Advances in African Economic, Social and Political Development

Sören Scholvin
Anthony Black
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Ivan Turok *Editors*

Value Chains in Sub-Saharan Africa

Challenges of Integration into the Global Economy

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Sören Scholvin • Anthony Black •
Javier Revilla Diez • Ivan Turok
Editors

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Editors
Sören Scholvin
Institute of Economic and Cultural Geography
University of Hanover
Hanover, Germany

Anthony Black
School of Economics
University of Cape Town
Cape Town, South Africa

Javier Revilla Diez
Institute of Geography
University of Cologne
Cologne, Germany

Ivan Turok
Human Sciences Research Council
Cape Town, South Africa

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About the Editors

Sören Scholvin is a research fellow at the Institute of Economic and Cultural Geography, University of Hanover, and an associated researcher at the German Institute of Global and Area Studies. He has research interests in world cities and global value chains in the Global South, regional development in South America and sub-Saharan Africa and the energy policy of emerging economies. From 2015 to 2018, he worked on a research project on 'Gateway Cities and their Hinterlands', financed by the German Research Foundation.

Anthony Black is Professor at the School of Economics, University of Cape Town. He currently directs the research unit 'Policy Research in International Services and Manufacturing'. Anthony has published widely in the fields of industrial policy, the automotive industry, regional integration, foreign direct investment and employment. He has also acted as an adviser and consultant to a number of African governments as well as international organisations, including the United Nations Conference on Trade and Development and the United Nations Industrial Development Organization. His latest book is the edited volume *Towards Employment-Intensive Growth in South Africa*.

Javier Revilla Diez is Professor of Human Geography at the University of Cologne and an associate at the Global South Study Center, University of Cologne. His research interests are in global production networks, regional transformation processes and the impact of natural risks on firms, people and regions in East and South-East Asia as well as sub-Saharan Africa. Since 2018, Javier has contributed to the research initiative 'Future Rural Africa', wherein he concentrates on the desired and undesired socio-economic effects of economic growth corridors in Namibia and Tanzania.

Ivan Turok is Executive Director at the Human Sciences Research Council and Chairman of the City Planning Commission for Durban. He is also editor-in-chief of the journal *Regional Studies* and Honorary Professor at the University of Glasgow. Ivan's research covers various aspects of city and regional economic development, labour markets and urban transformation. His latest jointly edited book is *Transitions in Regional Economic Development* (2018, Routledge). He has also co-authored 'Inclusive Urban Development in South Africa: What Does It Mean and How Can it be Measured?' (IDS Working Paper, 2018).

Contributors

Stefan Andreasson School of History, Anthropology, Philosophy and Politics, Queen's University Belfast, Belfast, UK

Eduardo Bidaurratzaga Aurre Department of Applied Economics, University of the Basque Country, Bilbao, Spain

Anthony Black School of Economics, University of Cape Town, Cape Town, South Africa

Artur Colom Jaén Department of Applied Economics, University of Valencia, Valencia, Spain

Andries du Toit University of the Western Cape, Cape Town, South Africa

Herman S. Geyer Department of Geography, Stellenbosch University, Stellenbosch, South Africa

Richard Grant Department of Geography and Regional Studies, University of Miami, Coral Gables, FL, USA

Ross Harvey South African Institute of International Affairs, Johannesburg, South Africa

Chelsea Markowitz South African Institute of International Affairs, Johannesburg, South Africa

Mike Morris School of Economics, University of Cape Town, Cape Town, South Africa

Martin Oteng-Ababio Department of Geography and Resource Development, University of Ghana, Accra, Ghana

Asmita Parshotam South African Institute of International Affairs, Johannesburg, South Africa

Mwanda Phiri Zambia Institute for Policy Analysis and Research, Lusaka, Zambia

Leonhard Plank Department of Spatial Development, Infrastructure and Environmental Planning, Vienna University of Technology, Vienna, Austria

Javier Revilla Diez Institute of Geography, University of Cologne, Cologne, Germany

Sören Scholvin Institute of Economic and Cultural Geography, University of Hanover, Hanover, Germany

Cornelia Staritz Department of Development Studies, University of Vienna, Vienna, Austria

John Stuart Trade Law Centre, Stellenbosch, South Africa

Ivan Turok Human Sciences Research Council, Cape Town, South Africa

Justin Visagie Human Sciences Research Council, Cape Town, South Africa

Margareet Visser Institute of Development and Labour Law, University of Cape Town, Cape Town, South Africa

Francis Ziba Zambia Institute for Policy Analysis and Research, Lusaka, Zambia

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Introduction

Sören Scholvin, Anthony Black, Javier Revilla Diez, and Ivan Turok

Sub-Saharan Africa is reasonably integrated into the global economy—but not on favourable terms. It still by and large exports primary commodities while importing manufactured goods and high-value services. The region's role in manufacturing global value chains (GVCs) is limited to the supply of metals and minerals. The countries of sub-Saharan Africa trade little with each other and regional value chains (RVCs) are, for the most part, undeveloped. Nevertheless, since the turn of the last century, stronger economic growth and closer political integration have led to promising new developments and a more optimistic outlook. While serious obstacles still remain, these emerging dynamics now deserve more detailed investigation.

The volume includes a selection of papers presented at the conference on 'Value Chains in the Global South: Challenges of Integration into the Global Economy', held in Stellenbosch, South Africa, in October 2017. The conference focussed on GVCs, which are not only a real-world phenomenon but also a key analytical concept—one that has proven particularly helpful in the study of the integration of the Global South into the world economy. For several years now, there has been considerable interest in applying this concept to sub-Saharan Africa. International organisations increasingly rely on GVC analyses in their policy-oriented

S. Scholvin (✉)
Institute of Economic and Cultural Geography, University of Hanover, Hanover, Germany
e-mail: scholvin@wigeo.uni-hannover.de

A. Black
School of Economics, University of Cape Town, Cape Town, South Africa
e-mail: anthony.black@ect.ac.za

J. Revilla Diez
Institute of Geography, University of Cologne, Cologne, Germany
e-mail: j.revilladiez@uni-koeln.de

I. Turok
Human Sciences Research Council, Cape Town, South Africa
e-mail: iturok@hsrc.ac.za

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publications (FAO 2014; OECD 2014; Subramanian and Matthijs 2007). A number of universities have started corresponding research programmes too.[1]

The interest in GVCs in sub-Saharan Africa has been matched by numerous recent scientific publications, mostly journal articles illustrating to what extent individual countries or places on the sub-national scale benefit from the export of raw materials—and also how they could industrialise by domestically converting these resources into (semi-)manufactured products (Dannenberg and Nduru 2013; Fessehaie 2011; Franz 2014; Fuchs and Tessmann 2016; Hanlin 2011; Teka 2011). Recent books have addressed such topics as job creation in agricultural GVCs and local spillovers from foreign direct investment (Dudwick et al. 2013; Farole and Winkler 2014); or, narrowing the scope further, the impact of new information technologies on GVCs in South Africa and Tanzania (Murphy and Carmody 2015). Books that provide broader assessments—like the compilation of cases of failure and success by Gibbon and Ponte (2005) for example—are scarce however. What is more, research on GVCs is marked by a sharp contrast between the overly optimistic expectations voiced in the aforementioned policy-oriented publications by international organisations, on the one side, and the mostly critical assessments by scholars standing in the tradition of world-systems analysis (which seeks to uncover exploitative relations among the periphery, semi-periphery and cores of the world economy), on the other.

Against this background, our book provides new empirical evidence that reveals both the bright and dark sides of GVCs in the Global South. Comprising a total of 15 empirical chapters, this volume brings together analyses of sectors as diverse as e-waste, grape farming, hydrocarbons and information technologies, revealing similarities and differences with regard to the various dynamics that corresponding GVCs trigger—as well as often highlighting the critical role of public policies, or the state, for GVCs. We also broaden the perspective taken by analysing RVCs in Part I of this volume. RVCs have gained significant relevance for the political visions of a number of countries—for example, South Africa and Tanzania—but lack adequate scientific attention, at least in the sub-Saharan African context. Standard cases of GVC research, meaning value chains that are of a global scope (for instance, Ethiopia's apparel export sector and Mozambique's megaproject-based economic model), are assessed in Part II. In Part III, the book sheds light on the political and socio-economic challenges relating to the participation of sub-Saharan Africa in GVCs. It brings research on GVCs together with that on cities and city regions in Part IV.

Further to the aforementioned recent publications, research on GVCs—in particular regarding the Global South—represents a long-standing tradition in Economics and Economic Geography, although the term itself gained prominence only during

[1]One example is 'Policy Research in International Services and Manufacturing' (PRISM), a research unit at the University of Cape Town, which conducts research on globalisation, trade and the prospects of industrialisation in sub-Saharan Africa. For further information on PRISM and its publications, see: www.prism.uct.ac.za.

the course of the 1990s. About 20 years earlier, scholars such as Dicken (1976), Firn (1975) and Watts (1981) showed that transnational companies were relocating specific segments of their GVCs to 'branch plants' in developing countries. These segments were labour-intensive, and required considerable investments being made in production facilities; they were hardly sophisticated in terms of technology, however. The segments decisive for economic development remained in the Global North. This pattern began to change in the early 1990s, with increasingly independent production facilities in the Global South becoming responsible for ever-more complex tasks. These 'performance plants' partnered with local suppliers and supported the upskilling of local labour, contributing to on-site economic development (Phelps and Fuller 2000; Phelps et al. 2003; Turok 1993).

Branch plants and performance plants are still being established today, meaning that not every location in the Global South that participates in GVCs benefits from significant impulses for economic development. Leaving aside precursors such as the French *filière* approach (Benoit-Cattin et al. 1996; Lauret 1983) and Porter's (1985, 1990) publications on GVCs, research that seeks to explain whether participation in GVCs facilitates economic development dates back originally to the edited volume *Commodity Chains and Global Capitalism* as well as numerous related studies (Gereffi 1999, 2014; Gereffi et al. 2005). In addition to the input–output dimensions of GVCs, the institutional and territorial embeddedness of participating firms as well as the power relations between all involved actors are analysed. Assessing these four dimensions allows conclusions to be drawn with regard to upgrading processes, which are the foundation for local economic development.

Criticising the supposedly narrow focus of the GVC approach on what happens along chains of production and commercialisation, researchers from Manchester and Singapore have advanced global production networks (GPNs) as an alternative concept. By using a network heuristic, the GPN approach examines the whole range of actors that surround value chains. It distinguishes between value creation, capture and enhancement (Henderson et al. 2002). Economic development in networks is explained through the specificities of processes of 'strategic coupling', which bring together local and non-local firms (Coe et al. 2004; Coe and Yeung 2015; Yeung 2009, 2015, 2016). In particular institutions are better covered by the GPN framework, whereas the GVC approach privileges intra-chain governance. As a consequence the territorial embeddedness of GPNs addresses various context factors that tend to be neglected in research on GVCs, as highlighted in Chap. 11 of this book. Indeed, numerous scholars have called for a more elaborate notion of territorial embeddedness in research on GVCs (Dussel Peters 2008; Henderson et al. 2002; Neilson et al. 2014). Some contributions have provided valuable extensions of the GVC concept, largely reflecting on the just-mentioned criticism but also trying to limit analytical complexity (Bair 2005; Bair and Werner 2011; Bolwig et al. 2010; Fold 2014; Leslie and Reimer 1999).

While acknowledging that there are important differences, we understand the GPN approach and the GVC framework to be complementary in fact: starting with the analytical toolset of GVCs does not prevent researchers from incorporating ideas from GPNs. From our viewpoint, GPN and GVC scholars analyse the same

phenomena (although the former incorporate almost countless context factors, whereas the latter avoid this). With some caveats, it can also be said that they concentrate on analogous conditions and draw similar conclusions. They are set apart by the fact that GVC scholars seek the simplicity of chain representations, whereas adherents of the GPN framework appreciate the complexity of network models. Hence, the contributors to this book often speak of GPNs and GVCs interchangeably, for instance referring to strategic coupling in GVCs or the input–output dimensions of GPNs.

Instead of summarising all chapters according to the order in which they appear in this volume, we use the remainder of this introduction to elaborate on five key issues in research on GVCs—so as to highlight, rather, how the individual chapters make specific reference to them. First, whether participation in GVCs triggers sustained economic development depends on policies that, for example, enable access to credit, support innovation and help develop infrastructure, as Chap. 4 by Mwanda Phiri and Francis Ziba demonstrates. In this regard initiatives such as the Southern Agricultural Growth Corridor of Tanzania, which is assessed in Chap. 5 by Asmita Parshotam and Javier Revilla Diez, play a vital role. Such initiatives are meant to bring about conditions that enable local actors to participate in regional and global value chains—an upgrade process that is central to several of the contributions to this book. Furthermore, institutional context factors are decisive for foreign investment and local economic development. These include a reliable legal system, secure property rights and the absence of corruption. This is probably best demonstrated by Mauritius, whose institutional efficiency makes the island highly attractive to transnational companies, as Sören Scholvin shows in Chap. 13. If institutions are weak or governments pursue unsound policies, GVCs are unlikely to trigger positive dynamics—as exemplified by the challenges that mark Ghana's e-waste sector, analysed in Chap. 8 by Richard Grant and Martin Oteng-Ababio.

Second, GVCs are diverse. The features and the various dynamics relating to them vary from one sector to another, as Kaplinsky and Morris (2001, 2016) explain. GVCs in the primary sector appear to be likely to trigger linkages to other branches, especially if there is local processing. The automotive and electronics industries, conversely, are marked by specialisation and globally fragmented production. They require different policies to facilitate economic development, and are characterised by risks and opportunities other than those that mark the primary sector—but ones that have nevertheless been critical for South Africa, for instance (Black 2001, 2007). Reflecting the diversity of GVCs, Chap. 6 by Cornelia Staritz, Leonhard Plank and Mike Morris together with Chap. 12 by Andries du Toit, which deal with the apparel industry and with agriculture respectively, both draw attention to the prospects of local processing—and the related economic dynamics that result from integration into non-local markets of different scales. Chapter 3 by Chelsea Markowitz and Anthony Black as well as Chap. 7 by Eduardo Bidaurratzaga and Artur Colom meanwhile both suggest that it is rather difficult for sub-Saharan Africa to generate such positive effects in the car manufacturing and extractive industries. Stefan Andreasson's assessment, in Chap. 9, of the prospects of the oil and gas sector furthermore shows that being part of GVCs also means being dependent on global

economic processes—ones that usually lie far beyond the control of sub-Saharan African countries. Seemingly, these dynamics are sector-specific.

Third, related to the contribution by Markowitz and Black, an issue of outstanding relevance—particularly for policy-oriented research—is the debate over whether value chains should be regional or global—with emerging economies and developing countries thus fully embracing globalisation in the latter case. RVCs in sub-Saharan Africa are not, to the best of our knowledge, well covered in the scientific literature. While the chapters in Part I are not meant to make a conceptual contribution—one that would, for example, generalise the dynamics distinguishing global from regional value chains—they do provide empirical assessments that reveal the challenges and prospects for establishing RVCs in sub-Saharan Africa. In the case of car manufacturing, costs and benefits are likely to be divided unevenly—with South Africa reinforcing its position as an industrial hub, and other countries having to block imports of second-hand vehicles so as to boost the sale of regionally produced new ones. Dealing with supermarkets in Zambia (largely owned by South African corporations), Phiri and Ziba conclude that local suppliers have much to gain from plugging into RVCs that would open up the markets of Zambia's neighbouring countries to them. However, Herman Geyer shows in Chap. 2 that mutually beneficial regional trade patterns and RVCs are more vision than reality currently. At present, sub-Saharan Africa's exports rest mainly on raw materials and low-quality, lower-tiered production inputs to GVCs dominated by companies from the Global North.

Fourth, this book addresses a particular research gap that results from the focus of the mainstream literature on the economic impact that GVCs have at different scales. We think it unwise to neglect the additional political and socio-economic effects of GVCs, however. Too often, research remains limited to assessing the prospects for economic development and providing related policy advice. Such research does generate key insights, but there is more to places being part of GVCs than just economic growth and economic upgrading. Chapter 10 by Ross Harvey, Chap. 11, by Margareet Visser as well as Du Toit's contribution (Chap. 12) hence go beyond the economics of GVCs. Harvey assesses the potential pitfalls of Tanzania's resource abundance, concentrating on institutional arrangements meant to help avoid the highly problematic consequences that resource bonanzas tend to have in politically fragile countries. Visser explains, meanwhile, processes of 'social downgrading' in fresh-fruit production in South Africa, and resulting violent protests from the GVC perspective—merging it also with the GPN approach. Du Toit compares rural communities in Malawi, South Africa and Zimbabwe. This reveals that what appears to be development from a purely economic perspective—that is, the shift towards large-scale, commercial agriculture—has negative consequences for the concerned communities from a broader socio-economic one.

Fifth, the territorial configuration of GVCs (and of GPNs alike) remains an underdeveloped analytical theme. While the concept distinguishes at a macro-level between places in the Global North that interact through economic processes with ones in the Global South, little is known about the specificities of these sites. The territorial division of GVC segments at the sub-national level—for example into

resource extraction at peripheral sites, transport and logistics in medium-sized port cities and GVC governance within national business hubs—is, usually, not addressed. Most importantly, for value chains (both global and regional ones) to function efficiently, transnational companies depend on corporate producer services. These services, for example relating to banking and legal advice, are concentrated in a limited number of cities worldwide. Friedmann and Wolff define these as 'banking and financial centres, administrative headquarters [and] centres of ideological control' (1982: 312). They argue that without these cities 'the world-spanning system of economic relations would be unthinkable' (1982: 312). Based on Sassen's (2001) understanding of so-called world cities, which is exclusively about service provision it should be noted, scholars affiliated with the Globalisation and World Cities Research Network have measured the interconnectivity of cities, referring to firms such as Ernst and Young, KPMG and Standard Chartered (Derudder and Taylor 2016; Taylor et al. 2002a, b, c).

Some inroads on world cities as service providers and as hubs in GVCs have been paved already, for instance by the edited volume *Commodity Chains and World Cities* as well as by a number of journal articles too (Breul and Revilla Diez 2017, 2018; Grant and Nijman 2002; Parnreiter 2015, 2017; Rossi et al. 2007; Scholvin 2017; Sigler 2013). It has been shown that bringing GVCs and world cities together generates important insights: the latter are decisive for the former because of the sophisticated institutional frameworks that they offer (Meyer and Revilla Diez 2014; Meyer et al. 2012). They are, moreover, hubs for logistics and transport, industrial processing, corporate control, service provision and knowledge generation (Scholvin 2017; Scholvin et al. 2017). In line with Phelps (2017), this territoriality of GVCs must now be more closely analysed—because it provides essential explanatory value regarding differentiated developmental outcomes.

The chapters in Part IV of this edited volume elaborate further on these ideas. They advance a typology of 'gateway cities', and conclude that whereas Johannesburg and Port Louis can be considered as these all other capitals in sub-Saharan Africa are rather poorly integrated into global flows meanwhile—as scrutinised by Herman Geyer in Chap. 14. As noted, Scholvin's contribution assesses the location strategies of transnational companies—referring specifically to Mauritius and the oil and gas sector. In Chap. 16, Ivan Turok and Justin Visagie investigate the concentration of knowledge-intensive producer services in Gauteng and elaborate on their composition, evolution and potential to contribute to economic development. They suggest that this particular sector could benefit significantly from accessing the sub-Saharan African market, turning Gauteng into a city region that would serve as a critical node in numerous different GVCs. In Chap. 15, John Stuart also reasons—in his analysis of the information and communications technology (ICT) sector in Cape Town—that there are opportunities for regional trade, especially because the ICT sector has already generated considerable forward linkages both in South Africa and beyond—mainly to the manufacturing of chemicals, machinery, metals and transport equipment, as well as to primary production. He finds, however, that RVCs in ICT—based on Cape Town as a gateway or hub—are but a rather hazy vision at present, however.

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Part I
Prospects of Regional Value Chains

Global Value Chain Participation and Trade Barriers in Sub-Saharan Africa

Herman S. Geyer

1 Introduction

The current literature on global value chains (GVCs) suggests the uneven development of economic activities worldwide, with the growing integration of countries in the Global North and the growing marginalisation of ones in sub-Saharan Africa and other parts of the Global South meanwhile (Ahmad and Primi 2017). Nonetheless, sub-Saharan African economies do reach a high level of participation in GVCs (Gibbon and Ponte 2005). The question here is whether their participation in GVCs is beneficial for economic growth on the subcontinent, and thus whether a significant portion of the value generated in these chains is captured locally. Much of the research concerning GVCs in sub-Saharan Africa—for instance the publications by Ponte and Ewert (2009), Riisgaard (2009) and Riisgaard and Hammer (2011)—is concerned with firm- and industry-level case studies in selected countries. These analyses are limited insofar as they cannot be generalised to the subcontinent as a whole.

This chapter analyses the macro-level GVC participation across countries and industries, and its relationship with national regulatory governance structures, using multivariate regression analyses. It determines whether GVC participation benefits sub-Saharan African economies, achieved by analysing the relationship between domestic and foreign value-added production. The chapter also aims to analyse the relationship between global value chain participation in sub-Saharan Africa and various trade barriers, to determine the degree to which government regulatory practices inhibit or promote the integration of the subcontinent into the global economy. Before coming to the empirical analysis, an overview of key features of value chains in sub-Saharan Africa is first provided.

H. S. Geyer (✉)
Department of Geography, Stellenbosch University, Stellenbosch, South Africa
e-mail: hsgeyerjr@sun.ac.za

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2 Background Information: Value Chains, Their Governance and Government Regulation

2.1 Regional and Global Value Chains

To understand the significance of GVCs in sub-Saharan Africa, they must be analysed in the context of trade within the region and between sub-Saharan African countries—as well as with the rest of the world too. Despite increasing trade liberalisation, deepening financial integration and the emphasis on modernising local industries through endogenous growth strategies, the subcontinent's share of global exports has remained consistently low—at approximately 2.6%—during the last two decades (Bora et al. 2007). While trade liberalisation, financial integration and industrial modernisation are generally successful in the Global North, the benefits of these mechanisms are only marginal in sub-Saharan African countries due to continued macro-economic instability (Ahmed and Suardi 2009).

