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WIDER Working Paper 2020/95

Fast tracking the SADC integration agenda to unlock regional collaboration gains along growth corridors in Southern Africa

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August 2020

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wider.unu.edu

Abstract: Despite more than two decades of economic integration efforts, levels of spatial development inequality remain high within the Southern African Development Community (SADC). Owing to persistent delays in the implementation of the SADC integration agenda, infrastructure connectivity is still overly inefficient, while cumbersome customs also continue to impede the free movement of goods and services. This hampers the growth potential of planned spatial development initiatives in the region. This study aims to analyse how the development of regional growth corridors and the deepening of SADC integration could help to ease existing connectivity bottlenecks and unlock the dynamic gains of closer intra-regional collaboration for shared growth. It examines the structural challenges to the emergence of dynamic growth corridors and probes the potential for overcoming them through territorial collaboration between metropolitan clusters and rural areas connected by transport corridors. The development of growth corridors requires the adoption of new production techniques and the application of concomitant skills and know-how. This study therefore also explores the absorptive capacity requirements for structural transformation and surveys existing facilities and incentives for technological capability building.

Key words: growth corridors, intra-regional trade, regional integration, Southern African Development Community (SADC), structural transformation

JEL classification: O13, O14, R12, R42

Acknowledgements: I would like to thank all my key informants for giving me of their time and wisdom during the data-gathering interviews. I also thank Moyoosore Babalola and Chijioke Nwosu, as well as the participants in the SA-TIED Workshop held in Pretoria on 6 December 2019 for their comments and suggestions on the first draft of this paper. Thanks also go to Yasser Buchana for his valuable comments and Sonja Heikkinen, SA-TIED project coordinator, for her excellent guidance throughout the project. A word of thanks is equally owed to John Page, who reviewed the paper, and Siméon Rapin and Joseph Laredo for copy editing. All remaining errors (*quas humana parum cavit natura*) are my own.

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This study has been prepared within the UNU-WIDER project Southern Africa—Towards Inclusive Economic Development (SA-TIED).

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ISSN 1798-7237 ISBN 978-92-9256-852-8

https://doi.org/10.35188/UNU-WIDER/2020/852-8

Typescript prepared by Joseph Laredo.

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1 Introduction

Despite substantial efforts aimed at strengthening economic integration, spatial development disparities remain glaringly high within the Southern African Development Community (SADC) region (Farole and Moberg 2017). As the largest economy in the region, South Africa seems locked in persistently high unemployment rates, slow growth, and widespread poverty. Its SADC partners are also characterized by low income, widespread poverty, and dependence on primary commodity production. Despite thriving metropolitan areas such as Gauteng and Western Cape in South Africa, the region as a whole is still characterized by insufficient energy supply, costly and unreliable transport services, and expensive access to information and communications technologies. As a result, intra-SADC trade is still only 10–14 per cent of the total trade of member countries, which is very low in comparison with other regional blocs (Chidede 2017; Hartzenberg and Mwanza 2015). Moreover, deficiencies in energy supplies and transport infrastructure suggest that SADC countries will continue to experience substantial difficulties in expanding industrial production (SADC 2016a; Vanheukelom and Bertelsmann-Scott 2016). New transformative strategies are therefore needed to spawn structural transformation and create transnational growth corridors capable of becoming engines of technological development and sustainable economic growth (Newman and Page 2017; Reeg 2017; Turok and Habiyaremye forthcoming).

To address the inefficiencies caused by the above-mentioned deficiencies, the SADC announced an integration agenda in March 2004, with a plan to establish an SADC customs union and implement a common external tariff by 2010, agree a common market pact by 2012, achieve monetary union by 2016 and emit a single common currency by 2018 (Negasi 2009; SADC 2001). The 2010 deadline for the establishment of the customs union was missed, and so were the subsequent integration deadlines (Hartzenberg and Mwanza 2015).[1] Challenges associated with the establishment of a customs union include the heterogeneity in levels of economic development among members, their different trade and industrial policy orientations, and heavy dependence on customs revenue by most member states.[2] A favourable intra-regional trade balance coupled with slow growth and high unemployment rates in South Africa, as well as the dependence of government finances on customs revenues in low-income member states, have led to protectionist reflexes, which have considerably slowed the integration process. These delays in the integration process imply that most of the developmental impediments they were intended to address remain unresolved. In fact, the cumbersome border procedures that still exist within the community make it almost inconceivable that SADC member states are in the same free trade area (see e.g. Infrastructure News 2016; Vanheukelom and Bertelsmann-Scott 2016). These disparities have a negative bearing on regional development and hamper the effectiveness of the various spatial development initiatives undertaken in the region.

The main question is whether deepening integration, and thereby eliminating the inefficiencies that impede the free intra-regional movement of goods and services, can help the SADC to tackle spatial disparities and trigger new economics dynamics. The potential static and dynamic gains of improved connectivity and higher growth include the ability to exploit economies of scale, the

[1] In 2012, the Committee on the SADC Customs Union issued a report highlighting these constraints and challenges, which led to the failure to establish a customs union with a common external tariff.

[2] As at the end of 2019, the SADC was supposed to be dealing with a single regional currency, with harmonious free movement of goods and services across all member states; the bloc has not moved beyond the stage of free trade area (FTA) and cumbersome customs procedures continue to cause undue delays, especially along the North–South transport corridor.

increased allocative efficiency of investments (by more efficiently channelling them where they are most productive within the region), and the advantages of just-in-time (JIT) production (Negasi 2009; NEPAD, African Union, and African Development Bank 2010; Turok and Habiyaremye forthcoming). The main question is broken down into the following subsidiary questions:

- What are the structural challenges that have derailed the SADC integration agenda and how can they be overcome to create regional growth corridors that transform economic production and contribute to addressing spatial disparities?
- How can further development of the North–South infrastructure corridor be engineered to connect regions with complementary resources and promote more intensive business exchanges and closer regional collaboration?
- How can such growth corridors leverage existing and new infrastructures as well as technological innovation to boost productivity growth for the integrated region?

This study was therefore undertaken within the structural transformation framework (Lewis 1954; Ranis 1988; Ranis and Fei 1961). Emphasis was put on assessing the capacity of the region to develop the growth corridors that connect intra-regional geographical entities with complementary resources to spur a shared development and reduce intra-regional spatial disparities. Without disregarding the importance of the political, institutional, and socio-economic motives for the integration effort, the study focuses on the challenges to infrastructure connectivity and the opportunities for unlocking the economic potential of growth corridors in the region. It finds that, for the growth corridors to be developed into an engine of regional economic transformation, economic operators in the region will have to harness new technologies and embrace more efficient production methods—a development that requires concomitant technical skills and know-how.

