperation or to change the payoff structure to the extent that defection is disincentivised.

[1] Pareto optimal outcome is an outcome where no player can become better off without making the other player worse off.

Extending the basic form of the prisoner's dilemma game to regional integration adds a layer of complexity. The regional integration process involves interaction between multiple states, over multiple periods of play and across a broad range of policy considerations. This disrupts efficient communication channels and results in the distortion of information, complicating cooperation (Mattli, 1999). Furthermore, where states have a dominant strategy to defect, external monitoring bodies are unable to comprehensively monitor a growing number of states, thus mitigating their functional purpose and making defection more likely (Snidal, 1985).

However, it is possible that, through regional integration and reputation considerations of repeated play, cooperation may be fostered. Here, states are able to punish one another for defection in future periods or alternate policy areas (Snidal, 1985). Empirical evidence has shown that imperfect information, repeated play and issue-linkages do not sufficiently guarantee cooperation, but they do make it more likely (Boyd & Lorberbaum, 1987). While a supply condition for regional integration can be stipulated as the presence of an external monitoring body, it is a weak condition.

An external monitoring body would undoubtedly make regional integration and cooperation more likely but is not a sufficient condition. The presence of external monitoring bodies in all regional agreements attests to its importance. Where states are able to sufficiently voice their concerns or hold other countries accountable through established processes, regional cooperation is more sustainable. Additional supply side considerations are important.

2.2.3.2: The Coordination Game

The normal strategic form of the coordination game is presented in figure 17 below. In the coordination game, there are two players, State A and State B. Both State A and State B have policy options P1 and P2. Each cell represents the respective ordinal payoffs for each State. A payoff of 4 is the highest, while a payoff of 1 is the lowest. The first number in each cell corresponds to State A's payoff. The second number in each cell corresponds to State B's payoff. If both States choose policy option P1, the payoff will be 4 for state A and 3 for State B. If State A chooses policy option P1 while State B chooses policy option P2, the payoff will be 2 for State A and 2 for State B.

Figure 17: Coordination Game

		State B	
		P1	P2
State A	P1	4\3	2\2
	P2	1\1	3\4

The key difference between the prisoner's dilemma and the coordination game is that, in the prisoner's dilemma, external costs are imposed on each State independently of their policy choice. In the coordination game, the costs and benefits associated with each policy option are contingent on the other State's policy decision (Snidal, 1985).

For example, if State A chooses policy option P1, State B can either choose policy option P1 or P2. State B will choose policy option P1 to maximise welfare. The payoff of 3 (P1) is greater than the payoff of 2 (P2). If State A chooses policy option P2, State B would then change their policy option decision to P2 because the payoff of 1 (P1) is less than the payoff of 4 (P2). The same holds true for State A responding to State B's policy option choices. Therefore, unlike the prisoner's dilemma, neither State has a dominant strategy in the interaction, because the optimal strategy requires information about the other player's choices.

By identifying the Nash equilibrium in this game, one can understand what cooperation may look like. If State A chooses policy option P1, State B optimises welfare by choosing policy option P1, as the payoff of 3 is greater than the associated payoff of 2 for policy option P2. The same holds true for State A responding to State B choosing policy option P1. A Nash equilibrium of P1;P1 (4,3) is therefore achieved.

However, if State B initially chooses policy option P2, State A will optimise welfare by also choosing policy option P2, as the payoff of 3 is greater than the payoff of 2 (if policy P1 is chosen). The same holds true for State B responding to State A choosing policy option P2.

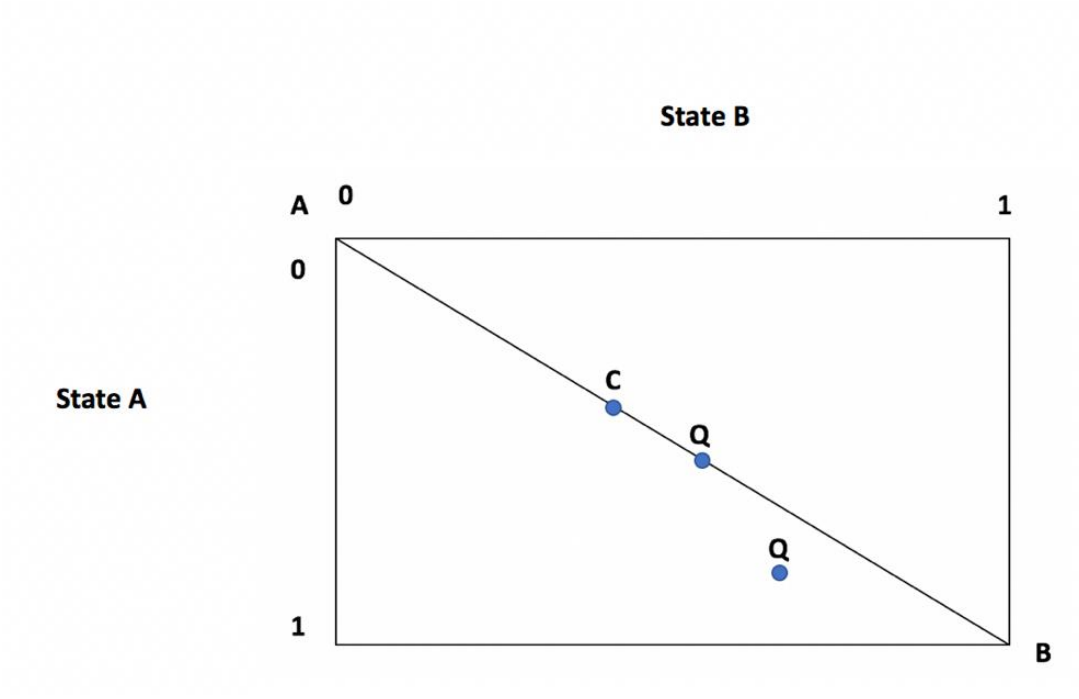
Therefore, a second Nash equilibrium at P2;P2 (3,4) exists. It is important to acknowledge that there is no disjuncture between individual and collective action. Cooperation at either Nash equilibrium is better for both States than defection; cooperation is thus self-enforcing (Snidal, 1985).

The problems with cooperation in the coordination game become evident upon closer inspection of the two Nash equilibrium coordination points. The first Nash equilibrium point of P1;P1 has an associated payoff structure of 4 for State A and 3 for State B. The second Nash Equilibrium point of P2;P2 has an associated payoff structure of 3 for State A and 4 for State B. Therefore, each State is expected to have a preference for a particular stable equilibrium coordination point. State A will prefer to coordinate at P1;P1, while State B would prefer to coordinate at P2;P2.

In the context of the automotive industry, policy options P1 and P2 can be considered as the degree to which each State will limit the import of secondhand vehicles. P1 can be considered as banning or restricting secondhand vehicles more strictly and P2 less strictly. Intuitively, it would be beneficial for spoke economies to still allow some secondhand vehicles into the market to secure welfare while they do not gain from automotive production in the early stages of development.

A modified version of the typically 2x2 coordination game is depicted in figure 18 below. The locus of ABC represents the policy axis of perfect coordination between two states (State A and State B). State A prefers coordination points closer to A, where the payoff structure is (4;3). Similarly, State B prefers coordination points closer to B, where the payoff structure is (3;4). C is an intermediate coordination point. The payoff structure of C can be stipulated as (3.5;3.5). Q is not on the axis of AB and is therefore not a point of perfect policy coordination. However, Q might be preferred to C by State B because it is closer to State B's preferred outcome. This indicates that bargaining over coordination points does not have to be restricted to the coordination axis of perfect policy coordination. We do assume, however, that for every point Q off the coordination axis, there is at least one-point Q*, which is preferred by either State A or State B that sits on the coordination axis.

Figure 18: Coordination Axis of Coordination Game



Two problems emerge. First, deciding which coordination point to operate at is difficult because each State has divergent preferences. Second, once a coordination focal point is established, it is self-enforcing, as neither State will be incentivised to defect. One State will therefore consistently receive a lower payoff over multiple periods of play. In repeated play, the disparity in the payoff structure may accumulate and cause unrest, resulting in cooperation eventually collapsing. Behavioural economic literature has suggested that, even if one player stands to lose from defection, issues surrounding the unequal distribution of welfare may result in non-cooperation, effectively removing the self-enforcing nature of the coordination equilibrium (World Bank, 2015). This sentiment has been highlighted in the Ultimatum game[2] in which individuals consistently reject offers of money that they perceive to be unfair, terminating cooperation (World Bank, 2015). This insight holds true where multiple periods of play are present.