Market volatility in sub-Saharan African countries is, on average, 10–30 times higher than in the Global North (Pallage and Robe 2003). Much of this fluctuation is linked to shrinking market shares for traditional sub-Saharan African resource exports, and to the lack of product diversification. This is evidenced by the high level of non-upgraded exports: almost 75% of exports from the region are raw materials, as compared to an average of 8% for the Global North (Anyanwu 2014). Specialisation in local resource products makes the sub-Saharan African economies highly vulnerable to external competition and foreign substitutes. Thus increased trade liberalisation invokes greater macro-economic instability due to inter-industry competition, resulting in further volatility in market cycles (Ahmed and Suardi 2009).

In stochastic economic environments, firms tend to be risk-averse—preferring the low returns of raw material exports rather than more productive and profitable upgraded products and manufactures. In turn, the use of non-rival technologies and locally increasing rates of return lowers labour productivity and prevents the autarchic capital accumulation strategies necessary for the use of foreign inputs—as required for upgrading and diversifying domestic products (Geyer 2016). This is evident in the low level of manufactured products produced on the subcontinent, with only 8% of manufactured goods consumed in sub-Saharan Africa being made in the region. Furthermore, the level of foreign production inputs in manufacturing in sub-Saharan Africa is less than half of the global average (Farole 2015). This also creates a structural mismatch between sub-Saharan African production outputs and consumer demands in the poor and fragmented regional markets of neighbouring countries, thus reducing the level of intra-African trade.

Product diversification and upgrading is also limited by high compliance costs from external product standards and customer preferences in the end-product-recipient countries. The proliferation and increasing stringency of standards is both due to the multilateral inclusion of different countries in trade agreements, multiplying the number of local control, ethical and 'sustainability' standards regionally, as well as internal pressures to maintain brand protection measures by lead firms (Homer

2008). This concentrates the upgrading of products, processes and related value-chain functions outside of sub-Saharan Africa, where producers can better keep abreast of customer preferences and more easily overcome increasing stringent regulatory standards in international trade (Gibbon and Lazaro 2010). In contrast, the African continent is fragmented into 17 regional trade blocs and approximately 30 regional trade agreements, further increasing compliance costs in upgrading export goods. Against this background, it is not surprising that regional trade only amounts to 13.2% of total trade, whereas trade within the regions defined by the Asia-Pacific Economic Cooperation and by the European Union is more than five times this share (Ben Barka 2012).

Consequently, the increasing integration of sub-Saharan Africa into GVCs is not distinctly beneficial for the development of local economies. It indirectly increases volatility, due to uncompetitive and undiversified local markets. Sub-Saharan Africa is marginalised by the combined pressures of increasing international competition, due to trade liberalisation, and of trade bloc fragmentation in the region. Local market forces and external compliance costs incentivise local producers towards the export of domestic non-upgraded production inputs, which diminishes the level of regional trade in consumer goods—as well as opportunities for the growth of local complimentary chain functions. Although participation in GVCs has increased through trade liberalisation, the share of value capture through product upgrading remains consistently low due to the uneven distribution of trade liberalisation benefits (Gibbon and Ponte 2005).

2.2 Governance of GVCs

Given market volatility, low product differentiation, limited upgrading, poor complimentary chain functions and high compliance costs, sub-Saharan African markets favour buyer-driven commodity chains in which non-upgraded exports are processed by branded manufacturers in the Global North (Gibbon and Ponte 2005). In buyer-led commodity chains, international first-tier buyers monopsonically acquire production inputs from a diverse range of local lower-tiered suppliers on behalf of, and according to the requirements of, foreign lead firms (Gereffi 1994). Although this is more economically efficient for upstream partners than conventional producer-led chains, it is disadvantageous for sub-Saharan African firms themselves because buyer-led chains increase the number of chain partners and per unit production costs. They also incentivise the production of low-cost production inputs, particularly raw materials such as fuels and ores (Gibbon and Lazaro 2010). However, sub-Saharan Africa remains dependent on the income generated by local lower-tiered firms, regardless of the level of profit captured by the upper levels of the chain (Gereffi et al. 2005).

Geographical distance accentuates the cognitive gap between local producer knowledge, technical standards imposed by lead firms and the product requirements of end-users, limiting the capacity of lower-tiered suppliers to innovate or adapt to changing markets. These functions are bridged by first-tier buyers, companies that

are generally native to but not ethnically African. This ethnically diverse group combines knowledge of the idiosyncratic nature of local markets with that of lead firms and end-user requirements abroad, including critical information on product specialisation and differentiation—as well as international compliance regulations (Chap. 14 in this volume; Geyer et al. 2015; Gibbon and Ponte 2005).

The volatile nature of sub-Saharan African markets makes direct transactions between foreign lead firms and lower-tiered suppliers difficult. In a low-trust regulatory environment, where transaction costs are high and technology diffusion low, reciprocity and confidence developed through tacit personal face-to-face interaction requires relational chain structures, with highly competent first-tier buyers as intermediaries who are capable of this sort of interaction with local lower-tiered producers—and who, at the same time, understand the codified standards of international lead firms (Pietrobelli and Rabellotti 2011). Relational chains are captive from the perspective of lower-tiered producers, because their capabilities are generally insufficient to comprehend complex codified product specifications. This results in power asymmetries and profits weighted towards first-tier buyers and lead firms (Ahmad and Primi 2017). Local lower-tiered suppliers face difficulties in comprehending the end-user market, and hence are largely unable to innovate their own value chain organisation—which prevents upward mobility into more profitable modes of production.

The relational governance of GVCs in sub-Saharan Africa presents a significant challenge to the further expansion of these chains. Sub-Saharan African firms tend to be at a distinct disadvantage for a number of reasons: they hardly achieve economies of scale, cannot meet (and maintain) the technical standards required by international lead firms, insufficiently comprehend end-user requirements and have to cope with low-quality local production inputs and services as well as rather low-level labour skills. Longer chains, numerous intermediaries and the poor capitalisation of local firms are further challenges faced (Farole 2015). In other words, success in sub-Saharan African buyer-driven commodity chains depends on the level of cooperation and reciprocity between international first-tier buyers and local lower-tiered producers in the face of both local market competition and international economies of scale.

2.3 Government Regulatory Barriers

While the economic relationship of the Global North to sub-Saharan African states periodically follows consensual regimes (such as the General Agreement on Tariffs and Trade, structural adjustment programmes by the International Monetary Fund and deregulation measures promoted by the World Trade Organisation), regulatory structures in sub-Saharan Africa tend to be idiosyncratic—varying according to the particularities of each sub-Saharan African state. Thus, although individual value chains can overcome regional entry barriers such as cost advantages, economies of scale, monopoly rents and product differentiation through effective governance, sub-Saharan African value chains remain captive to national and regional regulations (Gibbon and Ponte 2005).

Outside of their own trade blocs, sub-Saharan African firms have a distinct trade disadvantage. This is because the reduction of tariffs within external trade blocs such as the European Free Trade Association and North American Free Trade Agreement, among others, increases the competitiveness of firms operating within these blocs vis-à-vis their sub-Saharan African competitors (Ahmad and Primi 2017; Los et al. 2015). The aforementioned fragmentation of trade blocs on the subcontinent, meanwhile, creates a complex range of bilateral, temporary and conditional agreements between sub-Saharan African countries, the Global North and new East Asian trading partners. This complicates customs administration and exports, increasing the cost of operating GVCs in the region and limiting their expansion into sub-Saharan Africa—both in terms of the scale of production and the scope of value chain products, processes and related functions (Chap. 14 in this volume; Broadman 2008). Furthermore the fragmentation of trade blocs results in intra-bloc competition, as individual sub-Saharan African states attempt to capture a larger market share for similar export products (Gibbon and Ponte 2005).

Government policies in sub-Saharan Africa also tend to be idiosyncratic, due to onerous contract enforcement, bureaucratic inefficiencies and corruption. In a low-trust regulatory environment, interaction with government is also relational—based on complex, tacit personal interactions. This limits the degree to which policies and technical standards can be codified, and the extent to which products, processes and related functions can be upgraded too (Morrison et al. 2008). However, as a side note, it is worth mentioning that relational governance structures do provide cost-effective risk monitoring in an uncertain regulatory environment wherein incomes are stochastic (Bair 2008). Other internal government barriers that reduce the competitiveness of GVCs in sub-Saharan Africa includes tariff rates, customs regimes and infrastructure inefficiencies (Ahmad and Primi 2017). Tariff duties have significantly declined in sub-Saharan Africa, as the most prominent economically active countries have shifted from import substitution towards export promotion (Babatunde 2009). However tariffs continue to be significantly higher than in the Global North, reducing the profitability of producing upgraded products (Farole 2015). The complex range of customs transactions in sub-Saharan Africa, involving up to 30 different parties, significantly increase transaction costs (UN Economic Commission for Africa and African Union 2010). On average, customs clearance in sub-Saharan Africa takes 35 days. The costs associated with customs transactions generally equal or exceed tariff costs. With the extensive range of international substitute products available in overseas markets, each day regionally traded products are delayed in customs reduces regional trade by 1%—constituting approximately 10% of export costs on the subcontinent, as calculated by Buyonge and Kireeva (2008). What is more, sub-Saharan Africa has the lowest density of infrastructure of any world region (Ahmad and Primi 2017). The existing infrastructure is primarily geared to supporting extractive industries, at the expense of stimulating growth in sectors with value upgrading potential. Most of the available infrastructure is also state-owned, increasing the vulnerability of firms to idiosyncratic policies—particularly with regards to tariff costs, export clearance times and corruption (Farole 2015).

Such financial malfeasance is another endearing facet of trade in sub-Saharan Africa, whether in the form of bribing officials to gain competitive advantage, handing over money to secure government contracts or paying off officials so as to facilitate customs procedures unfolding in a timely manner. On average, more than 50% of firms conducting trade in sub-Saharan Africa are approached by public officials seeking to procure bribes (Buyonge and Kireeva 2008). However corruption may in many instances be beneficial, bypassing formal both tariff and non-tariff barriers. Certain estimates indicate that unreported trade makes up approximately 41% of total official transactions (Villoria 2008).

3 Empirical Analysis: Value Chain Participation, Value Addition and Regulatory Policies

3.1 Methodology

This study employs a cross-sectional statistical analysis to assess the structure of the GVCs in sub-Saharan Africa. It determines whether there is a positive relationship between GVC participation and governmental measures and policies. Underlying this analysis is the assumption that GVC participation is higher in countries with favourable trade policies and better infrastructure. Hence, it is assumed that a greater share of the global value-added production occurs in more efficiently run countries. The alternative hypothesis is that GVC participation is dependent on the type of product or service provided, with state intervention having a limited impact on the extent of such value chains.

GVC participation is calculated using the index from Koopman et al. (2010). For the purpose of this study, the GVC participation index distinguishes between global and non-GVC trade. GVC trade consists of that occurring between three or more countries for the same product, in which each recipient adds value to it. Non-GVC trade, meanwhile, represents that in domestically produced final products for consumption in a second country, and the re-export of imported products that are not upgraded within the country in question during this import–export process. GVC trade includes forward linkages, consisting of locally produced production inputs and services exported for upgrading in a second country—for consumption in a third one. Backward linkages, consisting of imported goods upgraded locally for export, are also included. This distinction into global and non-GVC trade necessitates distinguishing between intermediate product exports used for production and consumption in recipient countries, on the one hand, and intermediate production input exports then sent to third countries, on the other. It is also necessary to distinguish between domestic and foreign value-added components of finished product exports. The purpose of all of this is to exclude ordinary consumption exports and unimproved re-exported goods, which artificially inflate the recorded export values of sub-Saharan African countries. In a true GVC, each firm adds value to the product or service—with the greatest benefit occurring for those chain participants who add the

greatest amount of utility in terms of upgrading products, processes and related functions. The GVC participation index is, therefore, calculated as:

$$\Sigma GVP_i = \sum_{i=1}^{n} \left(\frac{FV_{ik}}{Ex_{ik}} + \frac{DV_{ik}}{IEx_{ik}} \right)$$

ΣGVP_i is the level of GVC participation in domestic exports in country i, expressed as a percentage of total domestic exports. It consists of the sum foreign value-added trade FV in gross exports Ex per industry k and the sum domestic value-added trade DV in intermediate production and service inputs for export IEx per k for consumption in third countries. Data was estimated by using the Global Trade Analysis Project's (GTAP) database and the Global Value Chain Indicators Database, as provided by the Organisation of Economic Cooperation and Development (OECD) for a range of industries per country. As the exports of services were generally low, they were aggregated and goods differentiated into raw agricultural products, food, fuels, ores and metals, and other manufactured products. The output includes, first, forward linkages, meaning the domestic value-added component of intermediate products in GVC trade. Second, the output includes backward linkages, which are the foreign value-added component of exports, and, third, the sum of backward and forward linkages. In many other studies—such as the one by Dedrick et al. (2010)—all re-exported import goods, including backward linkages, are excluded from GVC participation because they inflate the degree to which the concerned countries benefit from such chains—resulting in the double counting of trade. However Koopman et al. (2010) found it to be expedient to include backward linkages (when properly distinguished from other re-exported goods) in order to determine total participation in GVCs, as this is often the greater component of value capture.

To analyse the impact of government regulatory measures on GVCs, a variety of variables were included to represent corresponding barriers to international trade: the tariff rate applied on imports as a percentage of product costs, the average time to clear exports through customs, the documentary compliance costs to export, the ease of arranging competitively priced shipments and the percentage of firms making informal payments to public officials. These variables were collected from the World Bank's World Development Indicators. They represent the most important government regulations impacting GVCs, as discussed in the related literature (Ahmad and Primi 2017; Farole 2015). As some of these datasets consists of continuous qualitative data and different units of measurement, they were developed as linear transformed variables, weighted as a percentage or as a multiplicative inverse percentage of the largest value—with the highest value representing the starkest barriers.

3.2 Analysis

The rate of GVC participation in sub-Saharan Africa is indicated by Fig. 1, which includes the forward linkages, backward linkages and also their sum, all analysed as

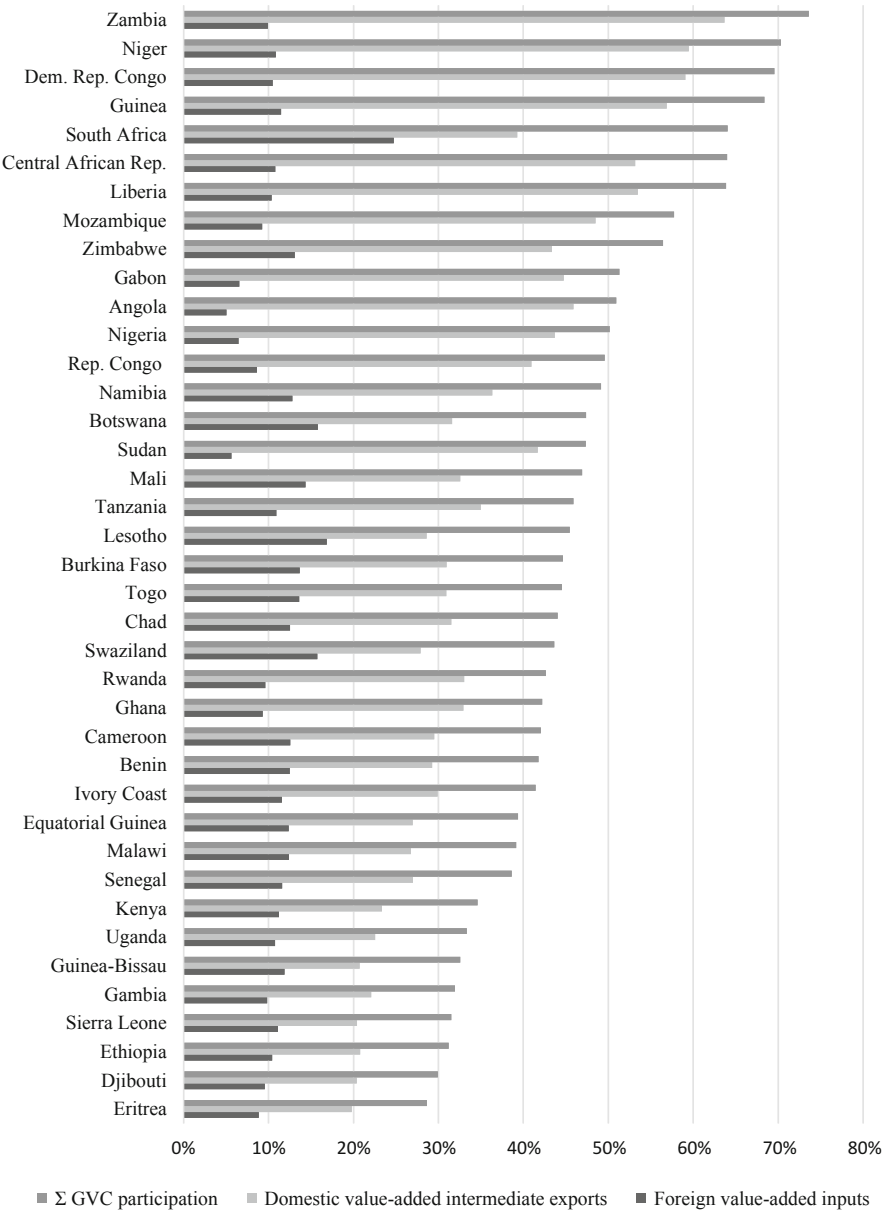

Fig. 1 GVC Participation in Sub-Saharan Africa. Source: Author's own compilation, based on data from GTAP (2011) and OECD (2013)

a percentage of total exports. The mean GVC participation rate of sub-Saharan African countries is very high, comparable with those in the Global North indeed. The country with the highest rate is Zambia at 73.6%. However the per country

variation is also very strong, with the lowest participation rate being reached by Eritrea at 28.6% and the standard deviation being 12.1%. This indicates that GVCs are an extremely important component of sub-Saharan African economies, even though there is significant variability from one country to another. Yet, given the subcontinent's constantly low market share of GVC trade, the rate of participation therein may not be a very useful measure of the level of value captured by sub-Saharan Africa—which is, however, the most important facet of participation.

As indicated by Fig. 1 and the upper graph in Fig. 2, the consumption of foreign production inputs is relatively low and constant for all countries—with the exception of South Africa. It is also relatively independent of value-added exports. This indicates that, despite the high GVC participation level in sub-Saharan Africa, per capita gross domestic product value of upgraded products, processes and related functions is exceedingly low. Very few of the GVC exports consist of finished consumer goods or upgraded products. Rather, the majority of exports are non-upgraded and serve as foreign production inputs. Thus the participation of sub-Saharan African countries in GVCs is, to a degree, detrimental to their developmental aims, substituting the export of upgraded products, processes and related functions with cheap non-upgraded production inputs.

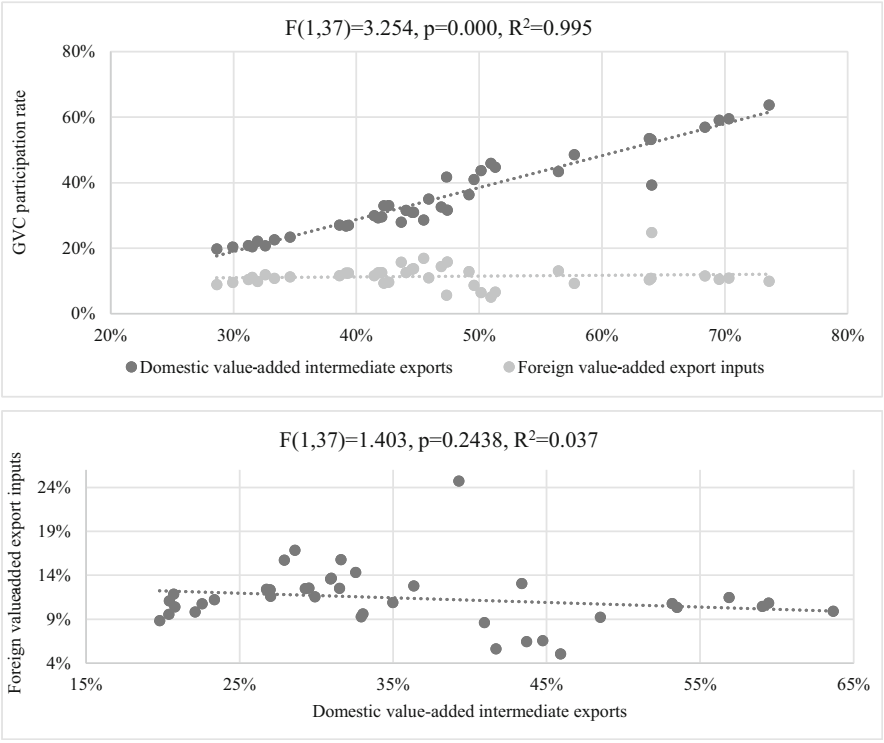

Fig. 2 Correlation of GVC participation, domestic value-added intermediate exports and foreign value-added export inputs. Source: Author's own compilation based, on data from GTAP (2011) and OECD (2013)

The lower graph in Fig. 2 moreover reveals that the foreign value-added component of exports declines slightly with the growth of domestic value-added intermediate exports, although the relationship is relatively inelastically correlated and is statistically insignificant. This confirms that increasing foreign competition and compliance costs, due to trade liberalisation, incentivise firms in sub-Saharan Africa to export non-upgraded production inputs instead of more profitable upgraded products, processes and related functions. In contrast, in the Global North the foreign value-added component of exports generally increases with the level of participation in GVCs—particularly due to trade liberalisation. Domestic value-added intermediate exports in the Global North are also inelastically correlated with participation in GVCs, with the exception of resource-rich countries and ones with large domestic markets (Kowalski et al. 2015). As a result, trade liberalisation benefits are uneven and reduce the regional competitiveness of sub-Saharan economies—as well as their ability to capture value-added production spillovers.