The study uses a qualitative methodological approach, which combines a digestive analysis of primary data collected from key people within the SADC policy and business domains with a desk review of available literature and information sources. Interviews were targeted at SADC officials as well as public and private sector actors in member states along the North–South infrastructure corridor. The main aim of the interviews was to garner an adequate understanding of the structural challenges to intra-SADC connectivity and the strategies undertaken to overcome these challenges. Emphasis was put on exploring factors that impede the alignment of policies for the free circulation of people, capital, goods, and services within the region. A seamless flow of physical and human capital is crucial for the emergence of dynamic growth corridors and the realization of gains from a congruent structural transformation of the regional economies.

The data collection process involved the following steps:

- Review existing SADC strategy and policy documents to understand the challenges to the removal of intra-community barriers.
- Organize interviews with SADC officials in charge of the integration agenda in order to gain deeper insights into the dynamics of North–South infrastructure corridor planning and cross-border trade and investment strategies.
- Interview regional economic actors in the private sectors and economic planning officials in charge of regional infrastructure development to gain insights into the estimated operability schedules of growth-enabling infrastructure projects.

The collected data were analysed in the light of the goals of leveraging local infrastructure and regional resources to boost collaboration for shared growth along regional transport infrastructure corridors.

The remainder of the paper is structured as follows: Section 2 presents the structural transformation framework for growth corridors within which the SADC spatial development strategy and regional integration agenda are conceptualized. Section 3 explores the structural challenges that have hampered SADC regional integration and delayed its economic development agenda. The fourth section presents the results of our exploratory study on the potential of spatial development initiatives along growth corridors for fostering intra-regional collaboration and achieving new growth dynamics for shared prosperity. Section 5 concludes with a discussion on the findings and proposes further explorations into additional factors with a bearing on regional harmonization and a shared structural transformation.

2 Building capabilities for transformative growth corridors

2.1 Industrialization strategy through structural transformation

The legitimate industrial aspirations of SADC member states, as outlined in the SADC Industrial Development Policy Framework (SADC 2014), are an essential component of the development strategy without which growth corridors cannot have an economic underpinning. As the economic structure of the region stands now, the economic profiles of most member states reflect their common dependence on natural resources and are so similar that the potential for trade between them remains very limited (Dieter et al. 2001; Ngarachu et al. 2018; Weeks 1996). A shift of emphasis from resource extraction to technological capability accumulation is therefore required if SADC member states are to build a modern regional economy with industrial capacity to add value to its natural resources. Such a transformation requires frictionless coordination to ensure that regional synergies and complementarity between member countries are exploited to the fullest.

The industrialization strategy outlined in the Industrial Development Policy Framework should be viewed in relation to the underlying theory of structural transformation (IFAD 2016; Lewis 1954; Ranis, 1988; Ranis and Fei 1961). It is premised on fostering intra-regional cooperation at national level in each member state in order to build a diversified, innovative, and globally competitive industrial base, capable of contributing to employment creation and shared economic growth for the region. The successful implementation of this strategy rests on the ability of the involved actors to unleash the forces of structural transformation and to harness the region's comparative advantages in natural resources and an abundant labour force.

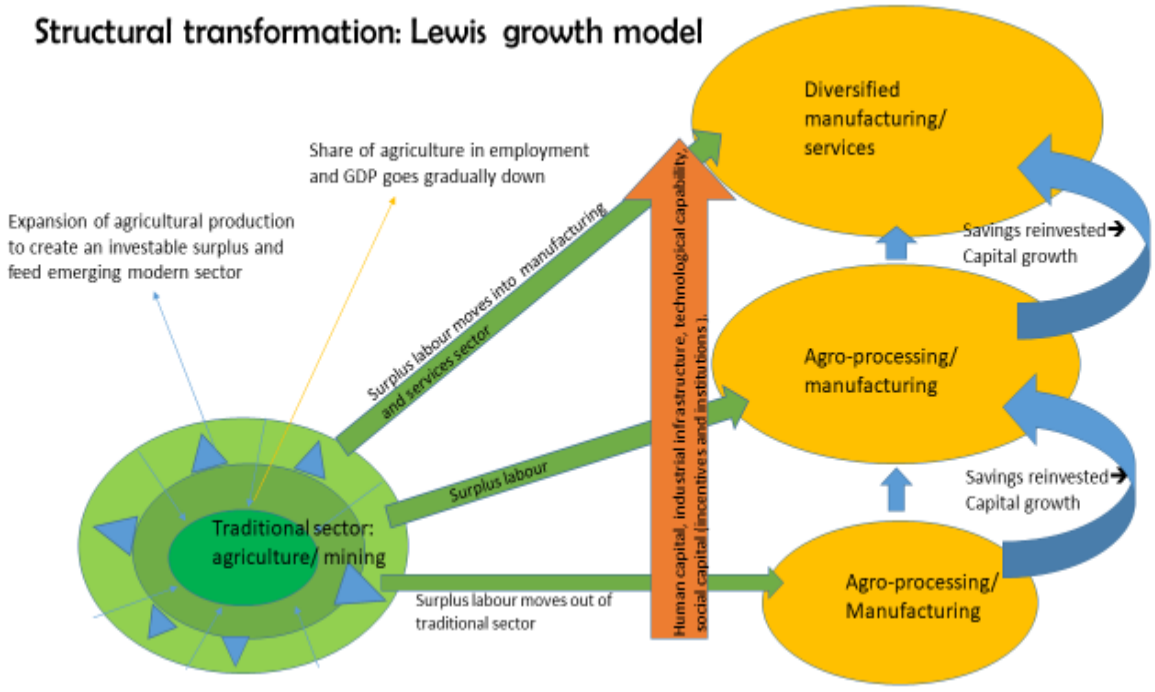
Structural transformation is the gradual shift of productive resources from the low-productivity sectors of the economy to the modern sector (e.g. agro-processing and other manufacturing), which has higher productivity growth potential. It explains the conditions under which the traditional economy reallocates resources across sectors to move away from its dependence on traditional production (natural resource extraction or agriculture) and develop industrial capabilities for higher productivity in the manufacturing and service sectors.

Resource reallocation is achieved by using the existing traditional sectors (usually with low labour productivity) to generate the investable surplus required to enable the economy to move labour from agriculture (or mining) into other sectors without compromising food security (Subramanian and Roy 2003; Timmer 1988). This requires a significant increase in food production, not only in order to confront existing food shortages but also to alleviate the pressure caused by the increased prices of imported foodstuffs (Collier 2002). This implies building a dynamic agricultural sector, which requires that a part of the surplus be devoted to strengthening the agricultural sector itself (IFAD 2016; Timmer 1988). The gradual reallocation of labour from the traditional to the modern industrial sector leads to an overall increase in productivity because of the learning effects in the

manufacturing sector (Tregenna 2015). Diversification aimed at reducing the economic dominance of the natural resources sector also has inherent features that enhance growth through learning by doing, as empirically demonstrated by Al Marhubi (2000), De Ferranti et al. (2002), and Herzer (2005).