Expanding the coordination game to multiple states has similar attributes to that in the prisoner's dilemma game. Some socio-political features of big versus small groups might

[2] The Ultimatum game is a popular instrument in economic experiments. One player, the proposer, is endowed with a sum of money which she must split with another player, the responder. The proposer offers a particular distribution to the responder. If the responder accepts the distribution, then the endowment is split. If the responder rejects the offer, neither player receives a payoff.

result in ineffective organisation. To the degree that large groups hinder communication, potentially complicating bargaining, this will undoubtedly make agreement to a coordination convention more difficult (unless convention or other aspects offer an obvious focal point). Having one country that is effectively able to set the agenda in this regard is therefore important.

However, the effects of reduced visibility in bigger groups of individual choices are not as serious in coordination games as they are in the prisoner's dilemma game (Snidal, 1985). Although larger groups will give distinctive states an opportunity to depart slightly from convention, the nature of the coordination game suggests that it will not be a major problem, because national incentives are to coordinate voluntarily with other states. Larger groups will give rise to problems around where to coordinate, but not the strategic incentives of cooperation once the focal point is established (unless, of course, the disparity is so large over time that cooperation unravels).

An increased number of states in the coordination game will reduce the likelihood of the breakdown of cooperation resulting from the deliberate actions of other states (Snidal, 1985). Once a coordination point is established, there might be strategic incentives for a state to leave (or threaten to leave) from the coordination point intentionally in order to influence other states to accept its preferred coordination point. However, as the number of states increases, the impact of any single state and its ability to blackmail or coerce other states decreases. Thus, coordination in large numbers does not impede cooperation like it does in the prisoner's dilemma game; it actually facilitates cooperation once a focal point is established.

Time impacts the outcomes of the coordination game less than the prisoner's dilemma because of the inherently stable nature of cooperation in the coordination game. However, past and future time has substantially different impacts in coordination games.

Because cooperation in coordination games depends on the ability to agree to common conventions (focal points), past experiences and established norms will be a stabilising force for regional integration (Snidal, 1985). States who wish to defect would have to consider the effects of destabilising established norms and changing the associated benefits of coordination.

Time in the future has the opposite effect in the coordination game when compared to the prisoner's dilemma. In the prisoner's dilemma, prospects of repeated play provide states with an incentive to cooperate. This is not the case in a one-shot interaction where an optimal strategy might be to defect (Snidal, 1985). In the coordination game, the single shot outcome is likely to be cooperative, because the importance of cooperation is more important than minor differences associated with the coordination point. In repeated play, and during longer durations of cooperation, the coordination game gives states incentives to be more concerned with the exact distributional consequences of particular coordination outcomes, because the smaller margins add up over time (Snidal, 1985). In the extreme, it may result in a state deliberately upsetting the prevailing coordinated outcomes in an attempt to institute a movement to a different convention which is more favourable to them. Thus, playing through time may be destabilising in coordination problems.

The table below highlights the main attributes of both the prisoner's dilemma and coordination games explored above.

Table 3: Attributes of the Prisoners Dilemma and Coordination Game

	Prisoner's Dilemma	**Coordination Game**
Basic Problem	**Assistance:** States interdependent on external body because each imposes costs on the other independently of the other's actions	**Coordination:** States interdependent on each other because impact of each State's choice is contingent on other State's choice.
Effect of multiple players	Generally, inhibits cooperation.	May inhibit formation of stable regional agreements because establishing focal point is harder. However, if focal point is established, it enhances stability of regime.
Impact of time	Future time and the ability to adjust behaviour increases the likelihood of cooperation.	Past time increases prospects for cooperation. Future time and the ability to adjust behaviour limit the likelihood of cooperation.

Typically, the collective action problem of coordination and stability underlying an n-state coordination game are solved if there is one state (a regional leader) whose membership and cooperation in the group is perceived to be more important than any other state by the majority of the group (Mattli, 1999).

Adopting policies of a regional leader makes economic and political sense. This is, in all likelihood, the least costly change within a group of participating countries. Costs aside, regional leaders can also contribute towards easing distributional concerns that may arise in repeated play of a coordination game.

Typically, repeated play makes coordination more difficult, because states acknowledge the distributional effects of coordination. Over time, small differences in payoff structures accumulate. Questions around the fairness or equitable distribution of payoffs associated with different focal points need to be addressed to prevent prevailing disgruntlement. A dominant state or regional leader may be able and willing to assume the role of regional paymaster, easing distributional tensions and smoothing the path toward regional cooperation (Mattli, 1999). This would make unequal payoff structures more tenable for a state who is receiving a least preferred outcome over time. For a hub-and-spoke model of automotive production, it may be the case that the lack of short-term gains associated with automotive production in spoke economies can be offset by payments or concessions by the hub economy.

The second supply side condition can be established as follows:

> *The presence of a regional leader among a group of countries seeking to cooperate. Such a state should have the ability to act as a coordination focal point and be able to act as a regional paymaster; easing distributional tensions.*

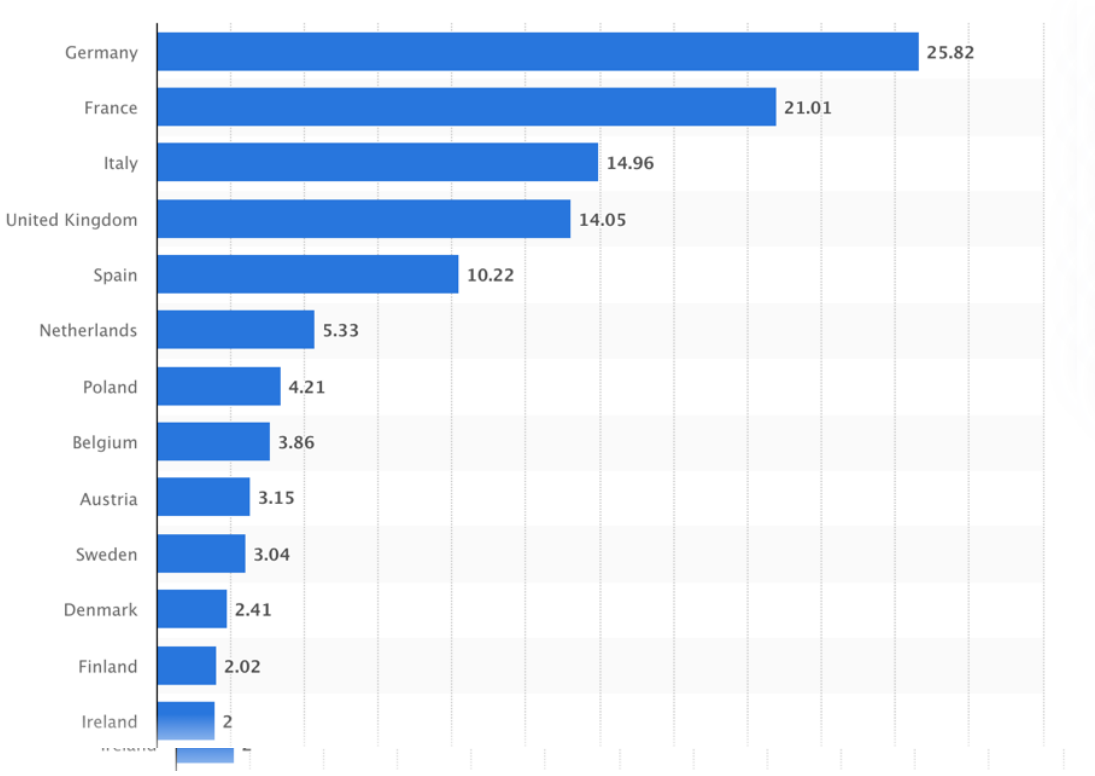
2.3: The stipulated demand and supply side conditions at play

Historical regional integration arrangements attest to the importance of the demand and supply side conditions stipulated above being met. These conditions are necessary for sustained cooperation and coordination between nation-states. A brief analysis of the North American Free Trade Agreement (NAFTA), the European Union (EU), and the Association of Southeast Asian Nations (ASEAN) supports this sentiment.