In order to find out why GVCs in sub-Saharan Africa are weighted towards lower-tiered functions, Fig. 3 correlates domestic value-added products in GVC exports as a percentage of total exports—as well as various potential causes, excluding therein

GVC participation, R= .840, R^2= .705, Adj R^2= .670, F(4,39)=20.292, p<0.000, Std.Err. est.: 0.07066				
N=37	*β*	*Std.Err. (b)*	*t(734)*	*p-value*
Intercept	0.142	0.088	1.622	0.114
Mining	0.422	0.082	5.128	0.000
Agriculture	0.107	0.087	1.221	0.230
Manufacturing	0.142	0.099	1.434	0.161
Services	0.231	0.228	1.016	0.317

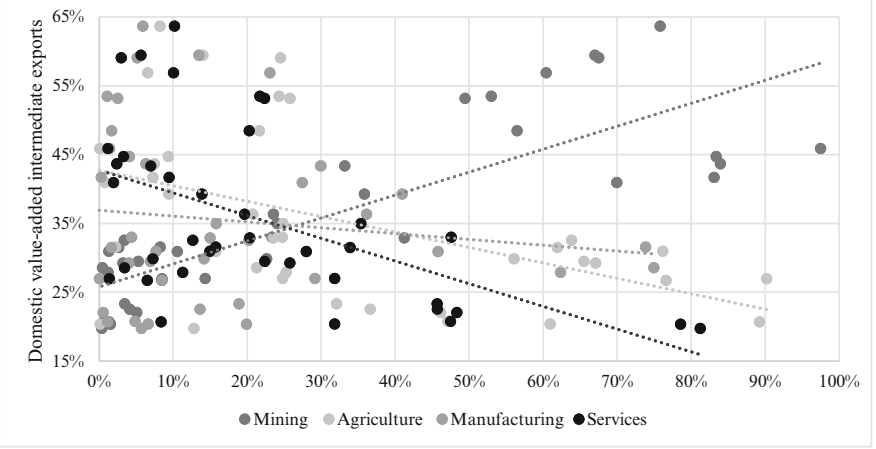

Fig. 3 Correlation of GVC participation and selected industries as a share of GDP. Source: Author's own compilation, based on data from GTAP (2011) and OECD (2013)

the inflating values of imported foreign production inputs. The only significant explanatory factor for the high GVC participation level in sub-Saharan Africa is the export of unrefined ores and fuels. There is a positive correlation between mining as a percentage of export revenues and domestic participation in GVCs. The insignificance of manufacturing and services is expected, due to volatile markets and locally increasing rates of return. It is, conversely, surprising that agriculture is not a significant factor in GVCs. This can be explained by the rigorous international compliance costs encountered: only certain countries have the capabilities to export specialised agricultural niche products, such as Kenyan tea or South African fruits and wine. Most other sub-Saharan agricultural produce consists only of non-tradable goods or low-quality substitute products (Gibbon and Ponte 2005).

Figure 4 indicates the relationship between government regulatory policies and participation in GVCs. It indicates that, at a 10% level of significance, the most important variables are the percentage of firms making informal payments to public

GVC participation R= .497 R^2= .247 Adj R^2= .133 F(5,37)=2.1617 p<0.082 Std.Err est.: 0.11457				
N=37	*β*	*Std.Err. (b)*	*t(734)*	*p-value*
Intercept	0.325	0.122	2.659	0.012
Average time to clear exports	-0.130	0.091	-1.421	0.164
Documentary compliance export cost	0.241	0.133	1.815	0.078
Informal payments to public officials	0.220	0.109	2.016	0.052
Ease of arranging competitively priced shipments	0.163	0.288	0.567	0.574
Weighted mean tariff rate	-0.149	0.120	-1.244	0.222

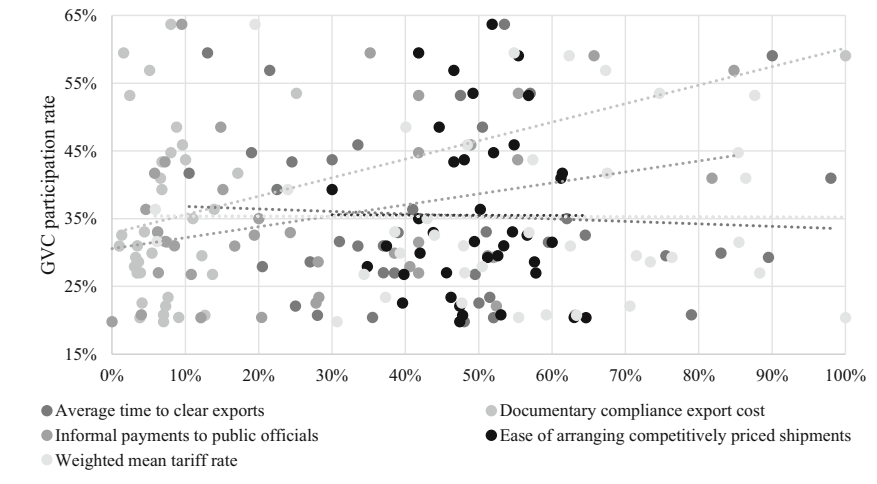

Fig. 4 Correlation of GVC participation and government regulatory policies. Source: Author's own compilation, based on data from World Bank (2016)

officials and documentary compliance costs. Somewhat counter-intuitively, these factors are positively correlated with participation in GVCs. The most sensible explanation for this is that informal measures in relational chain governance structures facilitate the bypassing of onerous tariff barriers and documentary compliance costs. The insignificance of tariffs, export clearance times and logistical service costs does not imply that these are not still key barriers to increased participation in GVCs. They may well serve as significant trade barriers in the export of higher-value upgraded goods, but nevertheless do not form important cost factors or trade barriers in the export of low-value, bulky raw production inputs—namely, fuels and ores.

4 Conclusion

This chapter has investigated the macro-economic distribution of GVCs in sub-Saharan Africa, using multivariate regression analyses. It has shown that the participation in GVCs of many (but not all) sub-Saharan African countries is higher than in the Global North. Thus, GVCs are a significant feature of sub-Saharan African economies. However, given that foreign value chain inputs are low, inelastic and insignificantly correlated to GVC participation, most trade is focussed on low-quality, lower-tiered production inputs—thus explaining the subcontinent's low share of global trade. There is little competitive advantage in exporting non-upgraded products as foreign production inputs.

Considering the insignificance and inelasticity of the correlation vis-à-vis exports between domestic value-added intermediate exports and foreign value-added production inputs, it is plausible to conclude that the high participation level of sub-Saharan African countries in GVCs is not very beneficial to these economies. They are not gaining from trade liberalisation polices, due predominantly to market volatility and increased foreign competition. The stochastic nature of local markets and the high compliance costs in fragmented trade blocs further incentivise the production of undiversified non-upgraded products, thereby reducing the chain spillovers necessary for upgrading and diversification. The rather high level of domestic value-added intermediate production, exported to serve as inputs in production processed abroad, results from the export of fuels and ores. This skews and overestimates the GVC participation of sub-Saharan African countries, confirming their low level of domestic product upgrading and explaining their only paltry share in global markets. The fact that agriculture, manufacturing and services are negatively correlated with participation rates in GVCs indicates that trade liberalisation, trade bloc fragmentation, external compliance costs and undiversified non-upgraded production undermines the local growth spillovers that could otherwise result from participation in GVCs. In sum, the developmental potential of GVCs in sub-Saharan Africa is limited and unequally distributed—that based on the uneven spread of mineral resources.

In contradiction to some of the initial thoughts of this chapter, government regulation actually has very little impact on participation rates in GVCs in

sub-Saharan Africa. Documentary compliance costs and informal payments to public officials are significantly and positively correlated to participation in GVCs, indicating that these are not significant barriers—but rather that corruption reduces compliance costs. The insignificance of the efficiency of export clearance, logistical service costs and tariffs does not imply that these factors are not key barriers in the exporting of higher upgraded or niche products. It only means that they are not significant for the export of unprocessed fuels and ores.

Given its methodological framework, this study has only a limited capacity to contribute to the better understanding of the governance of GVCs, relational chain structures, proximities of firms and the power relations between them. These issues are best analysed in qualitative meso-level case studies instead, as demonstrated by a number of chapters in this book. The present study also suggests that the GVC participation index is useful to distinguish between value-added trade and other export trade, but the model should be expanded because it only measures raw participation in value chains—and not where value capture occurs through product upgrading.

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The Prospects for Regional Value Chains in the Automotive Sector in Southern Africa

Chelsea Markowitz and Anthony Black

1 Introduction

Economic growth rates in Africa since the year 2000 have been impressive, and in some cases even spectacular. It is, however, a striking fact that manufacturing has not kept pace. The level of industrialisation remains low and manufacturing has declined as a share of gross domestic product, accounting for only 10% of continental output in 2015. Examples of dynamic manufacturing growth are few and far between. With South Africa being a partial exception, there are relatively few large-scale, indigenous manufacturing firms and a paucity of domestic technological development. Examples of dynamic industrial clusters are scarce. Even more striking is the virtual absence of regional value chains (RVCs), which have been an integral component of Asia's rapid industrialisation meanwhile (ASEAN-Japan Centre 2017; UNESCAP 2015). These problems are manifest in Africa's heavy reliance on imports of manufactured goods and limited such exports. In this chapter, we examine the automotive industry in Africa. More specifically the focus is on the Southern African Development Community (SADC), and the prospects for the development of RVCs within this important sector.

Along with the burgeoning middle class, the market for vehicles in sub-Saharan Africa is currently growing rapidly—albeit from a low starting base. However much of this demand is being met by imports, because, outside of South Africa, production is almost non-existent. With South Africa again being the exception, over 80% of these imports consist of second-hand vehicles—sourced mainly from Europe and

C. Markowitz
South African Institute of International Affairs, Johannesburg, South Africa
e-mail: chelsea.markowitz@wits.ac.za

A. Black (✉)
School of Economics, University of Cape Town, Cape Town, South Africa
e-mail: anthony.black@uct.ac.za

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Japan. Vehicle imports therefore provide a good proxy of market size, and imports of light vehicles into sub-Saharan Africa (excluding South Africa) amounted to 1.5 million in 2013 (the bulk of these are pre-owned ones)—having grown at a rate of 14% per annum since 2003 (Black and McLennan 2016). With the more recent slowdown in economic growth, this rapid pace of market expansion has not been sustained; by 2030, however, the light-vehicle market (including South Africa) will be very significant. The question then arises as to where these vehicles will be produced: Will sub-Saharan Africa continue to rely on imports, or can it develop an industry of its own that would draw in a number of countries to create competitive RVCs?

The next section examines the current state of the automotive industry in Africa, and in SADC in particular. The automotive industry is scale-intensive. We show that outside of South Africa, and some countries in North Africa, production is very limited. For the industry to grow in Africa, it has to transcend national borders—not just in terms of exporting but also of production, by developing competitive RVCs. The implications of this for regional integration and RVCs are examined in the second section, where we provide international examples of the importance of scale and of the potential for regional integration as the basis for competitive RVCs. The requirements for achieving regional integration in the automotive sector are then set out in the third section. These are a viable 'automotive space', competitiveness in manufacturing and supportive policy arrangements. This leads us to make certain policy recommendations as part of the conclusion.

2 The Current State of the Automotive Industry in Africa

Africa as a whole accounted for less than 1% of global vehicle production in 2016. Outside of South Africa, and some countries in North Africa, vehicle production is almost non-existent. Annual sales of new vehicles are very low, as shown by Table 1 below, and in sub-Saharan Africa (outside of South Africa) the market is mainly supplied by imported used cars—which in many countries account for over 80% of domestic demand (Black and McLennan 2016). South Africa accounts for the bulk of continental output (599,000 vehicles in 2016), followed by Morocco (345,000 vehicles in 2016). The largest plant on the continent is in fact the 400,000-car-a-year plant built by Renault in Tangier, Morocco, with a total investment of EUR 1 billion. The vast bulk of its production is for export to Europe and, to a much lesser extent, the Middle East and North Africa. Automotive exports from Morocco have expanded from USD 0.4 billion in 2004 to USD 5 billion in 2015 (McKinsey 2016). Algeria and Egypt also feature industries that have been established for many years now. Egypt currently faces growing international competition, especially as a result of the Euro–Mediterranean Free Trade Agreement—under which tariffs for cars are scheduled to decline to zero by as 2019. Egyptian imports have risen sharply and only 59% of vehicles sold in 2014 were locally assembled, down from 66% in 2004 (El-Haddad et al. 2017).

Table 1 Total new-vehicle sales in selected African countries

	Annual sales (units)
South Africa	555,716
Egypt	181,001
Morocco	168,913
Algeria	94,408
Tunisia	47,359
Réunion	31,039
Libya	23,600
Mauritius	12,597
Kenya	11,886
Botswana	7600
Ivory Coast	7118

Source: OICA (2017)
Note: Data is for 2016. Nigeria is excluded due to data unreliability

In the rest of Africa outside of SADC, a number of countries such as Ethiopia, Kenya and Nigeria have small-scale assembly operations. Most of these involve minor semi-knocked-down (SKD) assembly,[1] with minimal or no local content. Automotive support policies are being developed in a number of countries, and the major multinational firms are investigating corresponding possibilities. Nigeria in particular has signalled its intention to launch an automotive industry, following the introduction in 2013 of the National Automotive Industry Development Plan. This places a 70% tariff on vehicle imports, while incentivising local production through zero tariffs on components. By 2016 there were 15 such assembly operations underway, far too many in such a small market. Also, this is SKD assembly; while it is stipulated that firms should move towards completely knocked-down (CKD) assembly within 5 years,[2] the Nigerian government is having difficulty enforcing this (Black and McLennan 2016). A further problem is the proliferation of used vehicles. Though a ban on the import of these would arguably be necessary to stimulate the requisite demand for locally assembled vehicles, this would, of course, impact very negatively on consumers.

Within SADC, the automotive industry is completely dominated by South Africa. Ever since the 1920s the South African government has expended much effort on building up and protecting its automotive industry, with local content requirements dating back to the 1960s. A process of gradual liberalisation commenced with the advent of the Motor Industry Development Programme, in place from 1995, which provided import-duty rebates based on the costs of local materials in exported vehicles and components. This was followed in 2013 by the Automotive Production and Development Programme (APDP), which provides import-duty rebates based

[1] SKD assembly involves the final assembly of partly assembled vehicles.

[2] CKD assembly involves full assembly, including the welding of body panels. It requires substantial investment, which is not the case under SKD assembly.

on local value addition in the supply chain. Additionally, the APDP has put in place stable import tariffs on components and vehicles, an import rebate duty for a significant volume of vehicles being produced in a given assembly plant as well as cash grants for vehicle and component manufacturers for investments made under the Automotive Investment Scheme. The industry in South Africa, which includes seven assemblers of light vehicles (BMW, Ford, Isuzu, Mercedes-Benz, Nissan, Toyota and Volkswagen) and a number of truck assemblers, employed 33,000 workers in vehicle manufacturing and 80,000 in the components sector in 2016. It exported 344,859 vehicles in 2016 to the value of USD 8.03 billion. Component exports—standing at USD 3.6 billion—are dominated by catalytic converters, which alone accounted for 41.3% of the total value of such exports in 2016. South Africa also exports substantial volumes of engines and engine parts, radiators, tyres and other components (AIEC 2017).

In the other SADC countries there is very little automotive production, and most of them are reliant on imports of (mainly used) vehicles. Small-scale production in Zimbabwe dates back to the 1960s, and is a result of import substitution. Back then, Zimbabwe developed both components and assembly industries. In the 1990s, Willowvale Mazda Motor Industries had a capacity of 10,000 vehicles a year (Black and Muradzikwa 2004; Yu 2012). However, output has virtually collapsed with the economic and political instability of the last two decades. Botswana had a brief stint with a targeted industrial automotive programme, and an assembly plant was even established under licence from Hyundai in 1993. The plant benefitted from its proximity to South Africa and the common Southern African Customs Union (SACU) tariff. It initially enjoyed some relative success, but was eventually closed down in 2000 (Zizhou 2009). Mozambique has a small components production industry, and in 2014 the country's first two SKD assembly plants, owned by Hyundai and Tong Jian respectively, were opened—though these operate only on a very small scale (Deloitte 2016). As the third-largest economy in sub-Saharan Africa, Angola has a potentially significant and growing market. The country has a duty structure in place on the import of vehicles, and has expressed its intention to develop the automotive industry as a part of efforts to diversify from oil production (*Business Report*, 13 December 2016). Currently, there exists some minor SKD assembly in the country. In Zambia, China's Gonow is in the process of establishing an assembly plant (*Daily Mail*, 24 October 2017). Namibia has also demonstrated the intention to develop its automotive industry. In the country's 2015 industrialisation strategy 'Growth at Home', the automotive industry is positioned as one of the ten priority sectors. Up to now, Namibia has only attracted small-scale investment in vehicle assembly, however (*Business Day*, 12 March 2018).

It is clear, therefore, that within SADC, South Africa is the only country with a production base of any significance. Other countries do clearly have an interest in vehicle production, even if their current facilities are essentially SKD plants—which add minimal value, and use virtually no domestically produced inputs. The result of this unbalanced development is that automotive trade within SADC is overwhelmingly in one direction, namely from South Africa to other SADC countries. Aided by the SADC Free Trade Agreement, total automotive exports to SADC amounted to USD 1.86 billion in 2016—which was 16% of South Africa's total automotive

Table 2 South African automotive foreign trade

Exports to	Value (in USD million)	Imports from	Value (in USD million)
Germany	3181.5	Germany	4740.4
United States	1537.6	Japan	1367.4
Belgium	972.7	Thailand	1263.4
United Kingdom	611.5	China	943.4
Namibia	596.8	United States	780.4
Japan	496.1	India	653.3
Spain	378.6	United Kingdom	446.8
Botswana	361.2	South Korea	390.7
Australia	334.7	Spain	386.2
France	259.5	Brazil	319.0
South Korea	210.9	Italy	238.9
Zambia	193.0	Czech Republic	221.8
Zimbabwe	163.0	Sweden	168.4
Thailand	144.9	France	167.8
Mozambique	136.8	Poland	164.7
India	135.3	Romania	158.2
Canada	98.7	Hungary	114.4
Swaziland	96.5	Slovak Republic	103.5
Argentina	86.7	Turkey	94.9
Czech Republic	84.3	Taiwan	88.0

Source: AIEC (2017)
Note: Data is for 2016. SADC members are indicated in italics. Values have been converted from ZAR to USD, using OANDA average exchange rates for 2016

exports. These exports consist primarily of vehicles and aftermarket parts (AIEC 2017). As indicated by Table 2 below, while SADC countries are key export destinations none feature as a significant source for automotive imports into South Africa. Angola, Botswana, Lesotho and Zambia collectively supply less than USD 100 million of component exports annually to South Africa, illustrating the absence of RVCs. South Africa boasts a much larger industry, as well as production incentives for both components and completely built-ups (CBUs)—meaning fully assembled vehicles. Some other SADC countries have complained that these production incentives undermine the potential for local automotive production. However, representatives of the National Association of Automobile Manufacturers of South Africa (NAAMSA) and of the South African Department of Trade and Industry counter that the greatest barrier to regional integration is rather the lack of both capacity and demand in other SADC countries.[3]

There has been some relocation of labour-intensive suppliers to Botswana and Lesotho. Lower labour costs and a seemingly more stable labour relations environment, coupled with government fiscal support given to the industry in these

[3]Interview with a South African automotive industry representative, Pretoria, 8 February 2016, and with a South African government official, Pretoria, 14 March 2016.

countries, have made this a viable business decision.[4] Given that Botswana and Lesotho form part of SACU with South Africa, they also enjoy the benefits of the APDP. The relocation in 2015 of the automotive component manufacturer Pasdec from South Africa to Botswana is evidence of these advantages (*Daily Express*, 13 February 2015). While this represents but a small step towards developing value chains in the region, as South Africa continues to deepen its production base for components, even South African government officials nevertheless expect such regional shifts to increase.[5]

3 Developing an 'Automotive Space': Some Lessons from International Experience

In considering the potential for the automotive industry in emerging markets, Humphrey and Oeter (2000) use the concept of a viable 'automotive space'. This can take various forms. For instance, China and India comprise large and rapidly growing markets that have sufficient scale in their own right. Producer countries on the periphery of major markets can create a viable automotive space by integrating into these markets. Mexico in relation to Canada and the United States is one example, because of the North American Free Trade Agreement. Slovakia and other newer member states of the European Union are other ones. Morocco provides a more recent case, as it has attracted a global-scale Renault plant, which, as noted, mainly supplies the EU market. For countries that neither themselves constitute large markets nor adjoin them, an automotive space could take the form of a regional market—where trade agreements grant easier market access to member states and, thus, effectively enlarge the home market. Of course, for these emerging production locations to succeed then appropriate policies would be required—together with the capacity to upgrade production over time.

As indicated above, the presence of large economies of scale means that the automotive industry requires a large regional market or proximity to a major one. The reality is that sub-Saharan Africa consists of a large number of mostly small economies. Their combined market is, however, significant, with a GDP in 2013 of USD 1.66 trillion and a passenger-vehicle market of 1.84 million units per annum, as estimated by Black and McLennan (2016). A comparison with India, shown in Table 3, indicates the extent of the problem—but also the degree of opportunity. The total GDP of India and of sub-Saharan Africa as well as their respective average per capita GDPs and population sizes are of the same order of magnitude. Vehicle market size is also similar for both. The major difference comes in production: India manufactures its own vehicles, while sub-Saharan Africa imports them. India is also a significant exporter, especially of small cars and motorcycles. In 2013, Indian net

[4]Interview with a South African automotive industry representative, Pretoria, 8 February 2016.

[5]Interview with a South African government official, Pretoria, 14 March 2016.

Table 3 India's and sub-Saharan Africa's vehicle markets, production and trade

	India	Sub-Saharan Africa
GDP (in USD billion)	1875	1659
Population (in billion)	1.252	0.937
Per capita GDP (in USD)	1498	1771
New-passenger-vehicle market	2,554,000	1,839,000
Passenger-vehicle production	3,139,000	265,000
Tariff level for passenger vehicles	100%	no unified tariff
Direct employment in industry	> 1 million	120,000
Passenger-car imports (in USD million)	276.5	11,402.1
Passenger-car exports (in USD million)	5556.5	4317.7
Commercial vehicle and bus imports (in USD million)	45.8	5701.3
Commercial vehicle and bus exports (in USD million)	901.6	1341.6
Motorcycle imports (in USD million)	29.1	74.6
Motorcycle exports (in USD million)	1648.2	1.3
Kits imports (in USD million)	120.9	241.2
Kits exports (in USD million)	271.7	11.2
Vehicle parts imports (in USD million)	3479.1	4834.9
Vehicle parts exports (in USD million)	3912.8	727.0
Motorcycle and bike parts imports (in USD million)	438.1	489.3
Motorcycle and bike parts exports (in USD million)	371.7	4.5
Net automotive trade balance (in USD million)	+8272.9	−16,340.2

Source: Black and McLennan (2016)
Note: Data is for 2013

automotive exports amounted to USD 8.3 billion. Moreover, India has its own brands such as Tata. Sub-Saharan Africa is heavily reliant on imports meanwhile and, apart from South Africa, exports very little. As a result, the region had an automotive trade deficit of USD 16.3 billion in 2013.