In the Lewis (1954) growth model, continuous reinvestment of the savings generated by the modern sector leads to more capital accumulation in the manufacturing sector. The resulting increase in the capital–labour ratio prompts more labour to move from the traditional sector into the modern industrial sector because of higher labour productivity. The relative contribution of the traditional sector to total GDP decreases gradually as industrialization intensifies and the service sector becomes more important (see Figure 1).

Figure 1: Schematic representation of the dynamics of structural transformation



Source: author's representation of the Lewis (1954) structural change growth model.

2.2 Absorptive capacity for the adoption of new technologies

Many SADC member states are still characterized by a traditional economy dominated by natural resource extraction and agriculture. Their ability to successfully reallocate productive resources to the development of a strong modern industrial and services sector (structural transformation) hinges on adopting and assimilating external sources of technological knowledge—in other words, on developing adequate absorptive capacity (Cohen and Levinthal 1990; Criscuolo and Narula 2008; Narula 2004). This in turn is dependent on the availability of human capital stocks as well as basic industrial and technological infrastructure (Narula 2004). The availability of competent human capital stocks is a critical component of absorptive capacity because technical progress in the production process cannot occur without the requisite knowledge.[3] Human capital therefore plays a key role in structural transformation by making technological change possible and by

[3] See e.g. Nelson and Phelps (1966) and Ziesemer (1991).

subsequently supporting the resulting economic growth as the newly adopted technologies diffuse (Hall and Khan 2003).

The provision of basic industrial and technological infrastructure is necessary to support the processing of primary commodities or the initiation and expansion of manufacturing activities (Narula 2004). For example, roads, railways, and waterways reduce transportation costs, while the resulting exposure to outside products forces local firms to innovate in response to pressures from external competition. This can result in the creation of new production, trade, and profit opportunities. Provision of good public infrastructure is thus indispensable, not only for the necessary structural transformation, but also for sustaining growth once the transformation has taken place (Ranis 1988; Subramanian and Roy 2003).

Absorptive capacity is closely related to the concept of social capability, which refers to skills and technical competences as well as institutions and markets capable of mobilizing resources on a large scale to make structural transformation possible (Abramovitz 1986). Social capability is determined by socio-cultural features that are likely to foster or hinder the adoption of the new production technologies that are required to operate growth corridors.[4] Successfully harnessing the potential of growth corridors in order to achieve the transition from a dual economy to a diversified structure requires the development of appropriate technological capabilities and other complementary factors, such as managerial skills and technological infrastructure (Fagerberg and Srholec 2008; Kim 1997).

In summary, an environment conducive to the success of a growth corridor-based transformation must possess sufficient levels of human capital to make possible technological learning and public and private investment in physical infrastructure that will facilitate the free movement of labour, (human) capital, goods, and services. A robust agricultural (or natural resources) sector is also required in order to generate the investable financial surplus, whereas good access to financial services is necessary to facilitate resource reallocation (Ranis 1988; Subramanian and Roy 2003; Szirmai 2005).

2.3 Structural transformation and social change

The development of growth corridors holds the promise of stimulating economic diversification in the region, with the potential to contribute to new industrial dynamics that can lead to a more balanced growth path, whereby the benefits of economic activities are spread across sectors. An industrialization policy based on growth corridors (as transformative interventions needed to spawn further integration for better growth potential) can, however, also bring about considerable socio-economic disruptions in the communities in which they are introduced. Innovations are by definition a form of creative destruction, by which new production methods, processes, or techniques displace the existing ones and render them obsolete (see Aghion and Hewitt 1992). Existing social arrangements are also likely to face new shocks from the arrival of new economics dynamics.

That is why innovations in spatial development initiatives are often accompanied by resistance to change, especially when the target communities are not properly involved in the design and planning of such innovations. Empowered participation of local communities can mitigate the problem, provided that primary stakeholders are able and willing to participate in the initial analysis of transformative interventions that will affect their communities. The process of reviving the

[4] Social capital can be used to explain economic transformation (Fukuyama 1996), improved performance of diverse groups, growth of entrepreneurial firms, superior managerial performance, enhanced supply chain relations, and the evolution of communities.

SADC integration agenda must therefore take into account the need for consultations with the involved communities and the adoption of other measures necessary to mitigate the socio-economic disruption inherent in technological change.

3 Structural challenges to the integration agenda

This section does not touch on the static welfare and distributional aspects of economic integration theory. It is understood that the establishment of the SADC and its integration agenda are premised on accepted dynamic factors as well as long-term political benefits, as discussed in Balassa (1961). Mundell's (1961) theory of optimal currency area (OCA) is equally not discussed in detail, even though this study implicitly assumes that the move towards the establishment of a common currency must rest on the criteria set out in this theory, as well as on Kenen and Meade's (2007) contention that production diversification within the geopolitical area is a condition of sound monetary integration.[5] The structural challenges to SADC integration are nevertheless analysed in relation to four criteria directly derived from OCA theory:

1. intra-SADC trade imbalances and lack of diversification
2. poor transport infrastructure and low connectivity hampering the free movement of goods, services, and labour
3. inefficient border management systems hindering labour mobility and intra-regional trade
4. economic heterogeneity and South African hegemony
5. weakness of common identity impeding the redistribution of wealth necessary to compensate for the possible negative effects of mobility.

3.1 Intra-SADC trade imbalances

The intensity of internal trade within the region seeking to integrate is important in enhancing the benefits of closer integration. In contrast to the trading blocs in Europe and Asia, the SADC has a trade structure dominated by primary commodity exports and finished product imports. With the exception of South Africa, the production structure of member states is relatively similar and therefore allows little trade between them (Dieter et al. 2001; Ngarachu et al. 2018; Weeks 1996). As a result, intra-SADC trade flows represent 10–14 per cent of the regional bloc's total trade, which is very low in comparison with trading blocs in other parts of the world. A close look at the intra-SADC export data disaggregated by destination country reveals that most trade takes place between each member state and South Africa, whereas mutual trade between other members remains almost non-existent (SADC 2016b).

Table 1 presents the shares of manufacturing value added to total GDP for SADC member states over the period 2008–2018 to illustrate this relative similarity in production structure. The average share of manufacturing value added in the SADC region has remained around 12 per cent over the considered period, which is much lower than the averages found in other developing country

[5] OCA theory is based on the idea that economic efficiency is maximized in areas that share certain characteristics, such as (1) a large and integrated labour market where workers and capital can move freely throughout the area, (2) flexibility of wages and pricing to eliminate regional trade imbalances, (3) centralized budgeting or budgetary control to ensure wealth redistribution to parts of the area that may suffer as a result of labour mobility, and (4) similarity in business cycles to avoid shocks affecting some parts of the integration area.

regional groupings outside Africa (the corresponding rate for East Asia and Pacific, excluding high-income countries, is 29 per cent of GDP according to data from The World Bank).