Market actors have been credited with promoting legal integration in the European Community (EU). The Treaty of Rome, which established the creation of the European Economic Community (EEC), was signed in 1957. In 1992, a single market was established after the signing of the Single European Act (SEA). The establishment of the SEA was, in part, driven by the formation of the Roundtable of European Industrialists in 1983 (Cowles, 1986). The Roundtable of European Industrialists were a group of the region's largest corporations and included companies such as Philips, Daimler Benz, Volvo, Fiat and Bosch. The Roundtable's mandate was to lobby government for the expansion of domestic markets throughout Europe (Cowles, 1986). The Roundtable successfully pushed governments in Europe to formalise policy that allowed these companies to take advantage of economies of scale in production. The demand side conditions in Europe were met. Regional actors (who faced an opportunity cost) demanded change to the institutional status quo in order to capture gains associated with the pursuit of regional integration.

Germany's role in this process highlights the supply side conditions of regional integration which were also met. Acting as a coordination focal point, Germany was an important institutional agenda-setter in the European regional integration project (Cowles, 1986). Credit has been given to Germany for launching the European monetary system, arguably the first act of German leadership in the region. Germany also played an important role in outlining the budget compromise set out at the Stuttgart Council Summit in 1983 (Mattli, 1999). Although France could also be considered a regional leader, the mantle of regional leadership was taken up by Germany. Germany has established itself as a regional paymaster, easing tensions and making regional cooperation more attractive for smaller economies over time. Germany is the largest contributor of the EU budget with 25.83 billion Euros, followed by France with 21 billion Euros, followed by Italy with 14.96 billion Euros and the United Kingdom with 14 billion Euros (Statistica, 2021). Figure 19 below highlights the amount contributed to the European Union in 2019 by member states.

Figure 19: European Union budget contribution by member states, 2019 (billions of Euros).



Source: Statistica, 2021.

The primary beneficiaries of the EU budget are the poorest EU member states who do not benefit as much as larger economies from regional integration. German contributions to the European Regional Development Fund and the European Social Fund indicate Germany's willingness to act as a regional paymaster and to ease distributional tensions. It is evident that, at least to some extent, the demand and supply side conditions set out above are met in the European Union's integration scheme.

In NAFTA, the United States of America is the undisputed regional leader. In 2019, the USA had a GDP of $21.43 trillion, compared to Canada's GDP of $1.71 trillion and Mexico's $1.22 trillion (World Bank, 2020). When NAFTA was first formed, about 25% of all USA imports were originated from Mexico and Canada, and 33% of all USA exports were destined to the same countries (Mattli, 1999). The USA was thus an important strategic trading partner and held the majority of the bargaining power. The USA is effectively able to act as a coordination focal point and set the agenda for cooperation. Supply side conditions were thus met in the formation of NAFTA.

Big business also played an important role in the formation of NAFTA. The prospects associated with larger markets and cheaper labour incentivised North American firms to pursue production at a regional level. The National Association of Manufacturers, the Business Roundtable, the National Retail Federation and the United States Council for International Business all expressed a desire for regional integration (Haggard, 1995). Stephen Haggard (1995) suggests that the NAFTA agreement offered new investment opportunities in Mexico and the ability to ease the costs of doing business. The demand side conditions were therefore present during the formation of NAFTA. There was a clear and significant opportunity cost, and the demand for regional cooperation and integration was thus established and organised.

The ASEAN Industrialisation Cooperation (AICO) scheme was initiated in 1996 as a means to eventually implement a Common Effective Preferential Tariff (CEPT) structure for the establishment of an ASEAN free trade area (Markowitz, 2016). The AICO scheme highlights the importance of both the demand and supply side conditions for functional integration to occur.

Apprehensive buy-in of member states and a degree of unwillingness to reduce protectionist policy made the initial stages of the AICO scheme challenging (Markowitz, 2016). The root of this friction may have been the incompatibility between the regional environment and regional integration leading up to 1996. Intra-ASEAN exports in the late 1960s constituted 5% of total exports (Mattli, 1999). In 1988, intra-regional trade amounted to 2.5% of total trade. The majority of ASEAN states exported to similar world markets (Mattli, 1999). Thus, there was no significant call from regional actors to engage in regional integration, as it would not have necessarily increased the size of the regional market structure significantly.

However, as industrialisation of the ASEAN community grew against the backdrop of the 1997 Asian financial crisis, the regional environment changed. The Asian financial crisis significantly affected individual economies in the region. The expressed desire for political autonomy was replaced by the desire for economic efficiency. This made the supply side conditions for regional integration more tangible. Additionally, the emergence of Thailand as a dominant player contributed to significant investment in its economy, highlighting the fact that a regional leader who was willing to participate in regional projects may have emerged (Kobayashi, Jin and Schroeder 2015). Simultaneously, foreign investors claimed that the AICO

scheme was essential for continued business operations and the prolongation of Foreign Direct Investment (FDI). In the sense that regional cooperation was necessary for stable inflows of FDI, there was a demand for regional integration to be established. This sentiment has its roots in institutional change theory, particularly trade theory (established above). In this sense, the demand for institutional change was established.

It is evident that both demand and supply side conditions do play an important role in the establishment of functional, sustainable, regional integration and cooperation arrangements. It is pragmatic to use these conditions to assess the feasibility of establishing a regional automotive industry in SSA. Where the demand and supply side conditions for regional integration and inter-state cooperation are met, it is more likely that the regional strategy needed to establish an automotive industry in SSA will be viable.

The following section of this paper will apply the conditions set out above (namely, the demand and supply side conditions required for functional regional integration and cooperation) and apply them to the automotive sector in SSA. Special focus is given to the proposed hub-and-spoke model of regional value chain development and production. If the conditions are met, it is feasible to establish an automotive industry through a hub-and-spoke model of production. If these conditions are not met, it is unlikely that the levels of cooperation required to kick start the industry will be sustainable.

Section Three: The Feasibility of Regional Integration in the SSA Automotive Industry

Section three of this paper will explore whether the conditions for functional regional integration and cooperation are satisfied for hub-and-spoke production countries in SSA. If these conditions are satisfied, the hub-and-spoke model of automotive production is feasible. If they are not, any form of sustainable cooperation in the automotive industry is likely to unravel over time. The establishment of an automotive industry in SSA is important because of the role it might play in driving industrialisation and economic growth in the region.

It is important to note that, even if the demand and supply side conditions in SAA suggest that regional integration and cooperation in the automotive industry is unlikely, it does not mean that it is impossible. Conditions on the continent are rapidly changing, and lessons from the AICO integration scheme do show that a more conducive environment can be achieved over time. It is also possible that concessions in other industries address some of the distributional concerns in the automotive sector. However, the scope of this paper focuses on the feasibility of cooperation in the automotive industry in isolation. Cooperation refers to the implementation of policy by each state that is consistent with the establishment of an automotive industry throughout the region.

First, the demand side conditions for regional integration and cooperation will be assessed. The demand side condition set out in section one is stated as follows:

> *Regional actors who face high transaction and opportunity costs in an institutional status quo will demand institutional change. If regional integration addresses these concerns, it will serve as a viable strategy.*

This suggests that, if there is a situation in which regional actors (within the automotive industry) face high opportunity costs or high transaction costs within the status quo (no continental integration or cooperation and limited market access) and if regional integration can address those issues, regional actors will call on government to change institutional structures in favour of regional cooperation. In the automotive industry, this could materialise into a hub-and-spoke model of automotive production.

The demand side conditions being met will be assessed on three fronts. First, the theoretical underpinnings for regional integration in the automotive industry will be established to understand whether it is beneficial for automotive and automotive part manufacturers to call for institutional change which, effectively, expands the size of the market.

Second, evidence that considers how gains might be distributed will be assessed in order to understand which regional actors might call for institutional change or restraint.

Lastly, consideration will be given to existing calls for regional integration, focusing on trade liberalisation and eliminating tariff and non-tariff barriers, within the automotive industry in order to understand the extent of established demand for institutional change.

Furthermore, the supply side conditions for regional integration throughout SSA will be assessed. The supply side conditions established above can be separated into a weak condition and a strong condition; both will be explored.

The weak supply side condition is established as follows:

> *The presence of an external monitoring body is required to either monitor and enforce cooperation or to change the payoff structure to the extent that defection is disincentivised.*

To assess whether this condition is met, a brief analysis of the strength of monitoring bodies currently present in SSA will be acknowledged. Specifically, their ability to act as a hierarchical superior structure in a regional arrangement will be acknowledged.