There are, of course, limitations to this rather simplistic comparison. Sub-Saharan Africa is well endowed in resources, which implies a corresponding comparative advantage. India has very limited resources in relation to its population size. Neither region has particularly strong manufacturing capabilities. The key difference is that India has an integrated single market, and it is protected by a high common external tariff. As a result, it has developed competitive automotive value chains consisting of assemblers as well as first- and second-tier suppliers (Okada and Siddharthan 2007). This appears to indicate that with complete regional integration, powerful RVCs could potentially emerge in (sub-Saharan) Africa.

As stated above, regional trade agreements can create viable automotive spaces. Two such examples are the Common Market of the South (Mercado Común del Sur, Mercosur) in South America and the Association of Southeast Asian Nations (ASEAN). In both of these trade blocs, the automotive industry has been central—and related multinational firms have been strong supporters of trade integration arrangements. However both trade blocs have encountered great difficulties in forging closer arrangements because these tend to lead to clustering in preferred

locations, excluding other member states. In the case of Mercosur, results have been mixed at best. The national interests of Argentina and Brazil have tended to frustrate progress. While there has been trade creation, it cannot be argued that Mercosur agreements have turned the region into a platform for exports to external markets (Arza 2011). ASEAN has been more successful, and the region has emerged as a major production and export hub—although Thailand is the dominant player herein by a significant margin, and has attracted considerable investment especially from Japan (Kobayashi et al. 2015; Techakanont 2014). However the creation of RVCs has been complicated, as apart from Thailand there have also been serious efforts by Indonesia and Malaysia to develop their own indigenous car brands too (Farrell and Findlay 2001; Natsuda et al. 2013). Nevertheless, the benefits of building strong RVCs—facilitated by supporting regional integration arrangements—are clear, as will be demonstrated below.

In South East Asia, a key building bloc was the ASEAN Industrial Cooperation (AICO) initiated in 1996; it is therefore instructive to examine this in some detail here. AICO was established by the ASEAN Secretariat as a temporary scheme (one finally phased out in 2011) in order to facilitate the eventual full implementation of a Common Effective Preferential Tariff (CEPT) for the ASEAN Free Trade Area (AFTA). Initially, under AICO two different businesses or company divisions operating in two different ASEAN countries could form an AICO arrangement and receive preferential AFTA tariff rates of 0–5% for raw, intermediate and finished goods before the AFTA rates were fully realised for all trade. Importantly, the arrangement required the companies to engage in industrial complementation,[6] industrial cooperation and/or resource sharing for the benefit of the host countries. The products enjoying the preferential tariff were required to have at least 40% ASEAN content, and the companies involved to have at least 30% national equity (ASEAN 2012a). The scheme was mainly utilised by Japanese automotive companies, which had played a major role in persuading the ASEAN Secretariat to adopt the scheme in the first place (ASEAN 2012b). Foreign investors utilising the scheme often produced a particular vehicle model in one country to export to the whole region and, less often, clustered their components' production across the region (Fujita 1998; Kohpaiboon 2015). Eventually countries in South East Asia began to produce for export out of ASEAN, most notably light trucks from Thailand.

Given the sizeable uptake of AICO by foreign firms and the success in reducing protection in the region, the scheme has been held up as a showcase example of facilitating regional integration. However, there are lessons to be learned from both the challenges and successes of AICO. One of the biggest difficulties with AICO was getting buy-in from member states, and thus creating the willingness to loosen national protection for the benefit of the scheme as a whole. For example, while the Thai government welcomed AICO and encouraged multinational investments, its Malaysian counterpart was worried about AICO's effect on its own domestic car

[6]Industrial complementation refers to the allocation of the manufacture of products that are complementary in a value chain to different countries.

producers (Fujita 1998). Automotive firms played a major role in pressuring ASEAN governments to adopt the scheme. In 1996, when as noted it was first initiated, combined vehicle sales in the four major markets (Indonesia, Malaysia, Philippines and Thailand) were almost 1.5 million units, which created a large enough market to achieve economies of scale in local production for the region. This, combined with the fact that all four of these countries had engaged in some prior protection and development of their own industries, meant that regional cooperation also held potential advantages for all participant countries (Farrell and Findlay 2001).

While ASEAN has implemented policies that have promoted the creation of supply chains between member states to further economic development, closer integration resulting from the formation of the ASEAN Economic Community in 2015 is already influencing the development of the automotive industry. A key question is whether politically induced economic integration in ASEAN and the industrial policies of individual member states are going to lead to fully integrated production, or whether companies are going to practice minimal localisation in peripheral markets such as Cambodia, Laos, Myanmar and Vietnam. For example, the Thai industry is supplied with labour-intensive parts such as wiring harnesses and seat covers on a small but expanding scale from Cambodia, Laos and Myanmar (Kobayashi et al. 2015). This latter route could mean that these countries get locked into the assembly of imported components or the manufacture of labour-intensive ones.

4 Requirements for Regional Automotive Value Chains in SADC

As mentioned above, three factors are necessary to develop a sustainable automotive industry in developing countries: a viable automotive space, competitive manufacturing capability and supportive policy arrangements (in this instance, particularly regional integration). With regard to market size, regional integration is making slow but steady progress in sub-Saharan Africa—and the widely accepted core objective here is to improve the prospects for industrialisation by expanding the regional market. The five main overlapping trade agreements—the Common Market for Eastern and Southern Africa (COMESA), the East African Community (EAC), the Economic Community of West African States, SACU and SADC—are well established, and offer a degree of favourable market access among member states. A process towards creating the Tripartite Free Trade Area, including COMESA, the EAC and SADC, was launched in 2015. This is now culminating in the African Continental Free Trade Area, which will potentially bring together 55 countries with a population of 1.2 billion people and a combined GDP of USD 3.4 trillion between them.

When regional integration in the automotive sector in Africa was first explored in the 1990s, one of the biggest limitations was the small market demand for cars

(Black and Muradzikwa 2004). However, on the back of significant economic growth, these dynamics are changing and currently very low levels of vehicle ownership offer tremendous possibilities for growth. SADC has a population of 392 million people and is also a huge potential market, although demand has been negatively impacted by low growth in the two largest economies, Angola and South Africa. When AICO was implemented in ASEAN, the CEPT signified that its main intent was to serve the regional market. At the time, there was sufficient regional demand to drive foreign investment and regional production at scale. Combined vehicle sales in the four major South East Asian markets were almost 1.5 million units, far above the current levels in SADC. Only a couple of countries in North Africa demonstrate sufficient levels of demand at present. Additionally, much of the SADC market is served by imported second-hand cars. South Africa prohibits the import of used vehicles, but following suit would create a major affordability issue in most SADC countries.[7] However for an assembly industry to have any future in the region, used car imports will unquestionably have to be restricted.

Beyond the rather unclear prospects of a viable automotive space, limited manufacturing capabilities and competitiveness in the SADC region present additional significant challenges to developing RVCs via AICO-like schemes. Deficits in electricity and water provision, and especially in transport infrastructure, are evident throughout the region (Black and McLennan 2016). For example, inadequate rail systems linking the SADC countries mitigate against the location of suppliers in neighbouring countries. In any event, in the automotive sector related firms prefer to have their key suppliers in close proximity in order to ensure 'just in time' supply. Non-tariff barriers in the region, including border delays and cumbersome regulations, also increase the costs of regional trade. Even in the case of Lesotho, which is centrally located with duty-free access to South Africa and fairly seamless border controls, firms cite the difficulties of sourcing supplies from a neighbouring country (Black 2017). Although the lack of manufacturing competitiveness is indeed a challenge, it should not be seen as an absolute barrier. Improved infrastructure, which can greatly decrease manufacturing costs, is continually being developed in SADC under the 2012 Regional Infrastructure Development Master Plan and the 2012 Programme for Infrastructure Development in Africa on the continent more broadly.

Unit labour costs in Africa are generally higher than in Asia, and this certainly applies in the automotive sector as well (Barnes et al. 2017). Additionally, there has been strong labour union opposition to relocating production to lower-wage countries in the SADC region and beyond. For example, the National Union of Metal Workers of South Africa has strongly opposed the relocation of subcomponent manufacture to cheaper SACU countries (Markowitz 2016). There are other constraints as well. For example a SADC Secretariat representative, citing the case of a component plant in Botswana, stated that whenever there was a higher-level technical issue, workers had to wait for an expert to come from South Africa, which

[7]Interview with a SADC official, Gaborone, 8 February 2016.

created costly delays.[8] Exceptionally high-quality standards in the automotive industry also constrain the development of a regional supply base.

As the example of ASEAN has demonstrated, supportive policy arrangements are vital for RVCs to develop. SADC countries face the challenge of balancing the protection of their national industries while simultaneously opening up to regional trade. This is complicated by the fact that there is currently no other developed automotive hub apart from South Africa. Yet the biggest obstacle facing the integration of the industry within the region is that of the costs of trade diversion, which are particularly high given the large presence of low-priced, second-hand cars in most national markets. For automotive industrialisation to develop on a regional basis, there would have to be major limitations placed on the import of used cars. But why, for instance, would Mozambicans want to buy (relatively expensive) new cars made in South Africa rather than cheap, imported, second-hand ones from Japan?

Focussed automotive policies as well as some level of protection are necessary for SADC countries outside of South Africa to develop their industries and ultimately cultivate functioning RVCs. SADC member states that have automotive industries protected as sensitive ones within SADC's free trade area have indicated that the APDP and South Africa will undercut their own nascent enterprises if they loosen domestic protection in favour of a regional tariff scheme. SADC rules of origin are difficult to adhere to given the lack of capacity (especially for the export of CBUs), thus limiting the prospects for the regional free flow of goods.[9] Other SADC countries also do not have the necessary capacity or financial support to achieve the local content levels prevalent in South Africa. Additionally, as a customs union, all countries within SACU must comply with the APDP. Although this creates the potential for countries to utilise APDP support, it also leads to many challenges—as Botswana, Lesotho, Namibia and Swaziland lack the capacity to comply with regulations. In order to receive a production rebate credit certificate (PRCC) for exporting under the APDP, they must achieve a level of local value addition that they currently cannot (unless they export components only to South African original equipment manufacturers (OEMs) that apply for the PRCC). Foreign companies operating in these four countries must also apply for the PRCC in their own country. According to industry bodies, this has never been done before and the governments are unlikely to have the know-how to do so.[10] Thus, there are significant policy barriers in facilitating free trade in the SACU and SADC regions.

We have argued above that regional integration is critical to the development of the car industry in (sub-Saharan) Africa. This particular industry could also be a driver of regional integration, as vehicle producers place pressure on governments to increase market access and improve cross-border infrastructure (Lung and Van Tulder 2004). As noted, this has been the case in South East Asia already. Yet, it

[8]Interview with a SADC official, Gaborone, 8 February 2016.

[9]Interviews with a South African automotive industry representative, Pretoria, 8 February 2016, and with a South African automotive industry advisor, Johannesburg, 7 March 2016.

[10]Interview with a South African automotive industry representative, Pretoria, 8 February 2016.

is also possible that lobbying by private companies has the opposite effect in the short term—as countries raise special tariffs to protect their domestic industries. For example, Toyota's South African operation has seen a decline in exports to the rest of the continent as a result of higher tariffs being levied in Algeria and Nigeria (AIEC 2015).

5 Conclusion and Recommendations

A growing middle class in Africa is creating a surge in demand for motor vehicles. This represents a significant industrialisation opportunity, if competitive RVCs can be developed. However, SADC is some distance away from where ASEAN was when AICO was first implemented. There is an argument that the smaller economies could be drawn into RVCs as suppliers of major components for cars assembled in South Africa (or, say, Zambia). To some extent this is what has happened in ASEAN and Mercosur, where the automotive industry has played a leading role in driving regional integration. In ASEAN, in particular, there has developed a degree of specialisation and complementation involving Indonesia, Malaysia, the Philippines and Thailand. But there is an important distinction to be made with SADC, and with sub-Saharan Africa more generally. The aforementioned ASEAN countries are all medium- to large-sized markets, and all have a history of automotive production. The small SADC automotive cluster is already spread across three major locations (Durban, the Eastern Cape and Gauteng), all of which are situated in South Africa. It is difficult to envisage the emergence of many more such clusters in SADC. Even Lesotho, with its central location with respect to the major car-producing regions in South Africa, struggles to attract parts makers to invest in the country, given the extremely demanding quality and delivery reliability standards that exist in the automotive sector (Black 2017). Perhaps there is scope for automotive industry cooperation between the larger economies in their respective regions, for example Kenya, Nigeria and South Africa, but distances and especially transport costs are high between these countries.

Nevertheless, South Africa has an important role to play in capacitating the industries of other SADC countries. According to an interviewee from the Department of Trade and Industry, South Africa is 'fully supportive of regional industrialisation as a complement to growth dynamics for the South African industry'.[11] As indicated previously, South Africa is already seeing the movement of some of its component production to other SACU countries. South Africa can also assist in transferring skills and knowledge capacities to the region. The non-profit Automotive Supply Chain Competitiveness Initiative, established in South Africa in 2013, aims to enhance supplier competitiveness, increase localisation and facilitate

[11]Interview with a South African government official, Pretoria, 14 March 2016.

supportive industrial policies and regulations.[12] The Automotive Industry Development Centre—a provincial agency established in the Eastern Cape and Gauteng to increase the local automotive industry's global competitiveness—entered into a partnership with the Japan International Cooperation Agency in 2016 to dispatch experts to assist in component supplier skills development (Kgaphola 2016). South Africa could look to assist countries in the region in implementing similar capacity development programmes and partnerships.

The imperative for South Africa to assist other countries lies in the economies of scale and increased foreign investments that are realised in the long term from developing integrated RVCs. Even in the short term, the development of automotive industries outside of South Africa gives that country's component manufacturers the opportunity to export to nascent assembly operations in the region. One potentially important development is NAAMSA's recent institutionalisation of the African Association of Automotive Manufacturers. This body seeks to provide an independent perspective on identifying synergies and providing support in automotive industries on the African continent. They have placed focus primarily on collaboration with Nigeria, but are also looking to involve Algeria, Angola, Egypt, Ethiopia, Kenya and Morocco.

A strategy that worked well in the ASEAN region, and particularly in Thailand, was crowding investment towards specific products. By focussing policies on the production and export of one-tonne pickup trucks, Thailand began with assembly operations but eventually gained deep levels of expertise and value addition via this model. This allowed it to become a major producer and exporter of one-tonne pickup trucks, and as it moved up the value chain the benefits and its component production spilled over into the rest of the region (Barnes et al. 2017; Farrell and Findlay 2001; Kohpaiboon 2015). Other countries in the ASEAN region are also specialising in the production of specific cars, such as Indonesia in sport utility vehicles and Malaysia in passenger cars. Aftermarket production represents a potential starting point for SADC countries that do not yet have significant demand for new vehicles or the capacity to engage in competitive full-scale production. Certain countries such as Mozambique already have nascent component production specifically for the aftermarket (Black and McLennan 2016). By beginning with aftermarket components such as glass, low-level electrical ones and tyres, the capabilities developed could eventually be transferred into OEM assembly supply chains.[13]

With very low levels of vehicle ownership in tandem with rapid economic growth, the potential for a boom in automobile production in SADC and sub-Saharan Africa is evident. Notable barriers such as low market demand and marginal indigenous industries outside South Africa explain the minimal foreign investment up to this point. However these dynamics are changing, and regional integration is essential to the development of RVCs—which could lead to the establishment of a competitive automotive industry. The South African government

[12]For more information on this, see: http://ascci.co.za

[13]Interview with a South African government official, Pretoria, 14 March 2016.

together with multinationals based in the country are looking to create more regional synergies. In doing so, they need to adopt a far-sighted approach that encourages and enables other countries of the region to participate in emerging value chains. Regional integration is essential for developing a significant automotive industry, but the obstacles are considerable. The political geography of the region and the tendency of the industry to cluster in a few locations—which, in turn, develop key agglomeration advantages—mean that many smaller countries are likely to miss out on attracting investment. It will, therefore, be difficult for the automotive sector to drive regional integration independently of a broader integration process—one that develops RVCs in a range of sectors, and within the context of a larger common market.

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Expansion of Regional Supermarkets in Zambia: Finding Common Ground with Local Suppliers

Mwanda Phiri and Francis Ziba

1 Introduction

Zambia's economic emancipation in the early 1990s precipitated a number of structural changes that have since attracted an influx of foreign direct investment (FDI). This sustained inflow of investment into the free market economy, coupled with the commodity price boom from the start of the new century, saw Zambia experience record levels of economic growth. With this Zambia witnessed the modernisation of its retail sector, driven by the expansion of supermarkets—something that has, indeed, been taking place all over sub-Saharan Africa. This wave of retail modernisation has been spearheaded by South African supermarkets, which have capitalised on the winds of political and economic change in the early 1990s that brought economic liberalisation, globalisation, regional integration and, in consequence, opened the gates for FDI.

In 1995, Shoprite pioneered the way into Zambia's unsaturated retail space, gained first-mover advantages and now leads the retail market there. Game followed in 2001. Spar opened its first store in Zambia in 2003. Pick n Pay joined in 2010. Choppies, Food Lovers and Woolworths, the first with its origins in Botswana, have also penetrated Zambia's retail market. In 2016, these stores were estimated to collectively account for 14% of the retail and wholesale trade in the country. This also happens to contribute a major share to Zambia's gross domestic product, according to data provided by the Central Statistical Office.

Domestic factors that have facilitated this development are, first of all, increased urbanisation rates, especially in the Central, Copperbelt, Lusaka and Southern Provinces. In total, Zambia's urban population has doubled since the beginning of the current century. Advertisements and marketing have led to new patterns of food

M. Phiri (✉) · F. Ziba
Zambia Institute for Policy Analysis and Research, Lusaka, Zambia
e-mail: mphiri@zipar.org.zm

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consumption in urban areas, further spurring the growth of supermarket chains. Another factor propelling their spread is the growth in national income, largely driven by the commodity price boom of the first decade of the twenty-first century. Per capita income in Zambia rose from less than USD 1400 in 1990 to nearly USD 3700 in 2014, leading to the reclassification of Zambia as a lower middle-income country. Associated with this prosperity has been an emergence of the middle class, whose higher income has resulted in greater domestic demand for sometimes pricey and fast-moving consumer goods. Supermarkets adapting their business models to better suit poorer urban customers as well as investments in more efficient procurement systems are further key determinants (Weatherspoon and Reardon 2003).

The expansion of supermarkets initially concentrated on the central business districts and prime shopping malls in major cities and towns along the Line of Rail, which runs from Livingstone on the border with Zimbabwe to the capital Lusaka, to Ndola in Copperbelt Province. However there has been a certain shift in location strategy, following changes in retail procurement logistics technology and inventory management that have led to a dramatic reduction in costs and broadened the scope of supermarkets' products to include mass-market items in addition to high-price luxury niche ones too (Reardon et al. 2005). Supermarkets now spread into peri-urban, low-income areas, which are more densely populated and thus offer mass-market demand for basic food items. Foreign supermarkets' sales of fast-moving consumer goods, apparel, electronics and other home products have come to dominate the retail scene in peri-urban and urban areas. This development provides increasing competition to local shops and convenience stores.

With the expansion of supermarkets come a number of benefits, expectations and opportunities. These extend beyond merely improved quality and variety of services, as well as products at lower prices and direct employment effects. The intricate systematic organisation of the supermarket value chain from product design to consumption by end users suggests greater opportunities for indirect employment creation, agro-processing and related industrial growth and exports (Chege et al. 2015; Nordås et al. 2008; Reardon et al. 2007). Analogously, local processing firms can extract benefits from participation at various stages of the value chain—with production of processed food and other household products being the activities that we focus on in this chapter. At the upstream end, there is growth possible in agricultural produce such as fresh fruits and vegetables. At the downstream end, which involves higher value-addition, there are opportunities for the processing and packaging of beverages, canned meats, dairy products, other foodstuffs and of household products to meet the increasing demand for the fast-moving consumer goods frequently sold in supermarkets.

But notwithstanding these potential opportunities, supermarket chains in Zambia continue to grow amidst increasing concern that the participation of local suppliers and processing firms in corresponding value chains remains inadequate. Coupled with stagnant industrial growth, the limited integration of local processing firms into supermarket value chains perhaps presents untapped opportunities. For a country such as Zambia, with a strong impetus to industrialise and diversify its economy, the spread of foreign supermarkets could provide a catalyst for agro-processing and

light manufacturing and exports through the participation of local firms at various stages of the value chain—even if there are numerous challenges that impede such participation.

This chapter aims at assessing the opportunities for local suppliers that lie with the outlined expansion of supermarkets in Zambia. For this purpose, the following section elaborates more closely on how local suppliers may plug into both domestic and regional value chains. It sheds light on risks for local firms that result from foreign FDI in the retail sector. Afterwards, survey data is used to assess the prospects and limits of local suppliers in their relationships with supermarkets. This section also reveals the major challenges that local suppliers face in their everyday business activities. The conclusion provides policy recommendations to help Zambia benefit from these clear opportunities in the retail sector.

2 Plugging Into Domestic and Regional Value Chains

The procurement strategies of supermarkets have profound implications for domestic suppliers. For Zambia and other countries in sub-Saharan Africa, recent studies by Cattaneo (2013) and Emongor and Kirsten (2009) have shown that during the initial phase of operations, when foreign enterprises open their first stores, more than 80% of all processed food—and of other products as well—are imported from the respective countries of origin of the supermarkets. This obviously makes it difficult for local suppliers to integrate into corresponding value chains. At the outset, when supermarkets enter new markets, they also come with pre-existing standards for product quality, packaging and branding. They then impose these on local suppliers, and thus fundamentally change the structure of the supply chains—usually to the favour of foreign suppliers (Reardon 2006). The reason for this is that such standards pose considerable barriers to entry. As a result, local suppliers face fairly high degrees of marginalisation. The speed at which supermarkets later substitute imports with local produce depends on how adaptable local suppliers are to the needs and requirements of these supermarkets. The larger the gap between established foreign suppliers' and local ones' competitiveness, the greater the import propensity—and thus the crowding-out of local firms from value chains (Altenburg et al. 2016).