Table 1: Share of manufacturing value added to total GDP in SADC countries

SADC member	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Angola	3.5	5.2	4.6	4.2	4.3	4.8	5.2	5.1	5.0	5.0	7.4
Botswana	6.4	7.2	7.1	6.4	6.6	6.4	5.8	6.4	5.7	5.6	5.7
Comoros	7.4	7.7	7.5	7.7	7.3	7.8	8.1	8.2	8.6	9.0	9.2
DR Congo	23.2	26.5	17.0	16.2	16.4	16.6	16.7	17.7	20.4	20.8	18.8
Eswatini	36.1	36.3	34.0	33.3	33.4	31.8	32.9	34.0	32.8	32.0	32.8
Lesotho	21.1	17.5	13.2	13.1	12.1	11.8	11.4	12.5	12.0	12.1	14.5
Madagascar	14.6	14.4	14.3	14.3	14.3	14.1	14.0	13.8	12.9	13.1	14.1
Malawi	12.6	11.2	10.7	10.4	10.1	10.1	10.1	10.2	10.1	9.8	9.2
Mauritius	17.2	16.7	15.9	15.7	15.5	15.7	15.3	14.7	14.0	13.4	12.9
Mozambique	13.4	11.9	11.3	11.2	10.0	9.5	9.9	10.0	9.6	10.0	10.3
Namibia	12.3	14.1	13.5	14.8	13.1	11.9	10.8	10.5	12.0	11.7	11.0
Seychelles	10.8	9.2	9.7	9.4	10.3	8.6	7.9	7.2	7.0	7.4	7.9
South Africa	16.0	15.0	14.4	13.3	13.0	12.9	13.4	13.4	13.5	13.4	13.2
Tanzania	7.4	7.3	7.3	8.1	10.2	9.8	9.9	8.6	8.5	8.4	8.7
Zambia	9.0	9.0	8.0	8.0	7.5	6.4	7.3	7.9	8.1	7.9	9.9
Zimbabwe	15.9	12.5	10.4	10.3	15.8	14.4	13.9	13.2	12.8	12.1	13.3
SADC total	13.0	13.1	12.3	11.3	11.1	10.9	11.2	11.2	11.5	11.2	11.9

Source: SADC (2019).

Table 2 shows the dominant position that South Africa occupies in intra-SADC exports, its goods and services accounting for 58 per cent of total intra-regional exports. The shares of the next largest exporters, Angola and Namibia, have declined from 9 per cent and 8 per cent, respectively, in 2008 to 6 per cent in 2019, and whereas Zimbabwe and DRC have been gradually increasing theirs over the last 10 years, their current shares are barely one-eighth of South Africa's. Regarding the nature of exports, manufactured goods from South Africa to other SADC member states dominate the trade flow, while the other members mainly export natural resources and other primary commodities.

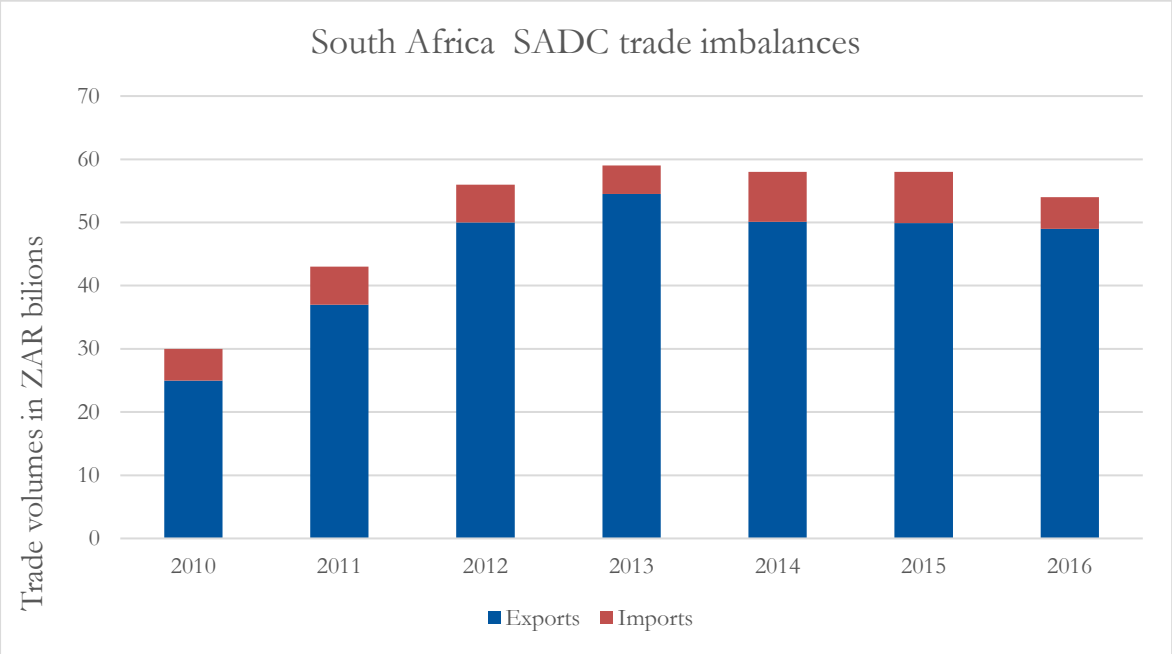
Table 2: Shares of total intra-SADC exports for largest exporters

Member state	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
South Africa	60%	60%	57%	59%	55%	54%	55%	53%	54%	57%	58%
Angola	9%	5%	5%	5%	7%	4%	5%	4%	5%	4%	6%
Namibia	8%	11%	8%	7%	5%	7%	6%	7%	6%	6%	6%
Zimbabwe	3%	4%	4%	6%	8%	8%	7%	7%	8%	8%	7%
DRC	2%	2%	8%	3%	3%	4%	5%	6%	6%	6%	6%
Rest of SADC	23%	23%	30%	30%	32%	35%	34%	36%	35%	33%	29%
Total intra SADC export (US$ million)	28,378	25,856	33,135	36,958	40,613	41,843	40,783	35,394	34,371	35,316	37,356

Source: SADC (2019).

Figure 2 illustrates this imbalance with trade data recorded for cargo traffic through the Beitbridge border post along the North–South Corridor, as reported by Ngarachu et al. (2018). Likewise, Table 3 displays the contrast between the large intra-regional trade surplus enjoyed by South Africa and the corresponding trade deficits of its largest trade partners within the community.

Figure 1: South Africa's exports through Beitbridge border post



Source: author's graphical representation based on Ngarachu et al. (2018).