The strong supply side condition is established as follows:

> *Successful integration requires the presence of a regional leader among the group of countries seeking closer ties.*

To assess whether this condition is met in SSA, four potential hub countries in the hub-and-spoke production model will be assessed. Particular focus will be given to Nigeria, Ghana, South Africa and Kenya. All four countries will be assessed across two categories. First, the political legitimacy and sovereignty of each nation will be acknowledged. Second, the material resources and development indicators of each country will be acknowledged as a way to establish the extent of each country's potential influence in regional arrangements. Both

aspects inform the extent to which a country can act as a coordination focal point and legitimate paymaster.

3.1: Demand side conditions

Understanding whether the regional cooperation required to establish an automotive industry in SSA is feasible is important for industrialisation prospects in the region. The automotive industry, a large manufacturing sector with strong forward and backward linkages, has the potential to drive manufacturing and contribute to economic growth.

The establishment of an automotive sector has the potential to further drive regional integration in other areas related to trade in SSA. Acknowledging the scale intensity of the industry and the requirements for larger markets, it is important to understand if the demand and supply side conditions (set up above) are met in SSA. Where regional actors stand to gain from regional integration and cooperation in the automotive sector, they will call on governments to pursue institutional restructuring.

3.1.1: Theoretical underpinnings for regional integration and cooperation in SSA automotive industry

Economic growth in SSA has been substantive since 2000. This has resulted in a burgeoning middle class and a growing demand for vehicles throughout the region. However, this emerging automotive market is growing from a very low base (Black et al, 2017). Most of the demand for vehicles is being met by imports. Outside of South Africa, production is almost non-existent. Automotive component parts have a similar trend. Existing trade data suggests that only 5.4% of Africa's requirements are supplied from within Africa (Stuart, 2020).

As indicated above, the demand for vehicles in SSA is expected to grow substantially by 2035. This suggests that there is an opportunity for regional manufacturers to take advantage of this growing demand. However, this can only be achieved if production is shifted to a regional level in SSA. This holds true for both vehicles and component parts. If the region is able to loosen its reliance on imports and develop its own industry, drawing in a number of countries to create competitive regional automotive value chains, there will be regional actors who stand to gain from such a process and may be willing to lobby government to change institutional structures.

The automotive industry, by nature, is scale intensive. Minimum efficient scale in modern car assembly lines varies from between 60,000 and 150,000 vehicles per annum for a single model. A similar sentiment holds true for component part manufacturing. Acknowledging the fact that Africa is typically made up of small, fragmented economies, this may be difficult. No single economy, aside from South Africa and Nigeria, has a large enough market to provide the minimal domestic demand to justify the establishment of an automotive or automotive component part sector.

Humphrey and Oeter (2000) use the concept of a viable 'automotive space' to consider the potential of an automotive industry in emerging markets. A viable 'automotive space' can take many forms. For example, while China and India comprise large enough markets with sufficient scale to justify an automotive sector alone, automotive producers in periphery markets can create an automotive space by integrating into established markets (such is the case with Mexico in relation to the USA). For countries that neither constitute large enough markets nor adjoin such markets, an automotive space could take the form of regional markets, where trade agreements grant easy market access to member states and enlarge the market through institutional restructuring. This has been observed in the ASEAN and MERCOSUR regional communities.

While it is clear that potential exists for the emergence of regional automotive value chains in SSA, it is essential that internal free trade is coupled with some protection from automotive imports to allow room for the industry to establish itself in the regional market. Without protection, the proliferation of cheap secondhand vehicles will continue to dominate the SSA market.

Currently, the demand for vehicles and the projected future demand is being met by secondhand imports. If SSA were able to remove trade barriers and provide some level of protection for the industry, effectively enlarging the market, domestic producers may be able to meet the minimum efficient scale requirements necessary to establish an automotive industry.

Theoretically, there are regional automotive actors who stand to gain from regional integration, cooperation and institutional restructuring. Thus, one can argue that regional actors (vehicle manufacturers) in hub economies such as Ghana, Nigeria, South Africa and Kenya will call on governments to pursue regional cooperation and establish regional

markets. However, regional actors in spoke economies will only call on government to pursue regional cooperation if the losses of liberalised trade can be compensated for in other areas of trade. In the short term, this is unlikely.

3.1.2: The distribution of gains from regional integration

Regional actors in the automotive industry who stand to gain from regional integration and cooperation are not evenly distributed throughout SSA. The discrepancies in the degree to which different economies have the ability to produce vehicles or automotive parts suggests that some economies would benefit more from liberalised trade than others. Hub economies such as Ghana, Nigeria, South Africa and Kenya would typically benefit from automotive production and sales. Spoke economies may benefit from the production and export of component parts for automotive production.

John Stuart (2020) analyses the status and future potential of the automotive components sector in SSA. Here, Stuart (2020) develops a simulation in which the effects of fully liberalised trade of the intra-African automotive components parts sector is analysed. The simulation results help to understand which economies are better positioned to benefit from the establishment of a regional automotive market and free trade.

In terms of trade effects, Stuart (2020) finds that South Africa captures the majority of the benefit. Small gains in trade in Tunisia, Egypt, Namibia and Morocco are present but to no large degree. What is clear, however, is that countries who already have some degree of automotive component part production are better positioned to capture the gains from liberalised trade in SSA. This supports the sentiment of Barnes et al. (2020) who suggest that spoke economies in a hub-and-spoke production model will not be able to capture the gains of regional value chains in the short term.

In terms of revenue and welfare effects, Stuart (2020) finds an inverse relationship. Countries that forgo the largest amount of revenue traditionally had a higher volume of imports at high tariffs. When tariffs are cut to zero, customs revenue is lost. Simultaneously, consumers benefit from lower prices and experience welfare gains. In countries that typically have no domestic automotive component industries, tariffs were in place for revenue collection. This loss needs to be gained somewhere else. Thus, it is important for countries in any type of regional arrangement to be able to reap rewards from regional participation.

3.1.3: Calls for regional integration in the automotive industry

Calls for regional integration in the automotive industry are prevalent. Regional actors who stand to gain from larger market access throughout Africa see regional integration as strategically important for the sustainability of the industry. Two bodies—namely the Automotive Industry Export Council (AIEC) and the African Association of Automotive Manufacturers (AAAM)—serve as evidence for calls from the private sector to pursue regional integration in SSA.

The Automotive Industry Export Council (AIEC) was established in 1999 with the intention of serving as the umbrella body for South Africa's automotive industry export promotion and development activities (AIEC, 2019). The AIEC is an important link between the industry and the Department of Trade and Industry (dtic). The AIEC represents the interests of major motor vehicle manufacturers and exporters such as BMW, Ford, Isuzu, Mercedes-Benz, Nissan, Toyota and Volkswagen (AIEC, 2019). The AIEC represents the interests of 13 manufacturers and exporters of trucks and buses and around 500 automotive component suppliers in South Africa. Additionally, the AIEC represents automotive component producers in NAACAM (AIEC, 2019).

The mandate of the AIEC is to provide cost-effective means of assisting current or potential exporters in the automotive sector. The AIEC is funded by the dtic, seven large light vehicles manufacturers and NAACAM with the aim of developing and broadening the automotive supply chain within South Africa. Export promotion mechanisms that are employed by Trade and Investment South Africa (TISA) and the dtic, through support from the Export Marketing and Investment Assistance (EMIA) scheme, include trade missions as well as investment and trade initiatives (AIEC, 2019). These interventions create visibility and market access for South African automotive component manufacturers, enabling them to diversify export markets and to integrate into global and regional value chains. The AIEC acknowledges that facilitating the establishment of regional value chains is a priority in the pursuit of new opportunities (AIEC, 2019).

In the 2019 Automotive Export Manual, the AIEC argues that, for weak domestic markets, automotive exports into Africa remain a priority for commercial vehicle manufacturers in order to increase production volumes (AIEC, 2019). The AIEC argues that regional economic integration is an essential mechanism for connecting African countries, expanding the size of

potential markets and achieving economies of scale (AIEC, 2019). Furthermore, the AIEC suggests that regional integration would unlock an improvement in intra-African trade in goods and services, customs cooperation between countries and the elimination of non-tariff barriers, all of which would improve prospects for investment on the back of economies of scale.