With regard to foreign providers, South Africa plays an unparalleled role herein. From 2008 to 2014, on average, more than half of Zambia's according imports came from South Africa, which is also, as noted, the country of origin of some of the major supermarkets that have expanded into Zambia. South Africa continues to be the main source of processed food and household products imported to and sold in Zambia. At the international standard industrial classification (ISIC) four-digit level, South Africa accounts for the highest share of Zambia's imports of processed bakery products, fruits and vegetables, cocoa and chocolate and sugar products, manufactured soft drinks, mineral waters, soaps, detergents and other food products. Incidentally, these product lines offer great potential for increased production in Zambia (and processing thereof too) (Fig. 1). Low-cost labour, a favourable climate

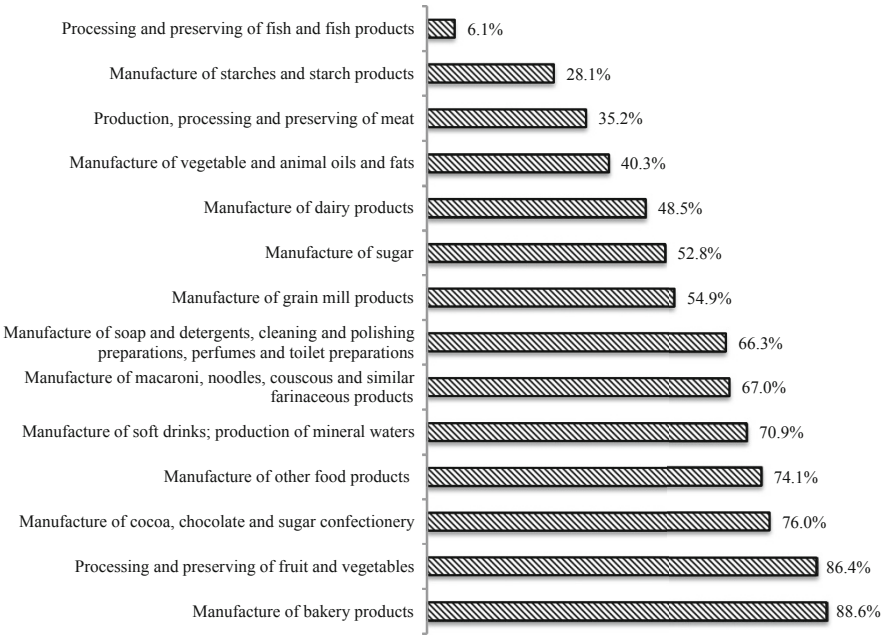

Fig. 1 South Africa's share in Zambia's imports of selected products. Source: Authors' own compilation, based on data from World Bank (2015). Note: The average value for the period from 2008 to 2014 is shown

and an abundance of arable land give Zambia a comparative advantage in the production of agricultural commodities that serve as inputs for processed food, suggesting potential for increased agro-processing activities (Zambia Development Agency 2014).

The integration into supermarket value chains has wider implications for local suppliers. Reardon and Gulati (2008) find that farmers who integrate into supermarket value chains tend to earn 20–50% more in net terms compared to their counterparts. Emongor and Kirsten (2006) find a positive impact on turnover for large farmers supplying fresh fruits and vegetables to supermarkets, albeit not for small-scale farmers—owing to the low proportion of them that are able to supply supermarkets (fewer than 5%). A number of reasons for this exclusion of small suppliers have been advanced. Among them are two main ones, as observed by Reardon et al. (2007). First, there appears to be an important fixed transaction cost component in exchanges between farmers and retailers. This makes it more expensive for retailers to deal with many small-scale farmers compared to a few large suppliers. Second, small farmers are often constrained financially in making the necessary investments, either because they do not have sufficient resources of their own or because they have problems accessing external funds from financial institutions—particularly in rural areas. Altenburg et al. (2016) add that the lack of economies of scale as well as product and process standards are further barriers to entry for local suppliers.

However, as foreign-owned supermarkets become established over time, there is evidence of supermarket supply chains incorporating more local suppliers. This is attributed to cost advantages and the convenience for supermarkets of sourcing their goods locally, as opposed to importing large volumes from their home base or from other external markets (Reardon and Gulati 2008).

Against this background, we argue that supermarkets provide formal-market value chains that can trigger local development and associated knock-on effects on employment creation, export growth, economic prosperity and poverty alleviation—provided that local firms manage to integrate into these value chains. The advantage of supermarket value chains over those of traditional markets, particularly for processed food, is that supermarkets have access to a larger and broader market, owing to their prime strategic locations in shopping malls as well as their spread across various cities and towns. Access to a wider market entails demand for higher volumes of processed goods from local firms—which could, in turn, lead to economies of scale as local firms expand their output.

In addition supermarkets possess more efficient procurement systems and are more consistent and predictable with their orders, easing production planning for their suppliers. The integration of local firms into supermarket value chains therefore has the potential to compel the former to improve their capabilities, in a bid to meet the higher quality demands and standards of supermarkets. Suppliers in developing countries are incentivised by the provision of marketing channels of sufficient scale to undertake investments in quality upgrading that pay off (Nordås et al. 2008). This, in turn, can allow for the acquisition and enhancement of production techniques and technologies, possibly culminating in increased industrialised production. In other words, supermarkets have the potential to stimulate agro-processing and related manufacturing industries. Stokke (2009) studies the effects of supermarkets on agricultural productivity, structural changes within agriculture as well as the dependence of supermarkets on domestic versus foreign farmers as suppliers. Her findings reveal that a win-win situation is not guaranteed for local suppliers herein. Productivity transformation is contingent on supply chain development initiated by supermarkets themselves. Local farmers are, therefore, faced with two options: they can benefit from supermarkets through productivity spillovers and increased demand, or get stuck in a low-productivity trap with limited interaction with the supermarket sector.

Apart from supplying the domestic market and upgrading in corresponding value chains, Zambian farmers could also benefit from increased regional trade. The multinational nature of supermarkets presents market entry points for Zambian firms to meet the growing demand for processed food and household products in Central and Southern Africa. At the beginning of this decade, Zambia recorded some significant growth in its non-traditional exports—meaning everything other than metal products. However, this growth tapered off in 2013. Non-traditional exports completely contracted in 2014 meanwhile. Figure 2 shows the share in regional markets of Zambia's exports of processed food and household products from 2008 to 2014. It has to be admitted that more than four-fifths of Zambia's exports, measured by value, are copper. In quantitative terms, processed agricultural products are also

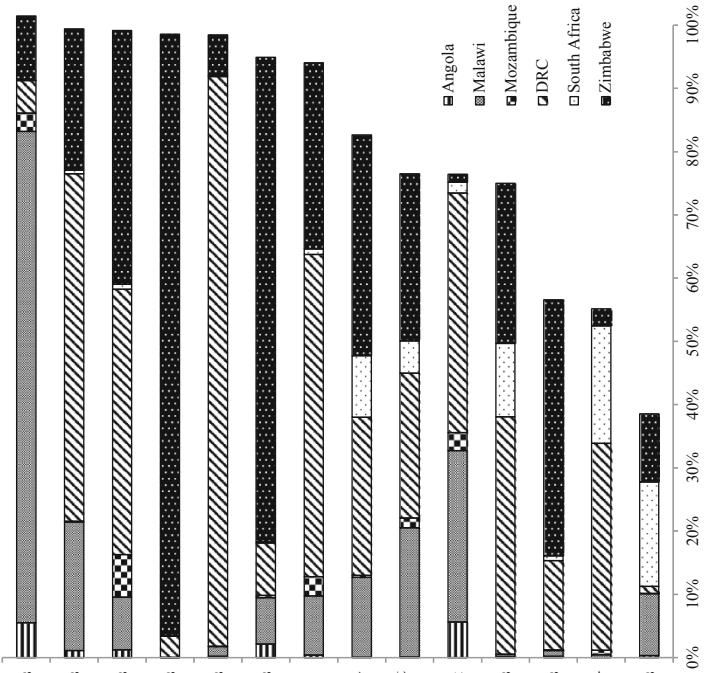

Fig. 2 Share of regional markets in Zambia's exports of selected products. Source: Authors' own compilation, based on data from World Bank (2015). Note: The average value for the period from 2008 to 2014 is shown

less relevant exports than, for example, cement, raw sugar and tobacco. Yet, this does not mean that there is no potential for the export of processed food and household products.

More than half of Zambia's exports across all goods selected for Fig. 2, except for processed and preserved fruits and vegetables, go to countries within the region. In particular, the Democratic Republic of Congo (DRC), Malawi and Zimbabwe, to a lesser extent also South Africa, are important markets. Zambia's penetration into these countries makes a strong argument for trade strategies aimed at further exploiting opportunities in regional markets. The reason for this is that Zambia's share in the regional countries' total imports of food and household products is rather low. For bakery products, sugar, cocoa, chocolate and sugar confectionery, imports from Zambia reach a share of more than 20% in Malawi and Zimbabwe. However, Mozambique and South Africa imported less than 7% from Zambia in all product lines of interest. Corresponding trade data for Angola and the DRC is, unfortunately, unavailable (World Bank 2015).

Supermarkets in these countries could potentially serve as entry points for goods from Zambia. For such exports to occur it appears necessary, however, that the corresponding products first successfully penetrate supermarkets in Zambia so that they will, at a later stage, be distributed back to South Africa and other countries in the region where supermarkets operating in Zambia also have a presence. Beyond sub-Saharan Africa, there is evidence for these processes being feasible. Reardon et al. (2007) show that imports from the same or other developing regions dominate those by retailers in Central America and Indonesia. Nordås et al. (2008) find that hosting a foreign supermarket chain increases exports from the host country to the home one of that chain. They attribute this development to the engagement of foreign supermarkets with local suppliers, which provides incentives for the latter to comply with product and quality standards—thus enabling them to sell in export markets. To achieve this, Zambian suppliers need to increase their competitiveness. This requires Zambia to address several both internal and external constraints to the increased processing of food and household products, light manufacturing and related exports. The following section sheds light on these obstacles, and suggests how to best overcome them.

3 Prospects and Limits for Zambian Suppliers

3.1 Methodology

Having a clear understanding of the wants and needs of supermarkets—and indeed the capabilities to meet them—is crucial for local firms to enter corresponding value chains. The objective of this study is, therefore, to investigate the required capabilities to make local firms more competitive and effective in integrating into supermarket value chains—and, along this process, to hence export their products to

regional markets. The study also examines the constraints hindering increased local-firm participation.

The following section is based on a mixed analysis of qualitative and quantitative data obtained from both primary and secondary sources. The principal dataset used to assess the determinants of local firms' participation in supermarket value chains was obtained by conducting a survey of these enterprises. The ones of interest were limited to local processing firms producing fast-moving consumer goods, such as processed foods and a select few manufactured household products. The choice of this category of firms for the survey was influenced by the potential of the respective products to promote value-addition and expand Zambia's industrial base through increased agro-processing and light manufacturing. The products were identified using the ISIC four-digit classification. At a broader level of classification, these are summarised into dairy products, processed grains, processed food, edible oils and selected household products.

The survey of local firms was augmented by data obtained from three of the five major supermarkets that operate in Zambia. The supermarkets were selected based on their market share, sales turnover, employment effects, volume of operating capital and length of operation in the country. Data from supermarkets was collected between June 2015 and February 2016, via interviews based on a structured questionnaire. This broadly covered supermarkets' procurement criteria and strategies, as well as perceptions of local firms' capabilities. Overall data for 99 local firms, consisting of 48 that supply supermarkets and 51 non-suppliers, was analysed. The majority of local firms, about 45% of the sample, were drawn from Lusaka Province. Copperbelt Province accounts for 29% of the firms surveyed, while the Eastern and Southern Provinces account for 12% and 13% thereof respectively.

3.2 Determinants of Participation in Supermarket Value Chains

The most common purported reason for domestic firms not supplying supermarkets is the long credit period imposed by the latter for the payment of goods. This refers to the time from the delivery of goods to the payment for them being made. Nearly half of non-suppliers indicated this as one of the major reasons for not working with supermarkets. In contrast to on-the-spot payments made in traditional markets, on average the credit period is estimated to range between 30 and 90 days for goods sold to supermarkets. The time lag in receiving payments results in cash-flow challenges, particularly for smaller processing firms. The second-most important reason is that firms do not have the capabilities to produce the volumes required to supply supermarkets. Lack of financing to acquire the machinery and technology required to upgrade production techniques and hence improve capabilities is the third-most important challenge, meanwhile. However, it is important to note that only a minority of the surveyed firms said that they are affected by these second- and

third-most important challenges. Most firms did not see the latter two issues as problematic.

Other obstacles include competition from foreign companies and the brands of supermarkets themselves (more on this later). Local firms also face being snubbed by supermarkets, and acknowledge not having full information on how to supply them. Cumbersome procedures have been named as an issue here, but local suppliers did not elaborate further on them. We would assume that these are mainly about adherence to particular quality and packaging standards, ones that entail additional costs for the suppliers. Unfavourable pricing of products is another constraint according to the survey. Yet, again, none of these issues appear to affect a clear majority of local firms—or, at least, they did not indicate so. Quality standards imposed by supermarkets and transport, meanwhile, are not challenges according to the survey results (Fig. 3).

Access to finance remains a major constraint for many firms including those supplying supermarkets, although the survey suggests that this factor still does not make it impossible to plug into corresponding value chains. Of all firms sampled, both suppliers and non-suppliers, approximately 66% find it difficult to acquire financing from commercial banks and other credit institutions. Particular challenges include high interest rates, which reach almost 30%, collateral demand required to serve as a contingent payment in the event of default as well as stringent conditions such as lengthy loan processing times, demands for costly audited financial reports and short repayment periods. The credit rationing of local firms limits the development of supplier capabilities. Without the requisite financial resources, firms cannot invest in machinery and packaging—or meet other requirements to market and supply their products more successfully. For instance investment in new machinery allows firms to modernise production processes, thus improving cost-effectiveness. It enlarges the production base, potentially further increasing productivity due to economies of scale. Investment in machinery also allows for the production of new and improved products, thereby increasing value-addition. It can lead to the incorporation of international standards and innovation, which increases the probability of supplying supermarkets and exporting.

Our survey, moreover, revealed limited export capabilities. The majority of both supermarket suppliers and non-suppliers (68% and 84% respectively) do not export at all. For non-suppliers, this finding suggests that their inability to plug into

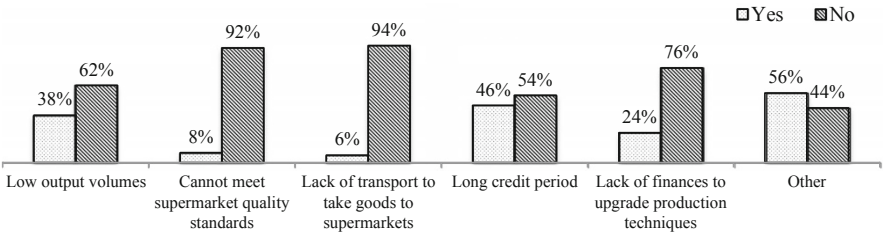

Fig. 3 Reasons for not supplying supermarkets in Zambia. Source: Authors' own survey

domestic supermarket value chains increases the likelihood of not accessing export markets, which may have more stringent requirements. Notably, the major export destination for both suppliers and non-suppliers is reported to be the DRC, followed by Malawi and Zimbabwe. These markets are attractive due to the strong demand for processed goods such as crisps, dairy products and flour. Proximity to Zambia and higher prices in comparison to those in its own domestic market and/or alternate export markets, which result in higher profits, are further factors that matter here.

It is reasonable to conclude that the high level of informality in the DRC provides easier market access for most products supplied by Zambian non-supermarket suppliers. The borders between the DRC and Zambia are porous, which tends to give rise to extensive smuggling and informal trade. This also presents high risks for businesses. Nonetheless, the DRC offers a large potential market for Zambian products. In particular the province of Katanga, which borders with Zambia, is estimated to have a population of 16 million people. Foreign competition in this market is rather limited due to economic and political instability. The recent bilateral trade agreement signed by the governments of the DRC and Zambia could bring about some semblance of normality that might offer security to trading firms, and thus result in increased formal cross-border trade. Broadly, the trade agreement covers operations of the one-stop border post at Kasumbalesa, construction of trade-centre zones there, a simplified trade regime and the elimination of both tariff and non-tariff barriers.

While there is certainly scope to increase Zambia's footprint in regional markets, using supermarkets as entry points, a number of challenges were reported in our survey as faced by exporters and would-be exporters. These include cumbersome border procedures, such as delays in obtaining and processing export permits and border clearances. For example the border post at Chirundu, which is the busiest one between Zambia and Zimbabwe, does not operate on a 24-hour basis. In general, customs clearance systems in Southern Africa are not sufficiently harmonised. The different coding of goods causes delays (Vilakazi and Anthea 2017). High transport costs exacerbated by roadblocks and a poor road network also present a challenge, as they render Zambian exports less competitive in comparison to items from competing exporters and to local products in market destinations. According to the African Development Bank (2015), transport costs are estimated to add up to 40% to the price of the final product in Zambia. Language barriers, particularly with Angola, Mozambique and the DRC, increase transaction costs for Zambian firms too. Bribery and corruption are other obstacles that make exporting difficult.

Coming back to the integration of Zambian suppliers into domestic supermarket value chains, there is a certain divergence between the importance that supermarkets attach to a number of factors that determine their procurement decisions, on the one side, and local firms' perceptions of how important these aspects are to supermarkets, on the other. Using a scale of 1–5, where 1 means not important and 5 means extremely important, we asked the five aforementioned supermarkets to rank the significance of price, quality, volume, lead time, distance to supermarkets, condition of the processing plant of potential suppliers, consistency, packaging and innovation for their decision to procure dairy products, processed grains and food, edible oils

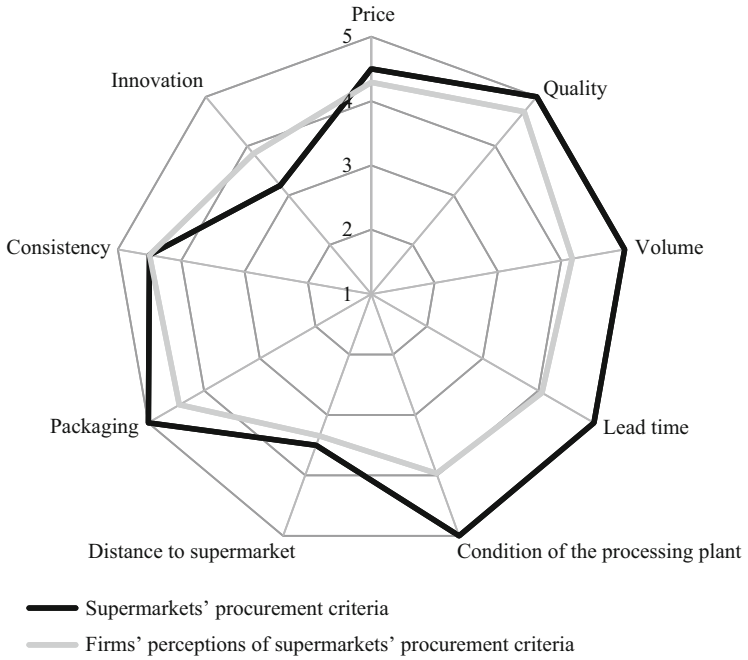

Fig. 4 Procurement criteria as seen by supermarkets versus local firms' perceptions thereof. Source: Authors' own survey

and household products. Three of them replied. The local firms from our sample were in tandem asked to give their perceptions of the importance that supermarkets attach to these factors. The mismatch between them, shown in Fig. 4, has implications for the ability of Zambian firms to supply supermarkets. Overall, supermarkets demand higher standards than what local firms expect. In other words, Zambian firms do not fully understand what these potential buyers want. On average, supermarkets attach extreme importance to quality, volume, lead time, the condition of the processing plant of potential suppliers and to packaging. Zambian firms underestimate the importance of these factors. Supermarkets also view distance to markets and price to be slightly more important than local firms do. Innovation is not as highly ranked by supermarkets as expected by local firms.

In the same vein, there is a similar but more striking disparity between supermarkets and local firms regarding their perceptions of the latter's capabilities. Using the same 1–5 scale, domestic firms were gauged on their competitiveness in meeting the nine factors that influence the procurement decisions of supermarkets. The latter were simultaneously asked to rate the capabilities of potential local suppliers accordingly. Firms were asked to self-assess their own capabilities. Overall, local firms rank themselves to be highly competitive on all but one factor—distance to supermarkets. Supermarkets, meanwhile, perceive the performance of local firms much less favourably, with the exception of distance to supermarkets. This finding reveals

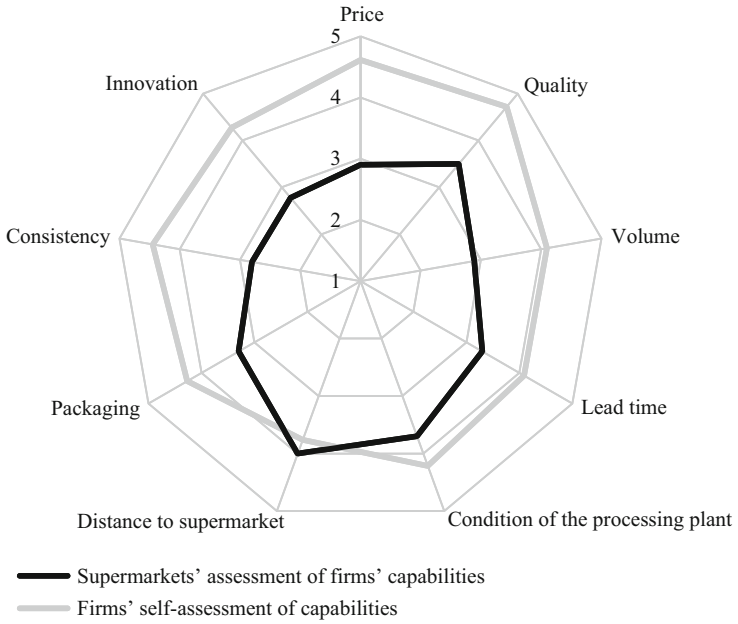

Fig. 5 Perceptions of local firms by supermarkets versus firms' self-perceptions. Source: Authors' own survey

a fundamental problem: Zambian firms do not fully understand the capabilities required to supply supermarkets—or, in other words, they overestimate their preparedness to meet the demands of them (Fig. 5).