Table 3: Intra-SADC trade balance of largest importers (US$ million)

SADC member	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
South Africa	10,928	11,526	13,479	15,694	14,703	15,391	15,983	12,585	13,076	14,406
Angola	1251	-933	757	494	1045	-493	518	334	928	609
Zimbabwe	-641	-3865	-1622	-2951	-583	-924	-347	-491	-88	-96
Namibia	-1352	-1619	-2208	-2680	-3319	-2367	-2704	-3046	-2601	-2113
Botswana	-2926	-3214	-3587	-3542	-4516	-3875	-3045	-3843	-2851	-3237
Zambia	-1962	-1267	-1981	-2332	-1885	-2187	-2980	-2827	-2967	-3672

Source: SADC (2019).

3.2 Poor transport infrastructure and low connectivity

As is the case in the many parts of Africa, the SADC region (with the possible exception of South Africa) has long been plagued by a lack of efficient infrastructure and connectivity, which results in significant barriers to the growth of investment, industrial production, and intra-regional trade (Hartzenberg and Mwanza 2015).[6]

Available data on total road network lengths in SADC countries indicate that for most SADC member countries, road infrastructure expanded only very slowly between 1990 and 2015 (SADC 2016b) (Table 4). In some member states, such as DRC and Zambia, total road network length has hardly increased at all; in Angola, DRC, Madagascar, it has possibly declined, according to available national statistical data (SADC 2016b). The Programme for Infrastructure Development in Africa (PIDA), a strategic initiative launched to address this infrastructure deficit challenge, has

[6] The World Bank (2010) estimated the infrastructure investment deficit to be US$93 billion per year for the entire African continent, while the Programme for Infrastructure in Africa (PIDA) (2011) identified infrastructure bottlenecks due to financial distress as posing a significant challenge to regional integration (PIDA 2011).

also had only limited success in terms of expanding infrastructure and intra-regional connectivity on the continent (CBRTA 2017).

Table 4: Estimated total road network length in KM in SADC member states

SADC member	1990	1995	2000	2008	2009	2010	2011	2012	2013	2014	2015
Angola	51429	51429	51429	n.a	n.a	n.a	n.a	n.a	n.a	n.a	26000
Botswana	9132	9132	9132	8916	8946	8946	18042	18042	30905	30276	30276
DRC	157000	157000	157000	n.a	n.a	n.a	n.a	152400	n.a	151529	n.a
Eswatini	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Lesotho	5090	4995	5940	4433	n.a.	5843	5860	5865	5865	5865	6906
Madagascar	49837	49837	49837	37476	37476	n.a	n.a	n.a	n.a	n.a	n.a
Malawi	10204	14594	14594	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Mauritius	1801	1899	1926	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
Mozambique	27000	29900	30400	30331	30331	30331	30331	30562	30464	30554	30983
Namibia	65254	63251	66467	n.a	42100	44138	n.a	n.a	n.a	n.a	n.a
Seychelles	498	498	498	508	508	508	508	515	520	526	n.a
South Africa	331265	331265	331265	n.a	n.a	n.a	n.a	n.a	n.a	n.a	750000
Tanzania	88100	88100	88200	87525	85000	83739	86472	88484	88485	88485	108946
Zambia	66781	66781	67761	67761	67761	67761	67761	67761	67761	67761	67761
Zimbabwe	90200	90200	85000	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a

Source: SADC (2016b); CIA World Factbook (2019).

A limited road network is a particularly costly obstacle when it comes in the form of missing road links (CBRTA 2017). The absence of connections between main transport routes increases the distance that vehicles must travel to reach their destinations and therefore leads to higher operating costs. This in turn has adverse effects on regional logistic efficiency end reduces regional growth potential. The creation of such links—e.g. the Kazungula road and rail bridge over the Zambezi River to link Kasane (Botswana) and Kazungula (Zambia) on the North–South Corridor—can provide a considerable boost to intra-regional trade.[7]

The North–South Corridor, which is the main transportation artery linking South Africa and its northern SADC counterparts, is characterized by poor and deteriorating road conditions, poor road connectivity, few service stations, at irregular intervals, and a lack of roadside parking and resting facilities for truck drivers (CBRTA 2017). The problem is compounded by the lack of dedicated road maintenance funding in most SADC countries (PIDA 2011), which increases the risk of road accidents, vehicle breakdowns, and cargo damage (FESARTA 2017; Ngarachu et al. 2018). Poor road conditions also increase transport and logistics costs, as they reduce vehicle speed while increasing fuel consumption, thereby contributing to delays in the region's economic development.

In addition to the problems of physical infrastructure, the soft infrastructure connecting the various member states, including border and customs procedures, currency exchange, and standardization of transport systems, creates considerable impediments to intra-regional economic operations (see also Section 3.3). Taking into account all border crossing and transit delays, the average speed of a truck travelling the length of the North–South Corridor from South Africa to DRC is a mere 6 km/h (Ngarachu et al. 2018).

[7] The 923 m long Kazungula Bridge is expected to resolve a notorious bottleneck at the end of December 2020, according to the African Development Bank. Its construction started in 2014 with financing from the Japan International Cooperation Agency, the African Development Bank, and the governments of Botswana and Zambia totalling US$260 million (Caboz 2020).

Transport costs are also up to double those in other regional trade blocs in developing and developed countries. The federation of Eastern and Southern Road Transport Associations (FESARTA) has estimated that the cost of transporting a 30-tonne load (or container) from Durban (South Africa) to Kasumbalesa (DRC) is approximately US$10,200. Of this amount, 25–30 per cent consists of cross-border taxes and charges, 25–30 per cent is due to delays, and less than 50 per cent represents the actual cost of transporting the load (FESARTA 2017).

Available statistical data from member states also indicate that, apart from South Africa, most SADC countries have only limited rail networks, which are even totally absent in some smaller economies (see Table 5). Moreover, most of the rail network in the SADC (including SA) is narrow gauge and thus not compatible with the standard gauge system widely used internationally.

Table 5: Total rail network in SADC member states: latest available estimates

SADC member	Rail network in km
Angola	2,852
Botswana	888
DRC	4,000
Eswatini	300
Lesotho	n.a
Madagascar	872
Malawi	n.a
Mauritius	n.a
Mozambique	3,116
Namibia	n.a
Seychelles	n.a
South Africa	20,986
Tanzania	3,682
Zambia	2,164
Zimbabwe	3,427

Source: SADC (2016b); CIA World Factbook (2019).