The AIEC also acknowledges the fact that South Africa is the only country in Sub-Saharan Africa where vehicle manufacturing is developed enough to drive cumulative process linkage building (AIEC, 2019). South Africa is therefore ideally placed to benefit from increased demand for vehicles and automotive component parts on the continent. South Africa has an interest in assisting other emerging markets in Africa because of the benefits associated with increased foreign direct investment and economies of scale associated with an integrated regional market. The AIEC supports calls for regional integration and, on behalf of regional actors who stand to gain from it, is constantly working with policy makers in South Africa to pursue functional integration through projects such as the Tripartite Free Trade Agreement and AfCFTA.

The African Association of Automotive Manufacturers (AAAM) was established in November 2015. Founding members include global automotive companies which traditionally have regional headquarters in South Africa (AAAM, 2021). The mission of the AAAM is broad. Firstly, the AAAM aims to establish an African automotive ecosystem by "working with African governments to unlock economic potential and promote the automotive sector across the continent" (AAAM, 2021). This can be achieved by developing a network of stakeholders committed to achieving the potential that exists in the automotive sector. Secondly, the AAAM focuses on regional strategies in promoting the establishment of an automotive sector. The AAAM recognises that it is important to focus on growth in key regions with "an alignment and understanding of what different countries could do best within the automotive industry" (AAAM, 2021). Nigeria, Ghana, Algeria, Egypt, Kenya, Angola, Morocco, Ethiopia and South Africa have been identified as important economies. Lastly, the AAAM argues that new automotive opportunities are important and aims to "cater for relevant and robust automotive technology and appropriate modernization levels/growth, while considering country maturity and in-country conditions and resources" (AAAM, 2021).

The purpose of the AAAM can be understood across two categories. First, the AAAM aims to promote industrialisation in Africa. To do this, global automotive stakeholders are encouraged to align their interests with the interests of the African continent. Automotive framework strategies that benefit the continent from an economic perspective and drive the automotive industrial agenda are to be pursued by the AAAM. As we have established above, regional integration and cooperation is one such strategy that can be mutually beneficial to both private players and public institutions. The AAAM aims to consult on inter-regional trade policies to support regional industrialisation strategies (AAAM, 2021).

Secondly, the AAAM's foundational purpose is to drive the establishment of an African automotive industry. The AAAM aims to be an authoritative body that provides automotive insights and advice that considers the entire automotive value chain (AAAM, 2021). Strong and influential relationship networks (starting with country leaders) are pursued with the intention of shaping policies that result in attracting investors into the African automotive industry. It is clear that the AAAM intends to act as a lobby and advisory institution. It is also evident that many of the AAAM's objectives can be realised through a regional integration and cooperation strategy. The AAAM does acknowledge regional integration as a key strategy for the establishment of a prosperous and sustainable automotive sector across Africa (AAAM, 2021).

The theoretical underpinnings for the establishment of a regional automotive sector are present. Regional actors do face an opportunity cost, insofar as they are unable to capture the gains from the automotive sector without the establishment of regional markets. However, not all regional actors stand to gain. Some economies are better positioned to take advantage of regional cooperation in the automotive sector. While this is true, there have been genuine calls from automotive manufacturers and regional bodies for governments to pursue regional cooperation in the automotive industry. The demand side conditions for the establishment of regional value chains, regional markets and regional cooperation are satisfied. However, for regional cooperation to be sustainable, acknowledging that not all economies are expected to benefit equally, it is important for the supply side conditions to be met too.

3.2: Supply side conditions

A nuanced approach to assessing the feasibility of functional regional integration and cooperation in SSA is important. The dynamic framework of assessment above established demand and supply side conditions to better understand the potential for success.

From a supply side perspective, there needs to be both a willingness and ability of political leaders to cooperate at a regional level. Section 3.2 will unpack both of these conditions. Special attention will be given to the ability of political leaders to pursue regional integration by exploring both the weak and strong supply side conditions.

Section 3.2.1: Willingness of political leaders to pursue regional integration

Political leaders throughout SSA have been committed to a strategy of regional integration and cooperation. As indicated in the introduction of this paper, there are multiple regional arrangements that have been established throughout Africa, some of which are making steady progress. There are five main overlapping trade agreements. 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). These arrangements are well established and do offer some form of preferential market access to member states. Further, the Tripartite Free Trade Area (TFTA), which includes SADC, COMESA and EAC, was established in 2015. Most regional agreements acknowledge the importance of Industrialisation in Africa.

Regional progress has culminated in the establishment of the African Continental Free Trade Area (AfCFTA). The AfCFTA is a free trade area established by the African Continental Free Trade Agreement in 2018. The agreement was brokered by the African Union and was signed by 54 of the 55 member states in Kigali, Rwanda on 21 March 2018 (African Union, 2020). The agreement requires members to remove tariffs from 90% of goods and allows free access to goods, commodities and services across the continent (EIF, 2019). The United Nations Economic Commission for Africa estimates that the agreement has the potential to boost intra-African trade by 52% by 2022.

The general objectives of the AfCFTA are to:

1) Create a single market by deepening economic integration on the continent.
2) Establish liberalised markets through various rounds of negotiation.

3) Move towards the future establishment of a continental customs union.
4) Enhance competitiveness of member states within global markets.
5) Encourage industrial development through diversification and regional value chain development (African Union, 2018).

Many of the objectives set out above can be achieved through the establishment of a regional automotive sector. The agreement establishing the AfCFTA entered into force on 30 May 2019 for the 24 countries that had deposited instruments of ratification. The operational phase of the AfCFTA was launched during the 12th Extraordinary Session of the Assembly of the Union of the AfCFTA in Niamey, Niger on 7 July 2019 (Tralac, 2020) . As of 5 December 2020, 34 countries had deposited their instruments of ratification. In January of 2021, the AfCFTA was officially launched.

It is clear that there is a willingness of African political leaders to engage in policy strategies that promote regional integration. AfCFTA participation suggests that political leaders in SSA and Africa are engaging cooperatively. This would have positive spillover effects for the automotive industry, making regional cooperation easier to achieve. However, for regional integration and cooperation to be sustainable, other supply side conditions need to be met to ensure that progress is made.

The hub-and-spoke model of auto-production requires the strong supply side conditions for regional cooperation to be met. It has been acknowledged that not all countries will benefit equally, making the supply conditions essential to avoid cooperation unravelling over time. The remainder of this section will consider both the weak and strong supply side conditions set out in section two.

3.2.2: Weak supply side conditions

The weak supply side conditions are established as the requirement of an external monitoring body. The presence of such a body ensures that there are channels through which countries can voice concerns and ensure that regional partners do not defect from agreements, even where a dominant strategy is to defect.

For the automotive industry, it is important for hub-and-spoke countries in the Auto-Pact to be able to challenge the policies of regional partners to ensure that the gains from liberalised trade are shared. One mechanism that can be used to do this is the AfCFTA.

The AfCFTA is governed by the African Union, a continental body consisting of 55 member states across the African continent. It was officially launched in 2002 as a successor to the Organisation of African Unity (OAU). The agreement establishing AfCFTA outlines specific objectives and protocols for implementation that sit within the African Union's organisational structure.

The AfCFTA is governed by these principles

1) Being driven by member states of the African Union
2) Using REC Free Trade Areas as building blocks for the AfCFTA
3) Flexible and differential treatment of member states
4) Transparency and disclosure of information
5) Reciprocity

The agreement also outlines the institutional framework for the implementation of the AfCFTA (African Union, 2018). The institutional framework for implementation, administration, facilitation, monitoring and evaluation consists of the following bodies:

1) The Assembly
    a. This is the highest decision-making organ of the AU and will provide oversight and strategic guidance on the AfCFTA. The Assembly will also have exclusive authority to adopt interpretations of this Agreement on the recommendation of the Council of Ministers and will be taken on consensus.
2) The Council of Ministers
    a. The Council of Ministers will, within its mandate, ensure effective implementation and enforcement of the Agreement and take measures necessary for the promotion of the objectives of the Agreement and other instruments relevant to AfCFTA.
    b. The Council of Ministers will also have the authority to make regulations, issue directives and make recommendations in accordance with the provisions of the Agreement.
3) The Committee of Senior Trade officials
    a. The Committee of Senior Trade officials will implement decisions of the Council of Ministers as directed and be responsible for the development of programmes and action plans for implementation of the agreement.