3.3 Further Challenges

Over time, as foreign-owned supermarkets become firmly established, their uptake of local goods is expected to increase (Reardon 2006). Still, there remains a considerable margin for local sourcing according to our survey: between 20% and 78% of product lines on supermarket shelves in Zambia are now locally sourced, with the highest proportion being fresh fruits and vegetables. Challenges for locally processed goods still remain, and some of these are contingent on the level at which procurement decisions are made. According to the supermarkets from our survey, it is not at the discretion of local store managers to select who local suppliers are. This is almost exclusively the decision of management at the respective head offices, which are commonly located in Lusaka, and often requires input too from the group head offices, located abroad. This presents additional entry barriers, particularly for local suppliers operating far away from Lusaka. In contrast, supermarkets operating as franchises have more flexibility with regard to making decisions on which firms

should supply their stores. This suggests that it is easier to enter into the value chains of franchise stores, which now constitute a considerable share of supermarkets as compared to that of corporate stores.

Further to that, supermarkets exert tremendous buyer power and impose their own private standards in addition to the ones stipulated by the Zambia Bureau of Standards to ensure consumer protection, environmental safety and public-health protection and safety. These additional standards may, however, increase the exclusion of some domestic firms from supplying supermarkets, particularly small ones—as they are more financially constrained. Additional demands made by supermarkets include a marketing budget for the promotion of the firm's goods, arrangement of the firm's own transport logistics when supplying goods, merchandisers to man the firm's shelf space in the stores and, for some supermarkets, the ability to supply a certain minimum number of stores in the country as well as price rebates. These demands are, obviously, severe barriers for those local firms that do not have the financial resources to upgrade.

As noted above, the increased manufacturing of supermarkets' own brands generates rivalry to locally produced goods. Over the years supermarkets have ventured into the production, distribution and retail of various products, including processed food and household ones, under their own brand name. According to the supermarkets we interviewed, few of these products are local. The bulk of them come from South Africa and elsewhere abroad too. It also appears that to promote their own brands, supermarkets are incentivised to raise barriers to entry for locally produced goods—for instance by imposing more stringent supply requirements or limiting the scale of locally produced goods. Notwithstanding the competition from these supermarkets own brands, the silver lining to this development is the opportunity for the domestic production of corresponding items via contract manufacturing. Supermarkets can outsource to local processing firms, which then manufacture and supply the supermarkets' own-brand products on their behalf. This is certainly a perspective for Zambian firms to consider.

4 Conclusion and Policy Recommendations

This chapter has presented some interesting findings from our own empirical research on supermarket value chains in Zambia. Among them is the revelation that local firms do not fully understand the factors that drive supermarkets' procurement decisions. Local firms also appear to overrate their own capabilities. These are fundamental challenges, as they imply that local firms will not take the necessary steps to better integrate into supermarket value chains—or, indeed, to integrate at all. Beyond such (self-)perception, the participation of local firms is constrained also by a number of other factors too—such as limited supplier capabilities due to a lack of finance, supermarkets' procurement strategies, supply-contract conditions, standards imposed by supermarkets and competition from imports as well as from supermarkets' own brands. Unless Zambian suppliers overcome these challenges, it appears

unlikely that they will tap into the considerable potential for regional exports that nevertheless certainly does exist. Thus, unlocking Zambia's full potential for agro-processing and perhaps even related industrial growth requires measures and strategies that aim to close the just-mentioned information gap, to develop the capabilities of local firms and to ensure market access for their produce—both in Zambia and abroad.

So what specific measures should be taken? First, provision of affordable and adequate financing to local suppliers is vital. It enables firms to acquire machinery and invest in new technologies for the timely manufacture of sufficient volumes of competitive products. In this regard, more support for development finance is required. A supplier development fund, supported by supermarkets, should be established with the aim of providing both financial and technical support to local firms. Second, and beyond issues related to finance and new technologies, such a fund could help local firms to improve the quality of their products and expand their production capacity. It could provide a guaranteed route to market for local products, build long-term, effective partnerships between domestic firms and supermarkets and thus increase the participation of micro-, small- and medium-scale enterprises in the supply chains of supermarkets. Such a fund would be of equal benefit to supermarkets too, because increased local sourcing would mitigate the currency risks arising from imports and enhance goodwill as well—likely contributing to increased customer loyalty.

Third, the already-proposed voluntary code of conduct between supermarkets and local suppliers could help to promote and manage a supermarket-supplier relationship that allows for learning and the transfer of knowledge. Such a relationship would facilitate discussions of critical issues faced by firms, such as the long credit period. To level the playing field, ease competition arising from imports and stimulate increased local production, the Zambian government should, as a fourth set of measures, promote import substitution by imposing temporary safeguard measures such as surcharges on imported products that offer the most potential for local production. This should be done in line with the existing World Trade Organisation protocols on trade remedies, provided for under the treaties of the Common Market for Eastern and Southern Africa and the Southern African Development Community. Fifth, and somewhat similar to the just-proposed measures, the government needs to facilitate the entry of local firms into supermarket value chains by introducing a local content policy that requires supermarkets to meet a quota of stocked locally produced goods—premised on criteria of capacity, consistency, quality, timeliness and other key supply factors.

Sixth, entry into regional markets should be facilitated through a regional procurement strategy by supermarkets that aims at exporting products already supplied by Zambian firms to ones in the country to subsidiary supermarkets in neighbouring countries too. This strategy cannot, of course, be brought about by the government. It should be developed by supermarkets, which could for example leverage the return leg of South African trucks that supply products to Zambia—currently these vehicles head home empty, making such a strategy entirely rational from an economic point of view. Seventh, the government needs to expedite trade facilitation measures

aimed at addressing the identified trade barriers. In particular border procedures must be eased, for example by creating one-stop offices where all export documents can be easily obtained and swiftly processed. Clearly defined permits for all export products are another must. Related to this, there is a need to improve the road infrastructure to Angola and partly also to the DRC, the former being currently inaccessible and the latter being so only at high cost.

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Part II
Prospects of Global Value Chains

Economic Growth Corridors Through a Value-Chain Lens: The Case of the Southern Agricultural Growth Corridor in Tanzania

Asmita Parshotam and Javier Revilla Diez

1 Introduction

The use of global value chains (GVCs) as one of the tools with which to establish economic growth corridors (EGCs) is a growing phenomenon across the Global South. EGCs have formed part of a movement using large-scale investment projects and traditional corridors to facilitate long-term, sustainable development in rural areas. EGCs have received widespread support from organisations such as the African Development Bank, the International Monetary Fund and the World Bank. An EGC is traditionally understood as an integrated network of infrastructure within a specific geographical area (one that can span across national borders), focussed on stimulating economic development and rooted in the understanding that economic development processes cannot occur simultaneously across all sectors and regions of a country (Dannenberg et al. 2018). Consequently, investment in and development of EGCs should rather commence in those sectors that offer a high potential to induce growth in other ones through spillover effects (that is, agriculture, manufacturing and mining) and via investment in larger, capital-intensive projects—such as infrastructure development (Brand and Geyer 2017; Priemus and Zonneveld 2003; Weng et al. 2013).

Although EGCs are supposed to spur trade facilitation, address regional integration challenges and provide a basis for sustainable growth, this has not always been the case in fact. While the 'first wave' of EGCs focussed on large-scale infrastructure projects during the 1960s and 1970s, these projects were largely unsuccessful—owing

A. Parshotam
South African Institute of International Affairs, Johannesburg, South Africa
e-mail: asmita.parshotam@wits.ac.za

J. Revilla Diez (✉)
Institute of Geography, University of Cologne, Cologne, Germany
e-mail: j.revilladiez@uni-koeln.de

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to their unsustainability—and failed to boost economic development (Mold 2012). The current 'second wave' of EGCs across many developing countries has, therefore, shifted the focus away from pure infrastructure development to a more holistic approach, and one that in the African context of agricultural development also intends to incorporate smallholder producers. The new approach taken to EGCs considers key developmental aspects, and also integrates a variety of actors through multi-stakeholder initiatives—including private entities, civil society organisations and multilateral institutions (Baxter et al. 2017; Gálvez Nogales 2014).

The Southern Agricultural Growth Corridor (SAGCOT) in Tanzania reflects a new initiative under this second wave of EGCs, one underscored by agricultural development, while also incorporating smallholder farmers. Launched in 2010 SAGCOT is designed to address infrastructure challenges, and stretches from Dar es Salaam across southern Tanzania and into parts of northern Zambia. It has strong government support because of its linkages with Tanzania's 2009 agricultural policy, 'Kilimo Kwanza', a public–private-led agricultural investment programme concentrated on modernising the agricultural sector and mobilising the private one towards increased investment. The project is still ongoing and, according to the World Bank (2018c), which is a large-scale financier for the project, it is due for completion only in 2021.

This chapter analyses SAGCOT against a backdrop of understanding the role that EGCs play as tools for developing GVCs with smallholder-farmer inclusion. It starts with a summary of the conceptual literature on GVCs, of global production networks (GPNs) and, in particular, of Kaplinsky's (2000) understanding of power dynamics within GVCs. Thereafter SAGCOT is assessed, showing how it seeks to address existing inequalities and unfavourable power dynamics within GVC development. Potential shortfalls that SAGCOT might face are discussed. The chapter concludes with recommendations for policymakers, ones that are meant to ensure that SAGCOT ultimately becomes an inclusive and sustainable EGC.

2 GVCs and Smallholder Incorporation in EGCs

The comeback of EGCs in countries of the Global South is somewhat surprising. As Mold (2012) demonstrates, large infrastructure projects undertaken during the 1960s and 1970s were not able to boost economic development in Africa. Originally, EGCs were bundles of infrastructure that connected places to regional and/or global markets (Priemus and Zonneveld 2003). According to the neoclassical worldview, improved connectivity leads to falling transport costs. Consequently, economic actors, in our case farmers, are able to specialise and generate economies of scale. Comparable to a snowball effect, firms such as processers of food and suppliers of agricultural machinery settle at different places along the corridor—thus enhancing a process of spatial concentration along it. In the past these visions did not ultimately materialise though, because the expected snowball effect did not automatically ensue (Ascani et al. 2012; Mold 2012).

Interestingly, in the last few years, a new wave of corridor projects have become identifiable. More than 30 such projects in Africa are currently underway (Weng et al. 2013). These recent EGCs are more than solely infrastructure initiatives; they are strategically promoting value-added activities along specific GVCs. The basic idea is to localise different segments of the respective GVCs—like crop production, processing and related logistics—at distinct locations that serve as nodes along the EGC in question, thus connecting rural spaces with other nodes along the corridor—and even markets in Asia, Europe and North America too (Gálvez Nogales 2014). The integration of GVCs into EGCs has become very popular among development banks like the African Development Bank and the World Bank, donors like the German Corporation for International Cooperation and the United States Agency for International Development (USAID), and national governments alike—specifically as a way to increase agricultural outputs and to improve the livelihoods of farmers in rural areas. According to the advocates of the new-generation EGCs, scaling up towards agro-processing or value-added agricultural production holds the potential to improve the socio-economic conditions of smallholder farmers by accessing, in the long run, larger incomes—a process facilitated by policies that overcome trade barriers and boost the global competitiveness of domestic players (Campbell et al. 2018; Gálvez Nogales 2014).

The policy relevance of GVCs for EGCs is reinforced by public–private partnerships (PPPs), which have become an increasingly relevant tool for spurring economic development—particularly because many developing countries lack financial resources, and expect PPPs to compensate for this. As Dannenberg, Revilla Diez and Schiller put it, 'instead of simply accepting contracts to construct infrastructure, today private companies (usually multinational enterprises [...]) are directly integrated in the planning and decision-making process of the corridors' (2018: 139). The authors continue to explain that apart from the generally discussed advantages of PPPs, such as greater efficiency as well as financial, informational and technical support, public developers of EGCs also seek the right private partners—usually turn-key suppliers and lead firms in the respective GVCs—to be able to integrate domestic businesses into the larger GVC. But, at the same time, concerns about power asymmetries and the impacts on value-appropriation have grown (Dannenberg et al. 2018; Murphy 2008; Ouma et al. 2013).

GVCs are not only real-world phenomena and tools in development policy; they are also an analytical approach. The chain heuristic finds its origin in world-systems analysis (Hopkins und Wallerstein 1977). The GVC approach, first advanced by Gereffi and Korzeniewicz (1994), adopts the former's product-specific focus of world-systems analysis and its chain perspective, whereas it breaks with the state-centred analysis and rigid distinction between core, periphery and semi-periphery (Bair 2005). It traces a line of economic activity from initial inputs up to final consumption, revealing the functional and geographical division of value-adding activities, cutting across national boundaries and trying to understand the structure of rewards between participants along the value chain. In the case of an agricultural one, the interrelated stakeholders are smallholder farmers, large-scale commercial farmers, processers of food, traders, wholesalers, exporters, retailers, input suppliers (most importantly for agro-chemicals, machinery and seeds) and consumers. These encompass different spatial scales, as indicated by Fig. 1.

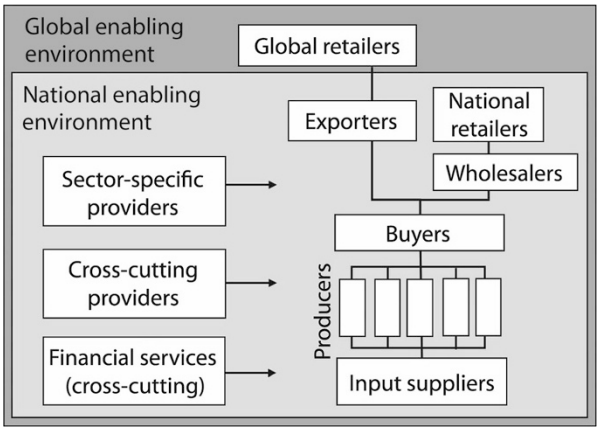


Fig. 1 GVCs in Agriculture. Source: Authors' own compilation, based on USAID (2014)

In his article 'Globalisation and Unequalisation', Kaplinsky uses value-chain analysis to understand the continuous inequality and unequal benefits accruing from globalisation—or, rather, the integration of given places into GVCs. He defines a GVC as 'the full range of activities [that] are required to bring a product or service from conception, through the intermediary phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use' (2000: 121). Value-chain analysis can incorporate various horizontal and vertical linkages between different value chains, intermediate goods and services. A wide range of activities as well as the use of value chains to spur industrialisation in developing countries have been studied, while also being responsive to the changing demands and requirements of the end market.

In spite of its merits, the GVC approach has been subject to considerable criticism. Most prominent objections come from the Manchester School, which provides an alternative approach: GPNs (Coe and Hess 2010; Henderson et al. 2002). The GPN approach combines the vertical perspective of GVCs and the horizontal one of the 'new regionalism' (Machacek and Fold 2014). By using a network heuristic, the GPN approach not only examines vertical chain participants but also the whole range of actors that surround the more narrow value chain. This broader approach is necessary because production networks and value chains not only reflect how firms in different locations are linked to one another but also the specific institutional and social contexts that they are embedded in. Beyond that, the GPN approach provides the very useful distinction of value creation, capture and enhancement (Henderson et al. 2002). According to Murphy and Schindler:

> value creation comes with a firm and region's ability to participate in and attract value-added activities demanded in international markets. Value enhancement refers to the processes of industrial upgrading and technological learning enabled through ties to GPN[s]. Value capture occurs when local institutions and non-firm actors are able to retain and channel the resources created through ties to GPN[s] into investments vital for long-run regional development. (2011: 64)

Coming back to GVCs as real-world phenomena, they are increasingly recognised for their ability to contribute towards pro-poor initiatives and to facilitate better linkages of small businesses with the larger marketplace (Webber and Labaste 2010). While this is part of an official narrative and has the support of multilateral development banks, the reality on the ground is more nuanced. Instead of accepting at face value the developmental contributions that GVCs make by virtue merely of their structure, Kaplinsky (2000) acknowledges value-chain analysis as an important tool for understanding how policies can impact inequality in the appropriation of rents. His analysis identifies three key elements so as to better understand how—despite the developmental aims of those who promote them—GVCs can actually reinforce inequality, as they continue to influence value creation, enhancement and capture:

- barriers to entry and rent, focussing on questions of access to production inputs and competition;
- governance, which is threefold: actors who define the rules for participation (legislative), those who ensure complacent with defined rules (judicial) and those who provide assistance to GVC participants to meet the operating rules (executive); and
- systemic efficiency, emphasising the need to enhance overall the efficiency of the GVC.

Concentrating on actors and power, the essential questions related to these analytical elements are: Who controls access to a particular GVC, and who benefits from this control? Who arranges and coordinates the various contributions to the GVC? Who ensures close cooperation within the GVC, to enable greater efficiencies?

All these issues are important to understand the distribution of profits (rents) along GVCs, particularly in times of increased competition, which forces down gains as the number of rival companies grows and as more and more states lower entry barriers through the deregulation and liberalisation of markets. They also suggest why, despite sustained efforts, not all initiatives focussed on GVCs have brought about development, particularly in the Global South—where small businesses and producers remain largely excluded from the formal market. Consequently, efforts in the context of the second wave of EGCs have focussed on supporting famers in upgrading their current operations by incorporating them into EGCs, GVCs and, as a consequence, the formal market. However, in order for this to work, serious financial, infrastructural and technical challenges need to be addressed; some critics suggest that commercialisation through EGCs and GVCs alone will not increase smallholder participation therein. Instead, these sceptics maintain that increasing subsistence farmers' outputs remains a critical measure for reducing their absolute poverty (Webber and Labaste 2010).

In this sense, there is growing acceptance among both donors and governments that large-scale farming should only be complementary to, and not replace, smallholder-led agricultural growth (Tumusiime and Matotay 2013). An inclusionary approach to smallholder farmers requires addressing the structural challenges that they face. These begin with infrastructural deficiencies: first of all, poor access

to roads and other transportation networks, which lead to high transport costs, as well as utility shortages (related to erratic power supplies and an absence of irrigation farming). In consequence, smallholder farmers suffer from limited/no access to the formal market. They are, moreover, unaware of market conditions such as food safety requirements and unable to sufficiently mitigate against crop disease, which causes volatilities in yield outputs (Arce and Caballero 2015). They also have low bargaining power with traders, for example because smallholders do not know the market prices for the products that they sell. Technical constraints—for instance, the absence of knowledge about new farming methods—and little/no access to financing from formal institutions, which view smallholder agriculture as a high-risk sector, are further such challenges (Tumusiime and Matotay 2013).

3 Investment and the Agricultural Sector in Tanzania

Tanzania is a low-income country (USD 877 per capita income in 2016) with a rather strong macro-economic performance: its gross domestic product has grown at an average of 6–7% per annum for the past decade now (World Bank 2017). In 2017, 66% of Tanzania's total labour force was employed in the agricultural sector. These people and their families survive predominantly on subsistence farming (Epaphra and Mwakalasya 2017). As such, the agricultural sector is a lifeline for Tanzania's economy, contributing up to 31% of GDP in 2016 (World Bank 2016). Tanzania is engaged in a growing number of PPP arrangements (one of which is SAGCOT). While there are considerable foreign direct investment (FDI) inflows, concerns have been voiced that erratic decisions from the government create an unpredictable economic climate that could make potential investors cautious about investing in Tanzania—as, for example, the Bureau of Economic and Business Affairs of the United States warns against. This may explain the fluctuation in annual FDI inflows shown by Fig. 2 below. These flows remain low at an overall level. According to Epaphra and Mwakalasya (2017), the net FDI inflow into agriculture was USD

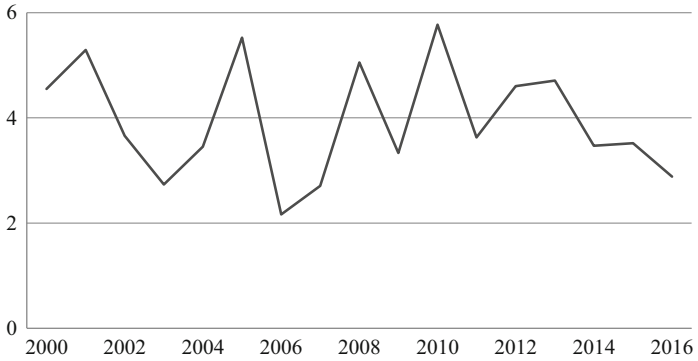


Fig. 2 FDI net inflow as a percentage of Tanzania's GDP. Source: World Bank (2018b)

254 million in 2010, representing only 2.7% of all incoming FDI. The absence of an overarching legal framework for FDI and challenging business conditions have also made it difficult for investors (Parshotam 2014). Tanzania also does not perform well in global indexes for business and competition: it is currently ranked 113th in the World Economic Forum's (2018) Global Competitiveness Report and 137th in the World Bank's (2018a) Ease of Doing Business rankings.

With regard to the agricultural sector, the government has attempted to address these issues through a number of regulatory reforms such as the Private–Public Partnership Act of 2010 and the National Agricultural Policy of 2013. The latter identifies the private sector as made up of farmers, distributors, exporters and 'all organisations directly involved in productive activities' (Lugendo et al. 2016: 24). It has also created the Tanzanian Investment Centre (TIC), as a one-stop shop for investors. The TIC is the primary government agency tasked with facilitating foreign and local investment, creating linkages between investors and local communities with the goal of strengthening skills and technology transfers and providing a range of incentives to make investment in the agricultural sector more appealing (Parshotam 2014). These include, inter alia, the following:

- access to various services related to approvals, licenses and permits in the TIC's facilitation centre;
- the recognition of private property, and protection against any non-commercial risks;
- a 0% import duty on capital goods, raw materials and spare parts for investment projects in agriculture, animal husbandry and fishing;
- a 10% import duty for semi-processed goods; and
- value-added tax deferment on capital goods such as machinery and plants.

However, progress has been slow: a planned PPP centre is not yet operational and several PPPs currently in progress are yet to reach final completion. Despite its economic importance agriculture still records low levels of investment expenditure, which results from the sector's domination by smallholder farmers (60% of all farms comprise merely two hectares of land or less), low productivity rates, limited education and skills, and weak institutional arrangements—all of which together ultimately make the agricultural sector unappealing for investors (Epaphra and Mwakalasya 2017). Nevertheless investment in Tanzania's agricultural sector is growing, and large-scale projects are underway at present.