Owing to limited financial means to invest in the optimization of operations, most rail operators in the SADC region have been struggling to meet the government's expectations for efficient, reliable, and competitive rail services. As a result of underinvestment in rail infrastructure in the SADC, rail transportation plays only a secondary role in regional transportation and logistics strategy. In fact, the movement of people and cargo by rail has been in constant decline over the last decade. Currently, rail accounts for only approximately 10 per cent of cargo transport in the region (CBRTA 2017; Ngarachu et al. 2018). The fact that the potential of rail transport is underutilized means that more than 80 per cent of all cargo is transported by road throughout the region, which results in increased road rehabilitation costs and environmental pollution (CBRTA 2017; Ngarachu et al 2018). Those costs come on top of opportunity loss due to the inefficiencies of this transportation system, as it misses the economies of scale potentially offered by rail transport.

To address the imbalance between rail and road transport in the North–South Corridor, the SADC Infrastructure Project Preparation Fund is financing a rehabilitation and upgrade scheme for the North–South rail track, and a memorandum of understanding has been signed between the rail operators of the countries concerned, Botswana, DR Congo, Eswatini, South Africa, Zambia, and Zimbabwe.

3.3 Inefficient border management systems

The expansion of transport infrastructures to facilitate the cross-border movement of labour, capital, goods, and services forms a critical component of the spatial growth strategy aimed at creating growth corridors in Southern Africa. In addition to developing physical infrastructures (roads, railways, seaports, and waterways) to reduce transport costs, however, the development of regional growth corridors must solve the more burdensome problem of complicated border and customs procedures, which account for 75 per cent of delays in cross-border traffic, according to the Regional Infrastructure Development Master Plan (SADC 2012). Disappointingly, most strategic transport corridors within the SADC region are still beset by an arsenal of non-tariff barriers, which frustrate the various road transport agreements aimed at smoothing cross-border transport operations.[8] With the possible exception of the Maputo Development Corridor (MDC), the transport corridors that pass through the SADC are also plagued by various infrastructure inefficiencies that undermine their ability to catalyse economic growth and cross-fertilize development between origin and destination points. Many of the problems that beset road transport also apply to cross-border rail transport, in which the biggest stumbling block is the lack of coordination among national rail system operators in the region (Infrastructure News 2016).

The main conceptual problem in management systems at most border posts is their administration, which is based on traditional approaches that perceive border posts as facilities for *controlling* movement across borders, rather than as facilities for *expediting* cross-border traffic flows. At the current stage of integration, cross-border road transport within the SADC is governed by bilateral and multilateral agreements concluded separately between the respective member states. Consequently, the transport regulatory regimes in each individual member state are still characterized by misalignment of policies, legislation, rules, standards, and practices with respect to their neighbours and trade partners. This lack of harmonization results in a multiplicity of rules and standards that cross-border transport operators have to comply with. The divergence in rules and standards produces unnecessary complexities and puts burdensome requirements on transport operators.

The border management systems also suffer from inexistent, obsolete, inefficient, or incompatible ICT systems, which hinders customs information exchange between countries and paralyses interoperability (CBRTA 2017). This means that most processes are conducted manually, with very little coordination between stakeholders on opposite sides of the border (CBRTA 2017; Ngarachu et al. 2018). Slow processing results in congestion and sometimes chaos at border posts, causing undue delays as well as burdensome costs to road users. For example, obstructions at the Chirundu border (between Zimbabwe and Zambia) along the North–South Corridor result in average crossing times of more than 18 hours, mainly due to systems inefficiencies that are inherent in all SADC borders. Such a system—offline, with paper records—is also open to manipulation and corruption, which undermine the trust of road transport operators.

Constant border congestion, delays, and long turnaround times resulting from regulation misalignment have a negative effect on the cost of doing business in the region (CBRTA 2027; Ngarachu et al. 2018). Ultimately, they impede intra-regional trade (estimated at only 12 per cent of total trade) and reduce the growth as well as the competitiveness of the region. The need to streamline regulations and harmonize cross-border requirements is therefore urgent: if this need

[8] Since 2008, most customs duties have been eliminated on goods from the SADC member states (about 85 per cent of goods attained zero duty in January 2008) and a common tariff system was applied to the import of goods from non-member states (SADC 2016). Within the SADC, South Africa, Botswana, Namibia, Eswatini, and Lesotho already form a customs union.

is unaddressed, the opportunity costs of inefficient regulations will continue to prevent the SADC from achieving its stated socio-economic and developmental objectives.

3.4 Economic heterogeneity and South African hegemony

Similarity or complementarity in the economic structure of its constituent parts is an important requirement for economic efficiency in a region seeking closer economic and political integration. By any measure, South African economic, political, and diplomatic influence is predominant within the SADC bloc (Dieter et al. 2014; Enaifoghe 2019; SADC 2016b; Vanheukelom and Bertelsmann-Scott 2016). With a total GDP of US$349 billion (2017), the South African economy is more than three times bigger than that of Angola, the next largest economy within the SADC regional grouping (at US$105.5 billion). In terms of income per capita, South Africa is an upper-middle-income country, a status shared only by Botswana and Mauritius among SADC member states (World Factbook 2019).[9] Zimbabwe, for its part, has seen its economy considerably weakened by a prolonged economic crisis and is experiencing a currency crisis leading to price instability and dollarization; constant disruptions in electricity and water supplies, coupled with a prolonged food crisis due to persistent droughts, are evidence that the fundamentals of economic production have become very fragile.

The presence of a disproportionately powerful member state in a regional grouping often shapes the agenda of regional organizations and can drive or block its implementation (Dieter et al. 2014; Van Heukelom and Bertelsmann-Scott 2016). Given South Africa's dominant position in the region, Pretoria has been able to wield considerable political and diplomatic influence on regional integration policy, with no political counterweight among its neighbours. In the case at hand, South Africa's divergent political and economic interests mean that the country has showed only limited commitment to regional integration, its economic policy tending to give preference to attracting trading partners outside the SADC (in the EU and US) rather than among fellow SADC member states (Mapuva and Muyengwa-Mapuva 2014; Vanheukelom and Bertelsmann-Scott 2016). Similarly, regarding regional industrialization ambitions, South Africa has a different mix of incentives from its less industrialized SADC partners. A strong regional industrialization policy with the potential to increase industrial production in SADC neighbours would erode South Africa's pre-eminent position and affect its trade patterns within the region. Given its technological and industrial advantage, South Africa enjoys a favourable trade imbalance with its SADC partners (see Table 2), which it has no incentive to relinquish. South Africa's goods exports to the rest of the region exceed imports by more than five to one. This trade surplus that South Africa enjoys each year at the expense of its SADC partners reflects not simply its stronger technological base, but also a host of protectionist barriers intended to keep goods produced in regional states out of its market. The industrial development of its neighbours therefore seems at odds with South Africa's own economic and trade interests. As a result, the hegemon's push for regional integration has been lukewarm, as it can reap more benefits from its current dominance (Hancock 2010; Mapuva and Mayengwa-Mapuva, 2014).