4) The Secretariat

    a. The Secretariat will be a functionally autonomous institutional body within the AU system with an independent legal personality.

In terms of dispute settlement, dispute settlement mechanisms are to be administered in accordance with the Protocol on Rules and Procedures and the Settlement of Disputes and will establish, inter alia, a Dispute Settlement Body.

From the institutional structure set out in the African Continental Free Trade Agreement, it is clear that the African Union as an umbrella body (and various institutions within it) will act as a hierarchically superior institution. With the mandate of ensuring implementation and dispute settlement related to the AfCFTA,. the AU as a body will have the power to hold member states accountable. The weak supply side conditions for the establishment of a regional automotive industry and the cooperation required to ensure its success are therefore met.

3.2.3: Strong supply side conditions

The strong supply side condition is established as follows:

> *Successful integration requires the presence of a regional leader among the group of countries seeking closer ties who is willing to act as a regional paymaster.*

It is important to have an undisputed regional leader to ensure that regional integration and cooperation agreements are sustainable. A regional leader is able to act as a paymaster to ensure that, over time, regional pacts do not unravel because of concerns surrounding distribution of welfare. Acknowledging the fact that the gains from liberalised trade and the establishment of regional value chains in SSA will not benefit all countries equally, a regional leader is important. If a hub-and-spoke model of automotive production in SSA is to be sustainable, it is important for hub economies to establish coordination focal points and act as regional paymasters.

To assess whether the strong supply side conditions are met for the establishment of a regional automotive industry in SSA, potential hub economies in the hub-and-spoke model of production will be explored. Nigeria, Ghana, Kenya and South Africa will be acknowledged as potential regional leaders.

To determine the degree to which a country is a regional leader; the political legitimacy, material resources and developmental indicators of each country will be explored. Only a legitimate government with the appropriate resources can act effectively as a coordination focal point and paymaster.

Political Legitimacy

Political science refers to legitimacy as the right and acceptance of an authority. Usually, this authority is a governing system that has a sphere of influence in which a legitimate authority is justified in exercising power. Political legitimacy is broadly considered to be a basic condition for governing because, without it, any government will experience legislative deadlocks.

Legitimacy, "a value whereby something or someone is recognized and accepted as right and proper" (Chen, 2016), is typically understood as popular acceptance and recognition of the government by the public, whereby the authority has political power not through coercion but through consent. Rational-legal legitimacy is derived from a process of institutional structuring, where government institutions enforce law and order in the public's interest.

Freedom House, an independent watchdog organisation, explores the freedom status of a country's population and helps to understand whether appropriate political legitimacy is established.

Nigeria has significantly improved the quality of its democratic elections since 1999. However, the 2019 presidential and National Assembly elections, which saw President Muhammadu Buhari re-elected and the All Progressives Caucus (APC) regain its legislative majority, experienced consistent irregularities (Freedom House, 2020). Corruption remains endemic in Nigeria's petroleum industry, which is a strategic economic sector. Further, the Boko Haram militant group has exposed security challenges throughout Nigeria. The Nigerian military and law enforcement agencies' response often involved extrajudicial killings, torture and abuse. Civil liberties are undoubtedly undermined by religious and ethnic bias as well as discrimination against women and the LGBTQ+ community. Nigeria's media freedom is impeded by harassment and arrests of journalists who cover politically sensitive topics. In 2020, civil unrest culminated in the STOP SARS (Special Anti-Robbery Squad) movement which accused the Nigerian government of police brutality.

Freedom House rated Nigeria as partly free with a score of 47/100 in 2020. This is three points lower than 2019 when Nigeria scored 50/100. The score is made up of political rights and civil liberties. Nigeria scored 22/40 for political rights and 25/60 for civil liberties. The political legitimacy of Nigeria seems under threat. The marred elections and riots signal a degree of civil unrest which reduces the country's political power and ability to act as a regional leader.

Ghana has undergone peaceful transfers of power between the two main political parties since 1992. Further, competitive multiparty elections have been held. Ghana has a positive record of upholding civil liberties, but discrimination against women and the LGBTQ+ is pervasive. Corruption has presented challenges to the effectiveness of government in Ghana, and political violence has been acknowledged as a growing concern.

Freedom House rated Ghana as free with a score of 82/100 in 2020. This is one point lower than 2019, when Ghana scored 83/100. Ghana scored 35/40 for political rights and 57/60 for civil liberties. The political legitimacy of Ghana is relatively secure which places it positively as a potential regional leader.

Although Kenya holds regular multiparty elections, corruption is pervasive. Further, the brutality of security forces remains a serious problem nationally. While there is a vibrant media and civil society sector, journalists and human rights defenders remain vulnerable to restrictive laws and political intimidation.

Freedom House rated Kenya as partly free with a score of 48/100 in 2020. This is on par with 2019 when Kenya also scored 48/100. Kenya scored 19/40 for political rights and 29/60 for civil liberties. The political legitimacy of Kenya is relatively insecure, making regional leadership precarious.

Since the end of Apartheid in 1994, South Africa has operated as a constitutional democracy and has been regarded globally as a proponent of human rights. South Africa has long been acknowledged as a leader on the African continent. However, in recent years, the African National Congress (ANC) has been accused of undermining state institutions to protect corrupt officials and preserve power.

Freedom House rated South Africa as free with a score of 79/100 in 2020. This is on par with 2019 where South Africa also scored 79/100. The score is made up of political rights and civil

liberties. South Africa scored 33/40 for political rights and 46/60 for civil liberties. The political legitimacy of South Africa is secure, making regional leadership tangible.

While political legitimacy plays an important role in any regional arrangement, it is not sufficient enough to ensure sustainable cooperation if the payoffs of participation are not evenly distributed. Because a hub-and-spoke model of automotive production will not result in equitable benefit for economies in each region, it is important for regional leaders to act as paymasters, adopting a similar role to that of Germany in the EU. Material resources and developmental indicators of a country give a good indication of its potential to do so.

The establishment of a regional leader is dependent on its current material resources as well as its development prospects into the future. If a country is able to act effectively as a paymaster, it is more likely that regional cooperation will persist. In the hub-and-spoke model of automotive production, it is important for there to be a regional leader and paymaster in the West, East and Southern territories of SSA. To this end, Nigeria, Ghana, Kenya and South Africa are assessed. Below, the material and developmental prospects of each country is presented in comparison to potential regional partners.

Material Resources

The material resources of a country can reflect the degree to which that country has the ability to act as a regional paymaster. Tables 4-6 below present a comparison of material resources for selected ECOWAS, EAC and SADC countries.

Table 4: Material Conditions of ECOWAS Region						
Year: 2019	Nigeria	Ghana	Ivory Coast	Togo	Benin	Niger
Population, total (millions)	200.96	30.41	25.71	8.08	11.80	23.31
Population growth (annual %)	2.56%	2.16%	2.54%	2.43%	2.71%	3.79%
GNI per capita, PPP (current international $)	$ 5 190,00	$ 5 530,00	$ 5 300,00	$ 1 670,00	$ 3 400,00	$ 1 330,00
GDP (current US$ millions)	$ 448 120,43	$ 66 983,63	$ 58 539,42	$ 5 490,27	$ 14 390,71	$ 12 911,69
GDP per capita (current US$)	$ 2 229,86	$ 2 202,12	$ 2 276,33	$ 679,29	$ 1 219,43	$ 553,90
GDP growth (annual %)	2.20%	6.47%	6.23%	5.33%	6.86%	5.90%
Manufacturing, value added (% of GDP)	12%	10%	12%	6%	10%	7%
Exports of goods and services (% of GDP)	14.22%	35.97%	23.77%	30.06%	29.63%	11.01%
Foreign direct investment, net inflows (BoP, current US$ millions)	$ 3 299,09	$ 3 879,83	$ 1 008,70	$ 133,31	$ 230,19	$ 592,76