These include some donor-led initiatives such as USAID's Feed the Future Programme, which has three components to it: a maize and rice value-chain programme, one on sustainable horticulture for income and food security, and the Tanzania Agriculture Productivity Programme—which aims at increasing smallholder farmers' income through enhanced productivity and improved access to domestic and foreign markets. Private sector-led operations and investments include the likes of multilateral corporations such as Unilever as well as smaller regional companies like Mount Meru (a Kenyan firm with sunflower operations in Tanzania) and also Tanga Fresh, which sources part of its dairy supply from smallholder producers. The creation of agriculture-focussed government entities like

the Tanzania Agricultural Development Bank and the implementation of the National Horticulture Development Strategy (2012–2021) are encouraging, although not without criticism, and at least reflect the government's commitment to the agricultural sector—particularly in light of Tanzania's potential to be a regional food-producing powerhouse for both East and Southern Africa. Its location, accessibility to both regions through transport corridors and membership in the East African Community and in the Southern Africa Development Community serve it well in this regard.

What is, at first glance, striking about the development of the Tanzanian agricultural sector is the involvement therein of a variety of food and seed multinational corporations, such as Monsanto, SAB Miller, Syngenta, Tanseed International and Unilever. Their participation results from the Tanzanian government's reliance on PPPs to develop the country's agricultural sector. However, key questions remain: Are multinational corporations willing and able to contribute to the wider aim of incorporating smallholder producers into GVCs? Can their profit interests be achieved without impacting negatively on the developmental concerns of farmers themselves? Are EGCs suitable to balance the need for commercialised, profit-driven agricultural production against smallholder farmers' own interests? Considering the only early stage of SAGCOT's implementation, answers to these questions cannot be given at present.

4 PPPs and Smallholder Participation in SAGCOT

As mentioned, EGCs now encompass multi-stakeholder initiatives—which is reflected in SAGCOT through the World Bank's participation as a key financier, together with other donors. Oxfam defines SAGCOT as a 'mega-PPP', owing to its potential for macro-level implementation and changes to existing economic, legal and regulatory policies (Tumusiime and Matotay 2013). Mega-PPPs are characterised by their ability to offer comprehensive incentives to encourage investment, by their multi-stakeholder support base and by their potential for job creation. SAGCOT receives financial support from a wide range of partners. Contributions include USD 1 million from the Tanzanian government, USD 2.5 million a year over a 5-year period from USAID and USD 45 million from the World Bank (Jenkins 2012). If well executed, projects like SAGCOT offer local communities the chance for holistic socio-economic development in rural areas. In terms of its multi-stakeholder and governance structures, SAGCOT has a tiered approach to governance with the aim of facilitating foreign and local investment. It is based on five pillars, as summarised in a presentation given by Geoffrey Kirenga at the Tanzania Agribusiness Event in Den Haag, the Netherlands, on 31 March 2017:

- partnership principles signed as a commitment to inclusive and sustainable investment;
- compact agreements between companies, farmers and local governments aiming at building inclusive GVCs;

- a green reference group advising those involved in SAGCOT on green and inclusive growth (Willoughby 2014);
- a partnership accountability committee that consists of companies, donors, farmers and the government, and that serves the purpose of monitoring investment and policy commitments; and
- investment-specific arrangements (memoranda of understanding, steering committees and working groups) that facilitate individual investments.

Being an ambitious project, SAGCOT intends to create 420,000 jobs and also agricultural revenues of up to USD 1.2 billion (Jenkins 2012). Further objectives are summarised in Fig. 3 below. The corridor spans 287,000 square kilometres in Tanzania alone, and is characterised by three key features: encouraging investment in the EGC's area, building capacity with the TIC and creating a matching grant fund in the form of the SAGCOT Catalytic Trust Fund (CTF)—which has been designed to provide innovative forms of financing, so as to reduce the risks and costs traditionally associated with the agricultural sector. The CTF is a loan that will ultimately be repaid by Tanzania to the World Bank, once the CTF becomes a legal entity.

Furthermore, a SAGCOT Centre has been established. It is responsible for providing information and coordinating investment initiatives among the involved companies, facilitating business—government dialogue and mobilising investors to make use of opportunities. The Centre is also involved in the reform of policies that matter to SAGCOT, as well as the implementation of best practices that will help improve productivity, farming and business-management skills among farmers (Jenkins 2012). Infrastructure development (electricity grids, railway lines and road corridors) is part of SAGCOT's focus area, and aims to linking smallholder farmers to the port of Dar es Salaam—and, thus, to international markets. SAGCOT aspires to becoming a cross-cutting EGC, providing rural areas with infrastructure, logistics support and storage systems, creating viable GVCs for both smallholder farmers and commercial enterprises in these ways. Map 1 shows SAGCOT and existing transport infrastructure. Ultimately, the long-term goal is to facilitate smallholder producers' outreach to global markets through long-term upskilling and agribusiness development (Flowers and Shuma 2016).

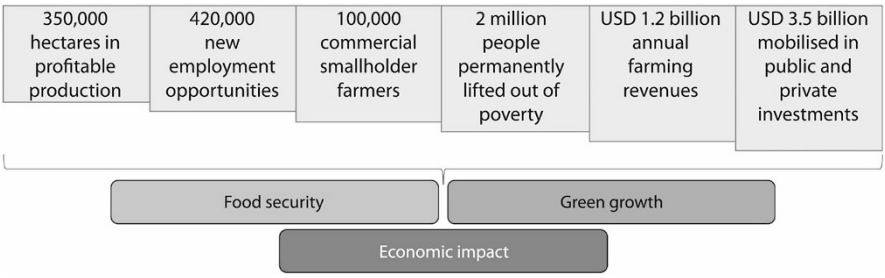
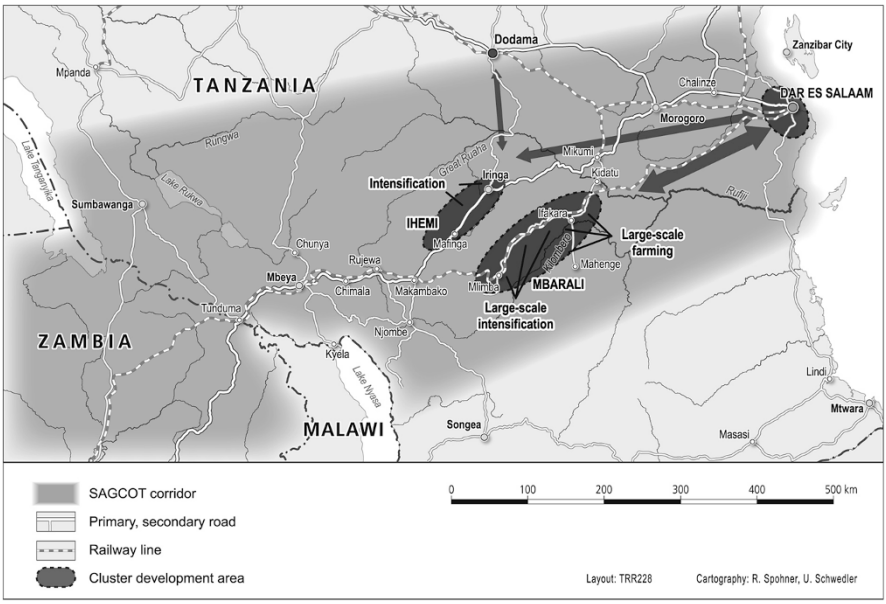


Fig. 3 Objectives to be achieved by SAGCOT by 2030. Source: Authors' own compilation, based on a presentation by Neema Lugangira at the Annual Agricultural Policy Conference, Dar es Salaam, 1 March 2017



Map 1 SAGCOT and existing transport infrastructure. Source: Authors' own compilation, based on AgDevCo and Prorustica (2011)

In order to fulfil this mandate, SAGCOT purports to kick-start a virtuous agricultural growth cycle that will provide a holistic, sustainable approach to agricultural development through its proposed creation of corridor clusters—meaning geographical concentrations of producers, suppliers, service providers and associated institutions. Six such clusters have been identified.[1] A recent SAGCOT report, in the possession of the authors, indicates investments to the value of USD 438 million being made by the private sector. These have taken place predominantly in the Iringa and Njombe Regions, where the first cluster—Ihemi Cluster—became operational in 2015. More recently, Mbarali Cluster, which comprises the Mbeya and Songwe Regions, was established. This was only launched in late 2017. The remaining clusters will be developed in a phased approach, in order to ensure that any lessons learned in the process can be implemented.

The six value chains on which SAGCOT concentrates are[2]:

- Dairy value chain: Domestic demand for milk has grown, and per capita consumption by 2020 will reach 100 L a year, up from the current level of 45 L per annum. Production is concentrated in Iringa Cluster. Currently, 1400 farmers are providing raw milk to a processing plant owned by the ASAS Group, which has organised smallholders into 60 groups through which collection and production

[1]Information on these clusters is available online at: sagcot.co.tz/index.php/sagcot-clusters.

[2]Information on these value chains is available online at: sagcot.co.tz/index.php/value-chains.

are undertaken. Support is provided to these farmers with regard to access to equipment, finance and technologies.

- Potato value chain: Potatoes contribute 40% of total income in Njombe. Productivity levels lag behind the regional average at seven tonnes a hectare. The envisaged partnership with smallholder farmers will work directly with 18 groups, and indirectly with 1520 people, via training programmes on business skills and good agricultural practices. Eventually, 11,000 farmers are targeted for such training schemes and for the demonstration of new technologies. These farmers will receive support in developing financial strategies to procure and utilise the inputs, services and technologies that major agribusiness companies have already introduced.
- Rice value chain: Rice-cultivation projects are supported by the European Union. SIKIA, a PPP targeting 125,000 smallholder farmers, aims at developing information services relating to cultivation techniques, weather and similar issues so as to increase the competitiveness of smallholders. Dutch, Kenyan and Tanzanian investors are involved. Three sub-projects focus on empowering female and young farmers on a wide range of financial services and post-harvest infrastructures.
- Soya value chain: Availability of soya seeds, domestic production and seed registration hamper this sector in Tanzania. Yet, plans cater for production occurring in Ihemi and Songe Clusters. The Clinton Development Initiative and its Anchor Farm Project seek to build an interlinked value chains in animal feed, maize and soya. With regard to soya, processers, retailers and smallholders are to be better interlinked. The Anchor Farm Project in Iringa Cluster was launched in 2013 as a commercial farm partnering with an estimated 3600 smallholders—that to provide them with access to quality inputs for maize and soya production, market access and training programmes (for instance on soil-management techniques).
- Tea value chain: Tea is one of Tanzania's biggest export crops. Approximately one-third is produced by smallholder farmers, mainly in the southern highlands. However, average yields are 40% lower than in Kenya due to limited productivity. Unilever is the major foreign investor here. The partnership of foreign investors and local farmers is to focus on production and processing, triggering investment along the value chain. Smallholder farmers are to be supported as suppliers of foreign companies.
- Tomato value chain: Tomatoes are the largest vegetable crop grown across Tanzania, but they suffer from poor resistance to disease and low yields. Darsh Industries, a tomato processer based in Ihemi Cluster, will work with partners to integrate more than 10,000 smallholder farmers into GVCs. A new tomato-processing centre was scheduled to commence operations already in 2015. Upon completion, this factory will have the capacity to process 200 tonnes of tomatoes a day. Project partners will work with farmers to raise their productivity in an environmentally responsible manner, including recycling of up to 90% of used water. Access to irrigation equipment is to be eased. The financial literacy of smallholders will be improved too.

As this all shows, a key intention of SAGCOT is to incorporate smallholder farmers into GVCs. Contract farming, direct sourcing of produce from farmers' associations or individual smallholders, and the aforementioned strategy on green and inclusive growth—which encompasses the socio-economic development concerns of farming communities—represent important steps towards distributing power within GVCs more equitably. This is particularly true if engaging with multinational corporations via cooperatives will afford smallholders the opportunity to access productivity improvements and technologies, providing the chance for skills development, increased productivity and market access—and thus mitigating against various risks (Bijman 2008). To this end, the SAGCOT Centre has brokered partnerships relating to issues such as crop cultivation, pasture management and seed technologies. What is more, SAGCOT supports new and risky long-term investments in agriculture, rural infrastructure, various related services and also technology development—most importantly, through the CTF. It provides smallholder farmers with financing to purchase machinery and technologies. Weather insurance for smallholder producers is available. Through a long-term infrastructure and development plan, SAGCOT shows potential for addressing some of the imbalances present in Kaplinsky's (2000) analysis, by providing farmers with the means to improve their efficiencies, engage in an agricultural growth cycle that rewards their upward mobility and that ultimately allow them to play a role in the governance of the respective GVCs through their close participation in agro-processing businesses. However, only accompanying monitoring will answer the question of whether the expected benefits for farmers will ultimately become a genuine reality.

5 Potential Challenges for SAGCOT

Mega-PPPs need to do more than merely link smallholder farmers to larger markets. Instead, they are an opportunity for sustainable, long-term development and permanent reduction of poverty in areas that benefit most from them. Hence, mega-PPPs must successfully address a wide range of issues including food security, mitigation against environmental damage, greater communication and transparency between agricultural companies and local communities, as well as the fair distribution of rents among producers, processors and retailers. While smallholders can be incorporated into GVCs within SAGCOT, these farmers must first integrate into local and regional markets through improved trading conditions as well as via greater quality and quantity to their outputs. To this end, the Agricultural Council of Tanzania and the Tanzanian Horticulture Association have signed memoranda of understanding with SAGCOT—an important step towards including therein civil society and sectoral stakeholders who are well-positioned to contribute to SAGCOT's development. The Tanzanian government has also worked towards securing smallholder inclusion through reserving land allocations between 3000

hectares and 50,000 hectares in size, to be leased to investors—with the land surrounding these plantations reserved for smallholder farmers meanwhile (Willoughby 2014). Having access to investors' improvements—first and foremost in terms of infrastructure—should allow smallholder farmers to enter local and regional markets, and to receive various inputs vital to increasing their overall competitiveness.

However there are conflicting accounts to this end derived from our conceptual considerations, which highlight dangers in mega-PPPs. For one, mega-PPPs in EGCs often attract powerful multinational and private companies together with substantial donor investments. Mega-PPPs may, therefore, be developed in a way that suits the specific needs of these financiers. Their benefits may not extend to more rural areas. When it comes to including local partners, 'commercially viable', organised cooperatives are better suited to meeting the stringent quality and quantity requirements of investors—and they also tend to have access to larger and better plots of land. Concentrating public investments in high-potential areas can mean that the most marginalised have little access to such opportunities, thereby increasing existing risks of increased food insecurity and sustained poverty (Tumusiime and Matotay 2013). In such cases, there is no economic development for those excluded from PPPs, related GVCs and their benefits. Marginalised farmers tend to be unable to overcome power asymmetries in their relations with companies and middlepersons.

SAGCOT has not been without its difficulties, despite its attempts at inclusivity. Concerns about loss of land ownership, owing to increased investment, are supposed to be addressed by the 'Letter of Sector Policy on Land', which confirms the government's commitment to protecting land rights for rural communities and ensuring that land allocations to agribusinesses will occur only with community-wide consent, the well-defined sharing of benefits between communities and investors, and appropriate compensation. However, it appears that the World Bank has granted a full waiver of its current safeguard policy for indigenous peoples (nomads and pastoralists) in relation to its SAGCOT loan, despite its responsibility to consult with communities in the SAGCOT area (Terra Nuova 2017; Tugendhat 2016). Beyond that, a review of SAGCOT by the Department for International Development of the United Kingdom found that 'outputs moderately did not meet expectation' (2016: 1). For example, the SAGCOT road tender is significantly behind schedule, while high political interference in maize markets deterred attempts to increase incomes of smallholder producers.

Lastly, it should not be forgotten that SAGCOT is a fairly new initiative. Its full impact will only become clear in a few years' time. The ongoing projects within the identified clusters are an indication that positive developments are underway, and these do enable smallholder involvement. Whether these efforts translate into long-lasting impacts depends on the rate at which smallholder producers are able to move up the respective GVCs into a position of leverage and power, and where they are able to upskill and enter into agro-processing ventures.

6 Conclusion

This chapter has shown that SAGCOT pursues the objective and holds the potential to help smallholder farmers in Tanzania to become active participants in GVCs. Being representative of the second wave of EGCs, SAGCOT goes beyond merely providing infrastructure in order to achieve this objective. It provides a broad range of institutions and organisations that are intended to support the integration of farmers into GVCs. Under the right leadership and with genuine political will, SAGCOT therefore has the potential to fulfil its socio-development mandate for the marginalised members of Tanzanian society. A key component of the initiative is PPPs, reflecting the government's insufficient financial capacities and its vision of mutually beneficial partnerships between local communities—especially smallholder farmers—and non-local investors. The envisaged partnerships must be equitable and strike a balance between investors' needs and goals, on the one side, and the development aims of smallholder farmers, on the other, while also being aware that investment and third-party collaboration should not foster over-reliance on donors, technical aid from the private sector and a system that does nothing to encourage positive competition among smallholders and farming cooperatives.

In order for SAGCOT's vision to become a reality, there are a number of policy measures that the Tanzanian government and other stakeholders need to take into account. These derive from Kaplinsky's (2000) discussion of GVC governance:

- For smallholder farmers to play a meaningful role in GVCs, they must be adequately equipped financially and technically—and also organised in a way that facilitates their greater engagement with investors and with large companies involved in SAGCOT too. It is critical to work towards incorporating agro-processing into their farming. It is not enough for SAGCOT to focus only on improvements in quality and yield. Instead, developmental aims must empower farmers as informed participants of GVCs—for those who are interested in moving into agribusiness to be able to scale up their farming activities.
- Interaction between the private sector and the state is required in order to utilise information and experience from the formal banking sector, and also to distribute this knowledge to smallholder producers so that they understand how financing works and what financial products best suit their needs. A potential model for the SAGCOT Centre to explore is the specialised agricultural division of Malawi's FDH Bank, which provides financing to agribusinesses in the form of four types of agricultural loan: seasonal ones for working capital, harvest loans, asset loans and bridge financing.
- There is scope for the Tanzanian government to systemise incentives, to promote more inclusive business models among large investors (Arias et al. 2012). PPPs show potential for leveraging the private sector's strengths for smallholder development, and this must be followed through on as the projects are implemented. PPPs must be designed to ensure that smallholder farmers receive the necessary knowledge and skills transfer, so that a project's completion does not disadvantage them. A transparent operating regime, a clearly defined and

implemented investment one and a comprehensive, well-balanced land distribution system with appropriate dispute-settlement mechanisms would go a long way towards addressing the land tenure and investment regime challenges that SAGCOT is facing already today.

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A Different Path of Industrial Development? Ethiopia's Apparel Export Sector

Cornelia Staritz, Leonhard Plank, and Mike Morris

1 Introduction

Textile and apparel features as a high priority sector in Ethiopia's economic development plans for structural transformation and industrial development. The underlying theme in industrial policy documents and debates is that the manufacturing sector should complement the growth of the country's dominant agricultural economy (agricultural development led industrialisation, ADLI). The focus is on labour-intensive and low-tech industries with linkages to agriculture—which includes textile and apparel, among other sectors (Altenburg 2010; Bräutigam et al. 2015; Gebreeyesus 2013; UNECA 2015).

In order to do this, industrial policy has been central in Ethiopia's development strategies. Indeed, Ethiopia is 'the poorest country to have devised a national economic transformation based explicitly on industrial policy' (Bräutigam et al. 2015: 3). Ethiopia's industrial plans have a long-term perspective, include ambitious targets and aim at deep institutional reforms inspired by the East Asian development experience. These strategies view the private sector as the engine of growth, highlight the importance of international actors and stress the leadership role of the state to enhance the performance and productive capabilities of the private sector.

C. Staritz
Department of Development Studies, University of Vienna, Vienna, Austria
e-mail: cornelia.staritz@univie.ac.at

L. Plank
Department of Spatial Development, Infrastructure and Environmental Planning, Vienna University of Technology, Vienna, Austria
e-mail: leonhard.plank@tuwien.ac.at

M. Morris (✉)
School of Economics, University of Cape Town, Cape Town, South Africa
e-mail: mike.morris@uct.ac.za

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Similar to the East Asian experience, the plans have a strong export focus. However, they also differ in some crucial ways: they concentrate on strategic foreign direct investment (FDI) and there is a clear focus on linking agriculture and the industrial sector. Through the integration of exports, FDI and linkages to agriculture, they pursue an integrated value-chain approach. By placing the Climate Resilient Green Economy Strategy at the core of its future growth model, Ethiopia is attempting to mainstream a green industrialisation agenda into its industrial policy and practices.

The textile and apparel sector has direct links to agriculture through cotton production, is labour-intensive and relatively low-tech, and has large export potential. By picking this sector, Ethiopia follows many developed countries and newly industrialised economies, where the textile and apparel sector was central in the industrialisation process (Dickerson 1999). Given its low entry barriers (low fixed costs and relatively simple technology) and its labour-intensive nature, the apparel sector absorbs large numbers of unskilled and mostly female workers. It provides upgrading opportunities into higher value-added activities within and across sectors, most importantly to textiles (Staritz 2011; Staritz and Morris 2015). However its defining characteristics also mean that it is very globally competitive, leaving many suppliers with limited leverage and challenges in ensuring longer-term development benefits.

In this chapter, we first provide an overview of Ethiopia's apparel export sector. We then discuss how the sector's integration into global value chains (GVCs) is different from most other apparel exporters in sub-Saharan Africa, focusing on the diverse types of ownership therein, including foreign and locally owned firms, and the importance of a proactive industrial policy. This leads to an assessment of upgrading and localisation processes. We conclude by summarising the major achievements of developing the apparel export sector in Ethiopia, and also point to challenges and shortcomings. For an earlier publication, we (2016) conducted interviews with 21 apparel and textile firms and eight interviews with relevant institutions from the public and private sectors in Ethiopia in November 2015. This information and data is updated from more recent field research, presented in Whitfield and Staritz (2019). The empirical information presented here is based on these research trips, unless otherwise indicated.