Those persistent trade imbalances put an unsustainable burden on the smaller economies in the region (Dieter et al. 2001). Consequently, further elimination of intra-regional trade barriers has been equally hindered by the prevalent fiscal consideration in many SADC member states, which still perceives customs revenues as being highly important for their respective government budgets. As South Africa faces its own challenges of persistently low growth combined with sky-high levels of unemployment, the ruling party could be tempted to bow to pressures for protectionist policies.

[9] Among SADC member states, only Seychelles is considered a high-income country, with an estimated per capita GDP of US$29,300 (2017), but it is a small island economy largely dependent on tourism.

Such a course of action would undermine mutual trust for driving a common integration agenda, with the risk of delaying economic harmonization efforts even further.

3.5 Weakness of common identity

Trade interests and benefits are not strong enough to hold a regional block together if there is no sense of common identity or a shared socio-cultural destiny among the populations of member states (Page 2001; Reeg 2017). This common identity is crucial for establishing a supranational structure to coordinate intra-regional gains and losses resulting from dynamic shifts in production and to organize compensation mechanisms (such a structure is seen as necessary for successful integration in OCA theory). Within the SADC region, this sense of common identity is chiefly derived from the shared history of anti-colonial struggle and support for the liberation of South Africa from apartheid oppression. The Frontline States were indeed crucial in shaping a sense of political unity among the political leaders of the region (Tjonneland 2005; Vanheukelom and Bertelsmann-Scott 2016). The resulting sense of common identity has, however, been weakened by the large economic disparities and heterogeneity in governance between SADC member states (Boazs 2001; Hancock 2010; Mapuva and Mayengwa-Mapuva 2014).

The divergence of economic and political interests between various member states means that the reality of mutual distrust among them is a far cry from the cordial multilateralism the SADC likes to present to international media and donor countries (Boazs 2001). Political and economic rivalry, as well as the tendency to protect existing relative advantages, continue to hamper the implementation of the SADC development agenda (Dieter et al. 2001). Moreover, given its constant preoccupation with halting the flux of immigrants from other African countries, South Africa is widely perceived as having a hostile attitude towards people from other SADC countries, as attested by recurrent outbursts of xenophobic violence. Political turbulence and economic instability in Zimbabwe have also added to the erosion of trust and a sense of common identity in the region. Indeed, divergent political and diplomatic interests have thrown a spotlight on the rivalry between Harare and Pretoria.

Despite the geographical proximity and similarity in local cultures of SADC member states, the historical factors that have shaped each state and continue to influence their institutional dispensation have resulted in difference and diversity (Vanheukelom and Bertelsmann-Scott 2016). The continuous focus of South Africa's economic and trade policy on European markets with disregard for the interests of its neighbours has also contributed to undermining a sense of common identity (Dieter et al. 2001). In this respect, the SADC integration agenda can be described as a voluntarist endeavour aimed at achieving common development objectives based on the ultimate political vision of a unified Africa. As a result of government interventions, regional integration within the SADC has been determined more by political considerations than by market forces (Meyn 2005).

4 Developing cross-border growth corridors to overcome integration obstacles

4.1 Theoretical underpinning of growth corridors

The theoretical underpinning of the developmental benefits of growth corridors in developing countries can be found in location theory, cumulative causation theory, and the concept of agglomeration economies (Reeg 2017). These theories predict that a fall in transport costs as a result of improved infrastructure connectivity will result in production being concentrated in agglomerations, and therefore tend to reinforce regional specialization (Farole 2012; Reeg 2017).

Differences in complementary resources between regions having different agglomeration factors can create opportunities for the integration of peripheral regions in order to achieve external economies of scale.

The conceptualization of growth corridors emanated from the success of special economic zones, which have played a catalytic role in growth and structural change around the world (Farole and Moberg 2014). Increased transport and logistic efficiency due to an adequate development of growth corridors can have substantial economic benefits for the region concerned. The corridor development model provided by China in the form of the Belt and Road Initiative (BRI) was estimated by a recent World Bank study to have generated additional real income growth spillovers of 2 per cent for the belt economies and additional real income of 0.4 per cent for neighbouring non-belt economies as a result of reduced transport delays (World Bank 2019).

The notion of corridors has evolved over time, expanding its scope to include a wider economic and development perspective. Initially, corridors were largely seen as mere transport routes. That narrow notion evolved with the realization that logistics services, and the institutional and regulatory framework governing those services, were equally important. Regional corridors can only work efficiently if they are supported by efficient transport infrastructure and digital connections (physical and virtual connections), both of which are necessary to enable a rapid exchange not just of goods, but also of ideas, knowledge, and other resources (World Bank 2019). The benefits of just-in-time supply chains, for example, depend as much on the timely transmission of information as on the timely transportation of inputs and outputs. The spatial development initiative (SDI) programme developed by South Africa after the end of apartheid further expanded that notion to include the demand side through investments in unrealized economic potential (Sequeira et al. 2014).

The SADC has drafted a Regional Infrastructure Development Master Plan that lays the groundwork for accelerating the development of growth corridors along the main transportation arteries, with the aim of leveraging the economic potential of these corridors in order to diffuse economic spillovers into the adjacent areas. The successful development of growth corridors requires the adoption and diffusion of new production techniques and the application of concomitant skills and know-how (Reeg 2017). Achieving balanced economic growth that addresses the spatial disparities in SADC countries is also predicated on the ability of member states to stimulate productivity accruing from cross-border trade and investment flows (Habiyaremye 2019; Oloruntoba 2019). As argued by Lall et al. (2017), large, well connected cities offer the best opportunities to participate in global value chains and to attract transnational investment.

4.2 Resource complementarity and territorial collaboration

The deepening of the SADC integration agenda hinges on creating growth corridors by combining infrastructure development with the harmonization of intra-regional border procedures to render them more efficient (FESARTA 2017; Hartzenberg and Mwanza 2015; Ngarachu et al. 2018; SADC 2016a). Border efficiency is necessary to ensure good intra-regional logistics performance. In order to bring a new economic dynamism to less prosperous localities of the region, it is necessary to harness the power of science and innovation to usher in new production methods and render existing ones more efficient. Intra-regional collaboration between partner localities holds the power to catalyse cross-border trade and investment flows, which can enable technologies, skills, and financial resources to circulate and generate mutually beneficial outcomes (Turok and Habiyaremye forthcoming). Prosperous localities are, however, also better equipped than poorer areas to exploit regional opportunities to their own advantage because of their superior resource endowments and more advanced productive capabilities (Turok and Habiyaremye

forthcoming). Accordingly, policies to develop growth corridors that confront intra-regional spatial inequality must seek to chart a smart third way between an autonomous regional development approach and a top-down approach prescribing which industrial activities should be developed in each region. Intra-regional collaboration for a shared development process, in which prosperous metropoles with industrial clusters agree to devote part of their know-how and investment capacity to partnering with less prosperous areas within the SADC, is one such way in which growth corridors can be created and spatial inequality tackled.