Table 5: Material Conditions of EAC Region					
Year: 2019	Kenya	Tanzania	Uganda	Rwanda	Burundi
Population, total (millions)	52.57	58	44.26	12.62	11.53
Population growth (annual %)	2.27%	2.95%	3.55%	2.60%	3.12%
GNI per capita, PPP (current international $)	$ 4 430,00	$ 2 700,00	$ 2 220,00	$ 2 250,00	$ 790,00
GDP (current US$)	$ 95 503,09	$ 63 177,07	$ 35 165,16	$ 10 354,42	$ 3 012,33
GDP per capita (current US$)	$ 1 816,55	$ 1 122,12	$ 794,34	$ 820,03	$ 261,25
GDP growth (annual %)	5.36%	5.79%	6.80%	9.42%	1.84%
Manufacturing, value added (% of GDP)	8%	8%	16%	8%	9%
Exports of goods and services (% of GDP)	12.03%	..	17.19%	21.81%	9.13%
Foreign direct investment, net inflows (BoP, current US$ millions)	$ 1 332,44	$ 1 112,40	$ 1 266,03	$ 384,46	$ 1,04

Table 6: Material Conditions of SADC Region							
Year: 2019	South Africa	Mozambique	Zimbabwe	Botswana	Namibia	Zambia	Lesotho
Population, total (millions)	58.55	30.36	14.64	2.30	2.49	17.86	2.12
Population growth (annual %)	1.33%	2.90%	1.41%	2.17%	1.87%	2.89%	0.80%
GNI per capita, PPP (current international $)	$ 12 670,00	$ 1 310,00	$ 2 740,00	$ 17 140,00	$ 9 780,00	$ 3 560,00	$ 3 330,00
GDP (current US$)	$ 351 431,65	$ 15 291,45	$ 21 440,76	$ 18 340,48	$ 12 366,53	$ 23 309,77	$ 2 376,33
GDP per capita (current US$)	$ 6 001,40	$ 503,57	$ 1 463,99	$ 7 961,33	$ 4 957,46	$ 1 305,06	$ 1 118,13
GDP growth (annual %)	0.15%	2.28%	-8,10%	2.96%	-1,13%	1.44%	-0,80%
Manufacturing, value added (% of GDP)	12%	9%	11%	5%	12%	7%	16%
Exports of goods and services (% of GDP)	29.85%	41.01%	..	33.58%	35.81%	34.63%	45.16%
Foreign direct investment, net inflows (BoP, current US$ millions)	$ 4 624,50	$ 2 180,77	$ 280,00	$ 260,93	$ (178,48)	$ 547,97	$ 117,67

Source: World Bank Data and Statistics, 2018.

ECOWAS

Nigeria has a significantly larger population and market compared to Ghana. Ghana's GNI per capita PPP is US$5,530. This is slightly higher than that of Nigeria's at US$5,190. Further, the GDP per capita of Nigeria and Ghana are comparable at US$2,229 and US$2,202 respectively. It is important to note, however, that Ghana's GDP per capita is experiencing an annual growth rate of 6.47%, while Nigeria's GDP per capita is growing at an annual rate of 2.2%.

Further, manufacturing value added as a percentage of GDP is higher in Nigeria (at 12%) when compared to Ghana (at 10%). This suggests that Nigeria is better positioned in the manufacturing sectors of the economy. though by no significant margin. Ghana performs better than Nigeria in the exports of goods and services. This signals that Ghana's infrastructure to export automotive vehicles and parts may be more developed than Nigeria's. Importantly, Ghana received more Foreign Direct Investment net inflows when compared to Nigeria. This signals the fact that Ghana's economy might be better positioned for the future.

Importantly, both Nigeria and Ghana have significantly higher material resources when compared to neighbouring ECOWAS countries. Both Nigeria and Ghana have the capability to serve as regional leaders in the hub-and-spoke model of automotive production in the ECOWAS region. For the supply side conditions in the automotive sector to be met, it is important for either country to take a proactive stance in promoting regional collaboration. Evidence does suggest that both Nigeria and Ghana are actively pursuing such a strategy. Strong supply side conditions in ECOWAS are arguably met.

EAC

Kenya has the second largest population in the EAC region with 52.57 million people. Further, Kenya's GNI per capita PPP of US$4430 is the largest in the EAC region. The second highest GNI per capita is attributed to Tanzania at US$2700. Kenya also has the highest GDP and GDP per capita in the EAC region. Kenya's GDP is 33% higher than Tanzania's. Although Kenya's annual GDP growth rate is the second lowest in the EAC region, most other countries are starting from a very low base.

Kenya's manufacturing value added as a percentage of GDP (8%) is not very high in the EAC region. Uganda (17%) and Burundi (9%) outperform Kenya. However, it must be acknowledged that, when compared to SSA countries, this value is still significant. This suggests that Kenya does have the industrial know-how to produce manufactured goods when compared to other EAC regions. While exports of goods and services only make up 12.03% of Kenya's GDP, it is still significant in absolute terms. Kenya is a major trade partner in the EAC region and has the infrastructure required to act as a production hub. Importantly, Kenya received more Foreign Direct Investment Net inflows than all other EAC countries. This signals the fact that Kenya has an economy that is attractive to foreign firms. Kenya is a dominant player in the EAC region and may have the ability to act as a regional leader in the automotive sector.

SADC

South Africa is the largest economy with the highest amount of material resources in the SADC region. South Africa's population of 58.55 million people is significant. Further, South Africa's GNI per capita PPP of US$12,670 is second only to Botswana with a GNI per capita PPP of US$ 17,140. Botswana's GDP per capita of US$7961.33 is also higher than South Africa's which is US$6001.40. However, it must be acknowledged that South Africa's GDP of US$351 billion is significantly larger than Botswana's GDP of US$18 billion. Although South Africa's annual GDP growth rate of 0.15% is lower than Mozambique, Botswana and Zambia, these countries are growing from a very small base.

South Africa's manufacturing value added as a percentage of GDP is 12%. This is lower than Lesotho with a value of 16%. However, it is still relatively high when compared to other SSA countries. Additionally, South Africa has an established automotive sector, which means it does have the capability to produce manufactured goods, particularly vehicles, effectively.

Exports of goods and services only make up 28.95% of South Africa's GDP, the lowest in the SADC region. However, considering the size of South Africa's GDP compared to other SADC countries, the absolute amount is significant. South Africa does have access to the infrastructure required to act as an automotive production hub. Importantly, South Africa received more than double Foreign Direct Investment Net inflows when compared to Mozambique in 2019, the country with the second highest FDI inflow.

The size of South Africa's economy and its ability to draw on established production capability in the region positions it well to act as a regional leader. However, it is important to consider development indicators too.

Development Indicators

Material resources are important for a country to establish itself as a regional leader. It is equally important for regional partners to have confidence that the economic and institutional power of a regional leader is sustainable. Table 7, table 8 and table 9 below present a comparison of World Bank African Developmental Indicators (ADI) for selected ECOWAS, EAC and SADC countries in 2011. (2011 is the last available year of full data.)

Development Indicator Tables

Table 7: Development Indicators of ECOWAS Region

	Nigeria	Ghana	Ivory Coast	Benin	ECOWAS Avg
Institutional Strength	3,31	3,96	2,87	3,58	3,43
Infrastructure	2,21	2,84	2,97	2,69	2,68
Macroeconomic stability	3,96	3,49	4,43	4,92	4,20
Goods market efficiency	4,18	4,2	3,7	3,93	4,00
Financial market sophistication	3,89	4,16	3,33	3,71	3,77
Techonological readiness	3,08	2,97	3,06	2,85	2,99
Market size	4,59	3,42	3,06	2,41	3,37
Business sophistication	3,96	3,51	3,23	3,49	3,55

Source: World Bank African Developmental Indicators, 2011.

Table 8: Development Indicators of EAC Region

	Kenya	Tanzania	Uganda	Rwanda	Burundi	EAC Avergae
Institutional Strength	3,3	3,63	3,5	5,23	2,7	3,67
Infrastructure	3,1	2,41	2,49	3,2	2,17	2,67
Macroeconomic stability	4,02	3,85	3,87	4,89	3,93	4,11
Goods market efficiency	4,09	3,82	3,89	4,37	3,02	3,84
Financial market sophistication	4,83	3,89	4,12	4,26	2,29	3,88
Techonological readiness	3,26	2,7	3	3,05	2,16	2,83
Market size	3,48	3,39	3,16	2,21	1,32	2,71
Business sophistication	4,07	3,48	3,33	3,75	2,68	3,46

Source: World Bank African Developmental Indicators, 2011.