4.3 Limits to what growth corridors can achieve

Evidence has recently been building up that growth corridors are difficult to harness effectively as part of a regional development strategy (see e.g. Farole and Moberg 2014, 2017; Reeg 2017). Within the African context, most zone programmes show low levels of investment and exports, while their employment impacts also remain moderate. In fact, many programmes have shown signs of stagnation and decline (Reeg 2017). As a result, the jury is still out as to whether spatial development initiatives are an adequate policy instrument for industrialization and employment creation (World Bank 2009).

Several theoretical approaches have been put forward to explain why spatial development initiatives organized as growth corridors may fail to perform as intended by their designers. The main theoretical perspectives point to the role of geographical factors (Krugman 1991; Sachs 2001; World Bank 2009) and the importance of institutions and good governance (Acemoglu et al. 2005). The form of territorial collaboration used by China, as part of its rural poverty reduction strategy, in linking its prosperous cities in the coastal area to the less economically advanced rural provinces in the hinterland is an illustration of how resource complementarity and the sense of a common purpose can generate tangible benefits along a growth corridor. The resulting dynamism was achieved through coordinated efforts between partner cities and rural districts, which deployed resources, skills, and infrastructures in a spirit of attaining a shared future rather than jostling one another for scarce investments (Turok and Habiyaremye forthcoming). The recognition that localities are interdependent for their development can lead to the form of cooperative learning that encourages cross-boundary collaboration and the bundling of forces to tackle common challenges, including poverty reduction.

With such developmental benefits in mind, the spatial development initiative within the SADC has identified three main corridors as potential engines of regional economic growth: the North–South Corridor (Durban to Lubumbashi and Dar es Salaam), the Trans-Kalahari Corridor (linking the port of Walvis Bay in Namibia to the industrial hub in Gauteng), and the Maputo Development Corridor, which connects Gauteng and Eswatini to the port of Maputo. Of all these corridors, the Maputo Development Corridor appears to be the most successful to date, because of its ability to associate private sector investors with the development initiative. As a result, traffic volumes between Gauteng and Maputo have recovered and reached their pre-independence level (Sequeira et al. 2014; CBRTA 2017). The Trans-Kalahari Corridor also has good potential for growth thanks to favourable road conditions, with capacity to accommodate additional traffic. This would, however, require an expansion of the limited freight loading and storage capacity at the Walvis Bay port. As for the North–South Corridor, it is still plagued by various physical impediments related to limitations in border facilities, excessive red tape and lengthy border procedures, and vulnerability to corruption. Plans are still in the making to intensify the logistics operations along the corridors by building a brand new deep water port and connecting Maputo to Zimbabwe and Botswana, as well as constructing a railway line to link to Botswana and Zimbabwe (Sequeira et al. 2014).

The physical and soft infrastructure problems along the North–South Corridor are the visible reflection, rather than a cause, of the stalled integration process. The economic costs that they impose on operators in the form of forgone income due to long delays and vehicle damage are also an unnecessary loss to the economy of the region, which reduces its attractiveness as an investment destination. Inasmuch as the economic losses are more visible along the transnational transportation corridors, the potential benefits of reviving the stalled SADC integration agenda can be seen in the relative success and growth prospects observed along the Maputo Development Corridor.

5 Concluding considerations

The stalled SADC integration process has put a brake on regional industrialization ambitions intended to transform the economic structure of member states and reduce their reliance on natural resource exports. Deficiencies in infrastructure as well as cumbersome regulations and the divergent interests of individual member states have contributed to blocking the potential efficiency benefits of increased integration. The region has much to gain from further integration, as argued by Dieter et al. (2001), but the inability of SADC member states to move beyond the initial stage of establishing a free trade area is primarily the result of distributional constraints due to their divergent interests and the low level of mutual trust concerning the fair distribution of gains from intensified cooperation. Although a customs union requires a greater degree of commitment to an integration process, it is easier to administer and offers an elegant means of redistribution within an integration project. If the SADC fails to agree on a customs union and remains stuck at the lowest trade integration level of a heterogeneous free trade area, then the political justification for the continued existence of the organization will also be called into question, as was observed almost two decades ago by Dieter et al. (2001).

The growth corridor approach is key to maximizing the technological spillovers from transport corridors between regions possessing complementary resources. As pointed out by Sequeira et al. (2014), growth corridors have the potential to catalyse regional economic integration, since many of them are not constrained by national borders. For land-locked countries that are dependent on transport corridors that pass through neighboring countries to access international markets, this is a particularly important consideration. Additionally, insofar as growth corridors are advanced economic entities requiring the use of efficient infrastructure and modern digital connectivity, they demonstrate what economies can achieve if the infrastructure bottlenecks are resolved. What is designed for the efficient operation of growth corridors can be a blueprint for the design of infrastructure and digital connectivity throughout the rest of the regional economy. The success of growth corridors also requires policy integration and policy coherence aimed at solving the existing infrastructure and developmental bottlenecks. To be effective in generating new economic dynamics, the growth corridors approach must be part of broader spatial planning strategies and be aligned with a conducive institutional framework. It must also integrate different sectoral policies combining transport and energy supply infrastructure, as well as an industrial policy based on the comparative advantage of particular territorial areas or regions (Lin 2012; Reeg 2017).

Closer integration and increased cooperation in their industrial ambitions offer SADC member states better opportunities to leverage the complementarity of their resources and harness the transformative power of growth corridors. Making advantageous use of their complementary resource endowments for industrialization can help them to overcome the hurdles of poverty and technological lag, but this requires regional cooperation based on mutual trust and a better alignment of developmental interests (Boazs 2001). A more structurally sophisticated approach to

regionalism, based on the promotion of regional complementarities and the strengthening of regional productive capacity, has even greater potential (Turok and Habiyaremye forthcoming).

For growth corridors to be sustainable and inclusive, the challenges related to infrastructure provision, trans-border interoperability, and the creation of an effective governance structure with clearly assigned responsibilities must be confronted and overcome. Long-term commitment to the provision of a favourable investment climate and institutional support for the private sector is crucial to attracting and retaining innovative investors capable of contributing to the success of growth corridors in Southern Africa. The alignment of incentives between growth corridors and local governments is equally necessary to avoid contradictory motives and coordination problems in policy execution.

Finally, even though the structural transformation will outweigh the short-term advantages to each individual member state, the shift in production will create distributional effects whereby some areas may lose as a result of greater mobility of production factors and changes in production structure resulting from the adoption of new technologies. It is therefore crucial for the SADC to set up a common compensation mechanism to ensure that the benefits of integration and structural transformation do not lead to new forms of undesirable spatial inequalities.

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