Table 9: Development Indicators of SADC Region

	South Africa	Mozambique	Zimbabwe	Botswana	Namibia	Zambia	SADC Avg
Institutional Strength	4,36	3,39	3,5	4,87	4,5	3,9	4,09
Infrastructure	4,02	2,57	2,49	3,48	4,22	2,78	3,26
Macroeconomic stability	4,96	3,94	3,67	4,6	4,86	4,43	4,41
Goods market efficiency	4,66	3,8	3,7	4,22	4,21	4,27	4,14
Financial market sophistication	5,48	3,2	3,6	4,44	4,57	4,34	4,27
Techonological readiness	3,6	2,86	2,69	3,12	3,25	2,96	3,08
Market size	4,81	2,76	1,97	2,95	2,51	2,64	2,94
Business sophistication	4,32	3,26	3,24	3,49	3,56	3,61	3,58

Source: World Bank African Developmental Indicators, 2011.

ECOWAS

Nigeria and Ghana are the two largest economies in the ECOWAS region. Both countries have the potential to establish regional leadership. Institutional strength, a development indicator made up of property rights, public trust of politicians, judicial independence, strength of investor protection and others is important. This signals the degree to which institutions will provide appropriate structures for regional leadership. Ghana has an African Development Indicator (ADI) rating for institutional strength of 3.96, while Nigeria has an ADI rating of 3.31. Ghana's institutional strength ADI rating is the highest in the ECOWAS region.

Neither Nigeria nor Ghana have the highest Infrastructure ADI rating in the ECOWAS region. The infrastructure ADI rating is also relatively low compared to a country like South Africa. Infrastructure is an ADI indicator made up of the quality of roads, railroads and ports. Generally, the indicator represents a country's ability to transport goods and services. This does not bode well for regional leadership in a hub-and-spoke automotive production model.

Further, Nigeria and Ghana do not have the highest macroeconomic stability ADI rating in ECOWAS. This may prove to be a hindrance to regional leadership for both countries. However, it is clear that both Nigeria and Ghana are leaders in the efficiency of their respective goods markets and in their financial sophistication. Both of these indicators are important if a country wants to lead a region sustainably.

In terms of technological readiness, both Nigeria and Ghana have relatively high scores in relation to the ECOWAS region as a whole. However, neither country is a clear leader. The same sentiment holds true for business sophistication.

It is clear that the ADIs presented above do not suggest that Nigeria or Ghana are clear regional leaders in terms of their development prospects.

EAC

Kenya has the potential to provide the regional leadership required for the establishment of an automotive industry in the EAC. However, it is important that regional leadership is sustainable. As indicated above, institutional strength is important. Kenya has the second lowest institutional strength ADI in the EAC.

In terms of infrastructure, Kenya has an ADI rating of 3.1. Only Rwanda has an infrastructure ADI rating higher than Kenya's at 3.2. Similarly, Kenya ranks behind Rwanda in both macroeconomic stability and goods market efficiency indicators. Kenya had a macroeconomic stability indicator of 4.02 compared to Rwanda's 4.89. Kenya had a goods market efficiency indicator of 4.09 compared to Rwanda's 4.37.

Prospects for Kenya's regional leadership are evident in the financial market sophistication, technological readiness, market size and business sophistication categories. Here, Kenya has the highest ADI scores in the EAC region. Kenya's scores of 4.83 for financial market sophistication and 4.07 for business sophistication signal that the country has good development prospects.

SADC

South Africa has the potential to provide regional leadership in the automotive industry. To successfully establish a hub-and-spoke model of automotive production in SSA, it is important for South Africa to act as a coordination focal point and paymaster for the SADC region.

Botswana and Namibia rank higher than South Africa on the strength of their institutions. South Africa has an ADI ranking of 4.36, while Botswana has a ranking of 4.87 and Namibia a ranking of 4.5. However, it is important to acknowledge that the size of South Africa's institutional framework, with a population of over 55 million people, is significantly larger and more complex than Botswana and Namibia which have an average population size of 2 million people. Only Namibia scores higher than South Africa in the infrastructure ADI score. However, both countries have relatively high scores relative to SSA and SADC.

South Africa has the highest ADI scores for macroeconomic stability, goods market efficiency, financial market sophistication, technological readiness, market size and business sophistication.

Importantly, South Africa performs significantly better than the SADC region's average in the majority of the ADI presented above. This suggests that South Africa would be able to provide regional leadership into the future. This is important for the sustainability of the automotive sector.

Conclusion

Industrialisation in Africa is necessary for sustained economic development. Problematically, African countries are typically reliant on the global North and Asia for manufactured goods. The small, fragmented nature of African countries results in it being difficult to achieve the economies of scale required for manufacturing in domestic markets. Regional integration and cooperation has been suggested as a feasible strategy to address this concern. Through regional cooperation, countries may be able to develop strong regional value chains and reap the rewards of a growing regional base and burgeoning middle class in SSA.

The automotive industry has been acknowledged as an important manufacturing sector because of its strong forward and backward linkages. It is also a manufacturing sector that requires scale. In SSA, it has been acknowledged that, to sustain an automotive industry, vehicle producers need access to regional markets. The dynamic relationship between regional integration and automotive production suggests that the automotive industry has the potential to drive regional integration in SSA.

Foundationally, the purpose of this paper has been to establish whether or not it is feasible for a regional automotive sector to be established and to function sustainably in SSA. The Auto-Pact and associated hub-and-spoke model of automotive production was acknowledged as a viable strategy to set up a regional automotive industry. Three major regions were considered: ECOWAS, the EAC and SADC. Regional cooperation was also acknowledged as being central to the establishment of an automotive sector in each region. The hub-and-spoke model of automotive production requires hub and spoke economies to cooperate over extended periods of time with unequal distribution of economic gains.

A dynamic framework of assessment was established in section two of this paper. The necessary demand and supply side conditions required for sustainable regional integration and cooperation were stipulated. Section three of the paper then explored whether the conditions for regional cooperation are met in the ECOWAS, EAC and SADC. Where these conditions are met, establishing a hub-and-spoke automotive industry is feasible. Where these conditions are not met, it is likely that any form of cooperation will unravel over time.

In terms of the demand for institutional change, it is clear that there are regional actors in the automotive industry who are actively lobbying government to pursue regional cooperation.

The opportunity cost of limited access to regional markets is acknowledged as a stumbling block for the establishment of a regional automotive industry. To this end, the demand side conditions for regional cooperation in the automotive sector are satisfied throughout SSA.

The supply side conditions for regional cooperation in the automotive industry address both the willingness and ability of political leaders to supply regional integration and cooperation. Political leaders have been willing to engage in a variety of regional pacts and have expressed a desire to pursue regional integration. To this end, the willingness of political leaders to engage in regional integration and institution building is present.

The ability of political leaders to do so is more complex. In terms of the weak supply side condition, it is clear that there are hierarchically superior structures present in SSA that can act as monitoring bodies. This is positive but not sufficient. In order for regional cooperation to be sustainable in the hub-and-spoke model of automotive production, it is important for there to be regional leadership in each hub-and-spoke region. Nigeria, Ghana, Kenya and South Africa are identified as four potential regional leaders.

In terms of political legitimacy, Nigeria does not fare well. Ghana, on the other, has very strong freedom scores and democratic structures. Kenya is not completely free, but it does have a degree of political legitimacy compared to other EAC countries. South Africa is a continental leader in terms of political legitimacy and influence. In terms of political legitimacy, it seems feasible to establish regional leadership in SADC, ECOWAS and EAC. However, it must be acknowledged that there is room for improvement in every region.

Nigeria, Ghana, Kenya and South Africa are all regional leaders in terms of access to material resources. However, it must be acknowledged that no country is a clear and undisputed leader. Across the majority of material resource indicators, regional neighbours cannot rely on these countries' ability to act as a stable and reliable paymaster. Even South Africa, a clear regional leader, has failed to act as a reliable paymaster in SADC. Prospects for clear, unambiguous, leadership seem limited throughout SSA.

A similar sentiment holds true for developmental indicators. It is possible (even likely in some instances) that regional leaders will perform better in the future. This suggests that the ability of regional leaders to act as coordination focal points and paymasters who effectively ease distributional concerns will improve over time. Although the strong supply side conditions for

regional cooperation are not unambiguously satisfied today, it is likely that regional leaders will emerge in the future. Thus, it is feasible for an Auto-Pact and hub-and-spoke model of automotive production to be established in key SSA regions. However, it must be acknowledged that, in order to achieve this, proactive policy measures and initiatives should be taken by participating countries and organisations.

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