2 Development of the Apparel Export Sector in Ethiopia

Ethiopia's textile and apparel sector took off after 2010. Data provided by the Textile Industry Development Institute of Ethiopia (TIDI 2017), complemented by our own interviews and updated with data from Whitfield and Staritz (2019), shows that there were 99 textile and apparel firms in 2017, including 23 spinning and weaving/knitting mills, 14 vertically integrated textile and apparel firms, and 62 apparel firms. This is inclusive of all firms that had set up operations in industrial parks by the end of 2017, even if not yet exporting. The sector had 55,076 direct employees in 2016, increasing from around 48,000 in 2014. Including accessories, ginning and packaging, the sector employed 57,432 workers. These employment figures, along

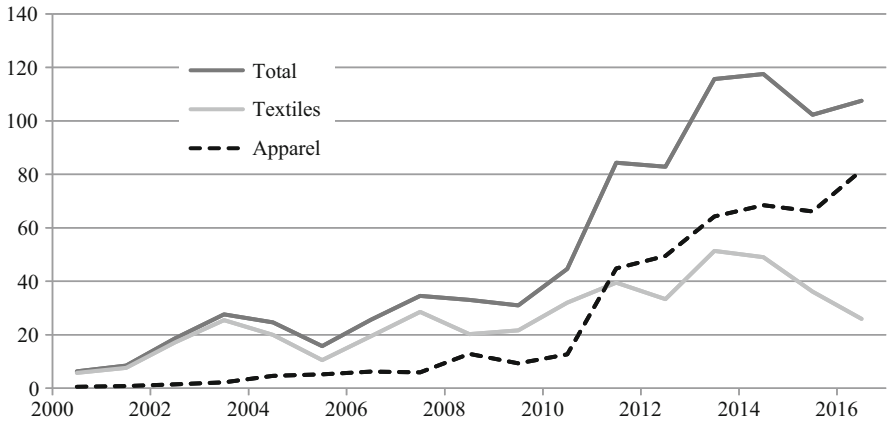

Fig. 1 Ethiopia's textile and apparel exports, in USD million. Source: Data obtained from the UN international trade statistics database. Note: Apparel represents HS92 61+62. Textile represents HS92 50-60+63. Exports represent partners' imports

with the export ones discussed below, are set to increase significantly, as firms in new apparel-specific industrial parks become fully operational. Ethiopia's apparel exports rose from USD 1 million in the middle of the first decade of this century to USD 12 million in 2010, and then jumped dramatically to USD 82 million in 2016 (as shown by Fig. 1). Textile exports were more important than apparel ones until 2010, accounting for USD 23 million in that year. They also rose to USD 49 million in 2014 but fell afterwards, accounting for USD 26 million in 2016. By 2016, textile and apparel exports together accounted for USD 108 million. Combined exports accounted for 19% of total manufacturing ones and 4% of all exports in that year.

End export markets are very concentrated, but this has declined in recent years. The major end markets for Ethiopian apparel exports are the EU-15 (the 15 pre-2004 member countries of the European Union), with a share of 48% of total such exports in 2016—declining from a previous 73% thereof. The United States accounted only for around 18% of these in 2014, but this increased to 42% in 2016. This is due to the rise of transnational producers, with their GVC networks. Textile exports went primarily to Turkey (44%) and the EU-15 (32%). The growth of textile exports until 2013 was primarily related to Turkey accounting for more than half of them. In contrast the share of the EU-15, which historically accounted for more than 90% of textile exports, has decreased to around one-third. However textile exports declined after 2013, which is explained by the closure of several Turkish textile firms.

The rapid rise of the sector and particularly of exports is the result of a number of factors, including preferential market access, changes in buyers' sourcing strategies, local context factors and the active industrial policies of the Ethiopian government. Duty-free access to the EU and US through the African Growth and Opportunity Act

(AGOA) and Everything but Arms (EBA) are key drivers of this export growth.[1] If these preferential trade agreements disappeared, industrial expansion in the sector would collapse (certainly at this early stage). Ethiopia has developed an AGOA strategy and has recently launched an AGOA Centre within the Ministry of Trade, with a mandate to help Ethiopian firms take advantage of this agreement. Ethiopia has also duty-free access to 16 other nations, including Australia, Belarus, Canada, China, India, Japan, Norway, New Zealand, Russia, Switzerland and Turkey (UNCTAD 2015), and is a member of the Common Market for Eastern and Southern Africa.

Buyers from the EU and US, searching for new low-cost production sites in sub-Saharan Africa so as not to concentrate all their activities in Asia, have actively visited Ethiopia to screen potential suppliers or 'convince' their core ones to invest in or source from Ethiopia. Although Ethiopia's labour costs are very low, when aggregated European buyers claim prices are still not comparable to Bangladesh. European buyers also prefer full-package suppliers and many firms in Ethiopia can only fulfil cut, make and trim (CMT) export orders. For buyers from the US, prices are more advantageous—as Asian supplier countries have to pay tariffs of up to 32% that are especially high for synthetic apparel products such as sportswear and workwear, according to data obtained from the UNCTAD Trade Analysis Information System.

The fact that Ethiopia is supposedly politically stable and also personally and socially safe differentiates it from many other sub-Saharan African production sites (recent widespread protests make this questionable though), making a big difference to foreign owners or managers of firms locating there. Further, Ethiopia offers a large pool of trainable labour at one of the lowest costs worldwide. Wages are lower than in any other sub-Saharan African apparel-exporting country. Further, electricity costs at around USD 0.027–0.047 a kilowatt-hour are very competitive compared with Bangladesh (0.05), Cambodia (0.16–0.21) and China (0.11) and also one of the lowest in sub-Saharan Africa (World Bank 2011). Energy is, moreover, environmentally friendly and carbon neutral, as it is largely supplied by hydroelectric plants. Water costs are also very low. What is more, Ethiopia grows some of the world's finest cotton and has a spinning, weaving and knitting history. The cotton sector is, however, underdeveloped and production does not meet textile demand.

[1] AGOA provides quota- and duty-free access to the market of the US for a large number of goods from sub-Saharan Africa. EBA, meanwhile, has been in force since 2001, and allows for quota- and duty-free imports—with the exception of armaments—to the EU from all least developed countries.

3 What Differentiates Ethiopia' Integration into Apparel GVCs?

The key country-condition differentiating Ethiopia from other least developed countries, especially in sub-Saharan Africa, is the pursuit of a proactive industrial policy with a clear vision and commitment. As noted the textile and apparel sector is one of the top priority sectors in Ethiopia's development plans, receiving special attention regarding resource allocation (foreign exchange, land and loans) and benefitting from sector-specific institutes supporting skill and technology development as well as other incentives—particularly ones linked to export. What makes Ethiopia interesting from both an academic and a policy perspective is that many of its business and industrial policy dynamics are different from the more established sub-Saharan African exporting economies.

Diversified types of firm and ownership structure exist in the sector. These are state-owned enterprises, firms linked to the dominant parties, private locally owned ones, Ethiopian diaspora-owned ventures and a variety of foreign-owned businesses. Ethiopia has a history of state-owned enterprises in apparel but particularly in textile production. These firms were privatised starting in the first years of the new century. Two textile mills could only be sold in 2017 to the Tiret Corporation, the endowment-owned firm linked to the Amhara National Democratic Movement—a political party that is one of four members of the ruling Ethiopian People's Revolutionary Democratic Front. These two mills produce woven fabric and made-up textiles, largely for the domestic market but with around 30% for export. There is one other integrated textile and apparel firm that exports a share of its made-up textiles and apparel products. It is owned by Effort Investments, the endowment-owned firm linked to the Tigrayan People's Liberation Front—which also forms part of the ruling front, and claimed 499 out of 547 seats in the last legislative elections.

Locally owned private ones account for nearly half of the firms, but are much smaller in size compared to the three local ones among public domain and foreign firms—particularly new FDIs in the industrial parks. A vertically integrated firm that is a sister company of the MIDROC Group, owned by the Ethiopian-Saudi entrepreneur Mohammed Hussein al-Amoudi, constitutes an exception in this regard. The majority of local firms, however, focus only on apparel production for the domestic market, with only 14 local firms—including the three discussed in the previous paragraph and the MIDROC Group-related firm—producing also for the export market (Whitfield and Staritz 2019). Among the owners are Ethiopian diaspora investors who emigrated during the Derg regime (1974–1987) but who have now returned home, attracted by business opportunities, AGOA preferential market access and supportive government policies. Diaspora investors have international business experience, contacts abroad, understand foreign cultures and speak the same language as foreign buyers. Hence, they are able to make value-chain connections more easily. As one diaspora owner-manager said during an interview with us, 'we know how to walk the talk with US customers'.

There are around 50 foreign-owned firms in Ethiopia. In terms of number of firms, China is the largest investor, followed by India, Turkey, South Korea, Sri Lanka and the EU. Given the expansion of industrial parks, most new investors are transnational producers with decision-making capacities situated at the headquarters abroad—but there is still an important share of FDI that seems to have more local decision-making power, particularly compared to other sub-Saharan apparel-exporting countries. The first FDI wave involved Turkish investment from around 2008/2009, as a result of close diplomatic relations between the two governments and, from 2010 onwards, also due to Turkish firms' search for new low-cost locations as an alternative to North Africa in the context of the Arab Spring. Investment was largely in textile mills producing fabric and yarn, with the exception of one large vertically integrated firm that also produced apparel and became the by far largest apparel exporter. However, by 2017, four Turkish textile and apparel firms had closed down, as they could not pay back their loans to the Ethiopian government.

The more recent wave of transnational apparel producers (from India, South Korea, Taiwan and Sri Lanka) are attracted by low costs of electricity, labour and water, high public security and political stability, duty-free access to the EU and US, government incentives for FDI and particularly the new industrial parks—with Bole Lemi, located on the eastern outskirts of Addis Ababa, being the first. They generally have globally dispersed plants, focus on export and follow the typical production set-up of transnational producers, producing low-value-added, large-run products in Ethiopia on a CMT basis, with head offices and often also textile mills abroad pursuing the higher value-added activities. However, several have plans to also produce more complex products in Ethiopia and to build backward textile linkages. Hence, some of these firms have the potential to be more locally embedded and diverge from governance structures and firm set-ups typical for transnational producers (Morris et al. 2016). Chinese firms are small compared to the other FDI ones. Some are located in the Eastern Industrial Park, a private one developed by Chinese investors, and some only concentrate on the domestic Ethiopian market.

The large share of local firms (even though most are not exporters), the prevalence of vertically integrated firms at this early stage of sectoral industrialisation as well as potentially more embedded FDI firms distinguish Ethiopia in sub-Saharan Africa. FDI in that region—apart from Mauritius and partly Madagascar—is to a large extent only involved in export-oriented apparel assembly (Morris et al. 2016). In Ethiopia, the sector covers part of the whole value chain, including spinning, weaving, knitting and sewing, as well as cotton farming and ginning—but linkages to apparel exports remain limited. The other feature distinguishing Ethiopia is the role of government, driven by a clear vision and high commitment from political leaders, embodied in economic policies steering a specific form of export-oriented industrial development. Notwithstanding capacity problems, the government has a clear aim to drive industrialisation through an export-oriented strategy, focussing on priority sectors, foreign and domestic investment attraction, and capability and skill development. It also attempts to create a conductive environment for the development of the private sector, investing in education (primary, technical, vocational

training and tertiary), infrastructure (particularly power generation and transport) and health. Industrial policies also have a selective character, providing direct support and influencing resource allocation towards priority sectors. With the exception of Mauritius, which pursues a clear development strategy focussing on upgrading, the other sub-Saharan African apparel-exporting countries do not pay sufficient attention to learning, linkages, local value-addition and upgrading (Morris et al. 2016).

Ethiopian recent industrial policy for the textile and apparel sector encompasses seven key strategies to drive export-oriented industrialisation:[2]

1. Using bank loans and foreign exchange to push exports: The Ethiopian government engages in selective policies that strongly influence resource allocation to priority sectors and to export. The regulation of the banking sector and foreign exchange flows play an important role in influencing resource allocation. The two state-owned banks, the Commercial Bank of Ethiopia and the Development Bank of Ethiopia, provide most of the credit to firms in priority industries under favourable conditions. Foreign investors are not allowed in the banking sector as long as national banks have not become competitive enough to compete with them. Through strongly controlling access to foreign exchange and giving favour to export firms, the government further influences resource allocation. The government uses this to reward export firms and to punish those only serving the domestic market.

   This policy is supplemented by general export-promotion initiatives such as the establishment of a foreign exchange retention scheme as well as voucher and duty-drawback ones and bonded warehouses, to facilitate the importing of inputs for the production of export products. Export firms are allowed the duty-free import of inputs as long as they are needed for the manufacture of export products and of equipment, machinery and spare parts. Further, they have access to a credit-guarantee scheme to avoid problems of working capital and the government has reduced the costs for opening letters of credit. Firms in priority sectors also receive tax holidays on corporate income tax from 1 to 9 years and on income tax from 2 to 7 years, depending on the export share (minimum 60%) and location of the firm (the closer to Addis Ababa, the fewer years), access to serviced industrial parks as well as support through sector-specific institutes (Gebreeyesus 2013).

   What is more there is a clear distinction in policy documents between 'rent-seeking' and 'developmental' industrialists, and an emphasis on the need to curtail the former and promote the latter. The Ethiopian government seems to have a deep-seated mistrust towards traders as rent-seeking middlepersons in contrast to as producers (Bräutigam et al. 2015). For example, foreign investors are not allowed to invest in trading-related activities. Some trading activities such as those performed by agents are, however, crucial for gaining access to and

[2]Whitfield and Staritz (2019) provide an overview of the development of textile and apparel sector-specific industrial policy in Ethiopia.

building trust with foreign buyers. This is less of an issue for large foreign firms, which have access to buyers through their head offices abroad but important for smaller foreign firms—and particularly local ones.

2. Use of land and serviced industrial parks to attract investment: In Ethiopia, land can only be leased from local and regional authorities for up to 99 years. Hence, access is important. Firms in priority export sectors gain access to land at favourable lease rates. More recently, the government has developed industrial parks targeting specific sectors. These provide not only land and factory shells but also communication/telecommunication services, electricity and water. They are particularly important in tackling infrastructure challenges. The first industrial park established was Bole Lemi, with 20 relatively large prefabricated factory sheds. It was fully booked out even before construction was completed. Factory rental has a renewable 10-year term, with a very favourable rental charge of USD 1 per square metre and month in the first 5 years and USD 1.25 per square metre and month in the remaining five. Outside of Addis Ababa, the most developed industrial park is Hawassa, where a group of foreign manufacturers largely from the apparel sector is commencing operations. Further industrial parks planned and developed are Adama, Bahir Dar, Dire Dawa, Jimma, Kombolcha and Mekele.

   There are more FDI firms wanting to invest in or expand into industrial parks than the government can accommodate. Consequently, some firms have started to build such parks on their own. Parks have been allocated to foreign investors on a country-cluster basis, and have been granted to Chinese, Egyptian, Indian and Turkish investors. The aforementioned Eastern Industrial Park (located just outside of Addis Ababa) is the first such one, developed by a Chinese private firm with support from its national government in 2007. It contains, however, only few textile and apparel-related firms. The other country-based industrial parks are only at an early inception stage currently.
3. Strategic FDI attraction and GVC participation: Policy in Ethiopia emphasises GVC participation and attracting foreign lead firms as critical levers to access global markets. FDI is a key channel to acquire capital, skills and technology. Investors are actively approached. FDI attraction involves high-level bureaucrats and politicians, with prime ministers personally visiting priority countries to talk to potential investors. The focus is twofold: persuading buyers from the EU and US to source from Ethiopia, and attracting large first-tier suppliers from apparel-producing countries to set up plants in Ethiopia. The strategy is to bring in key buyers and suppliers as first movers, thereby increasing the country's profile on the international-sourcing landscape.

   The strategic approach to FDI attraction requires investors to ensure an export focus and vertical integration or linkages. Foreign firms are required to export 80% of production to secure incentives and political support. Firms not able to reach their export targets lose this support. Moreover, linkage policies do not confuse localisation with indigenisation. Textile firms are pushed to expand into apparel to increase local value-addition and apparel firms to invest in textiles, particularly if they have mills abroad. Textile firms are also pressed to sell fabric and yarn to local apparel manufacturers. The Ethiopian government is clear that

only attracting FDI is not sustainable for building competitive industries. Hence, it is complemented by aiming to secure transfers of skills and technology from foreign to local firms. The aim is to assist Ethiopian firms to develop their own capacity to break into international markets. Policy documents differentiate between attracting large-scale foreign investments and focussing on domestic investors to build medium- and small-scale capabilities. In other words, they try to avoid the usual large-firm bias that can be seen in the other main sub-Saharan African apparel-exporting countries. However, backward and subcontracting linkages are still very limited.

4. Focus on productivity and skills through specific institutes: Productivity and skills are accorded major importance, and priority sectors are strengthened through the establishment of sector-specific capacity-building and technology-support institutes. TIDI has been established to support, coordinate and guide the textile and apparel sector. It implements a capacity-building programme to enhance competitiveness, provide consultancy, investment promotion, marketing services, research and training (Gebreeyesus 2013). In addition, largely through TIDI (2015), the government provides capacity-building and export-facilitation activities such as trade fairs, benchmarking studies and investment support. However TIDI seems unable to operate as a one-stop shop for firms, which still have to apply to various government departments and ministries for permissions and permits (Bräutigam et al. 2015).

   The government has strongly invested in education and training. Technical and vocational education and training has been expanded with support from the German Corporation for International Cooperation, new universities have been built with a focus on science and technology, and sector-specific institutes such the Textile and Apparel Institute at TIDI have been set up. The Ethiopian Institute of Textile and Fashion Technology (EiTEX) at Bahir Dar University produces graduates in garment engineering, textile engineering and fashion design, who occupy most top-management positions in the textile and apparel firms. The government supports the recruitment of foreign supervisory and managerial personnel in local firms through a matching grant scheme, facilitates access to temporary work permits for technical personnel within foreign firms, assists export ones in hiring expatriate experts and organises short-term training seminars for supervisors and managers too.

5. Exporting alongside domestic market protection: All firms in the sector are strongly encouraged to export. The National Export Coordination Committee, chaired by the prime minister, meets monthly to set and monitor export targets. It aims to improve coordination among government institutions (Oqubay 2015; Gebreeyesus 2013). Firms have to submit yearly export plans, demonstrate a commitment to export and meet certain export targets to which incentives are coupled. High import protection in the sector is intended to facilitate export-oriented industrialisation, and is subordinated to export. Close to two-thirds of tariff lines are protected by the maximum tariff of 35% plus an excise duty of 10%, a surcharge of 10% and a value-added tax of 15%—with the latter also applying to local inputs. However, exemptions allow for the duty-free

importation of inputs used for export products. Ethiopia has also prohibited the import of second-hand textile and apparel items, which have proven to be a major problem in neighbouring East African countries (Office of Textiles and Apparel 2016).

Protection does, however, incentivise firms to sell to the domestic market, since it offers higher profits, is less demanding in terms of standards than export ones and does not require investments in compliance and upgrading either. As such the majority of local firms only supply the domestic market, and those that export also straddle both that market and the domestic one too. Earlier FDI firms also supplied the domestic market, but the new wave of FDI based in industrial parks is focussed specifically on export. Hence, the government's dualistic policy of combining export focus and import substitution has helped to subsidise the process of becoming competitive for local firms—but, at the same time, it has also reduced incentives to become competitive and to upgrade. Ultimately, the Ethiopian government tries to operate with both a carrot and a stick to firms' intent on primarily hiding behind protective domestic barriers. Still, it has faced challenges to implement this approach.

6. Development of value-chain linkages between apparel, textile and cotton: The Ethiopian government operates a dual import strategy to develop a well-integrated industry and avoid import dependency. It provides facilities for exporters to import duty-free inputs, improve trade logistics and rail transport as well as to increase local value-addition through backward and forward linkages. The latter requires particularly improving capacity, quality and price in the textile sector, as the existing local textile mills cannot be used for export production. Hence, the government concentrates on attracting new investors to build textile capacity. A similar strategy is followed for accessories and packaging inputs within industrial parks. Even though Ethiopia has significant potential in terms of cotton production, gaining access to cotton supply continues to be a challenge for textile mills. The recent transfer of responsibility of cotton development to TIDI provides a chance to deal with the entire value chain in a coordinated manner. The government is working towards expanding cultivation, improving production, raising quality and attracting domestic and foreign investors for cotton.
7. A green industrialisation agenda: The Ethiopian government is attempting to mainstream a green industrialisation agenda into the country's industrial policy and practices, through incorporating its Climate Resilient Green Economy Strategy. Another key policy document, 'the Green Economy Plan', is based on four pillars—the last one being leapfrogging to modern and energy-efficient technologies in buildings, industrial sectors and transport. It aims to implement innovative measures to bring a green-growth agenda to three key sectors: cement, leather and textile/apparel. At the core is a major focus on renewable energy—geothermal, hydropower and wind—to cut carbon emissions. Central to this is ensuring that the new industrial parks use LED and intelligent lighting systems, renewable energy sources, natural ventilation and lighting, recycled water and renewable resources, develop green areas and reflect upgraded environmental standards and

inspection systems. The government hopes to leapfrog global competition by using the parks' green identity to provide a competitive advantage over Asian firms (Oqubay 2015).

4 Upgrading and Localisation

There have been functional, process- and product-upgrading initiatives in Ethiopia's apparel export sector. Simultaneously, there are also localisation processes in terms of local linkages and skill development—ones that are, however, only at an early stage currently. With regard to process upgrading, the technologies used in the industry—and, hence, productivity—vary considerably. Local firms, particularly older ones, tend to use basic and medium-level technology. Newer locally owned apparel firms usually have better technology. In earlier waves, foreign-owned firms made use of the government allowance to relocate their whole factory from abroad—including second-hand machinery. Most foreign-owned firms in the industrial parks have invested in the latest technology. For local firms, limited capacity utilisation, smaller-scale operations, poorly trained workers, weak intra-firm organisation and low-quality raw materials are major reasons for limited productivity (Gebre Egziabher 2012; Van der Pols 2015).

Yet, a World Bank study indicates that in a few well-managed firms, labour productivity is nearly comparable to levels in China and Vietnam (Dinh et al. 2012). This shows that if proper work layout and training is put in place, the average productivity of labour can be improved significantly—especially for basic apparel products. An issue impacting on productivity is labour turnover in the context of developing an industrial working class, and workers shifting between firms and sectors in search of higher wages.

Product upgrading has occurred only to a limited extent, as exports are concentrated in basic apparel products; several firms aim to upgrade the types of product to more complex ones, however. A South Korean firm in an industrial park produces quite complex, high-quality products for outwear brand buyers, but at the cost of high productivity. Locally owned firms tend to be focussed on basic knitwear products for the EU market, and on relatively standard sport and workwear products exported to the US. The current focus on basic products is also confirmed by export data: Ethiopian apparel export products are mostly basic, relatively low-value items, and show a high degree of concentration. Key export products include jerseys, knit t-shirts and trousers. Export product concentration is relatively high, as compared to Asian and other sub-Saharan African countries. The top-five products accounted for almost 70% of total apparel exports in 2014. With regard to the two key end markets, product concentration is high in both—with the top-ten products accounting for 92% in the EU-15 and for 88% in the US respectively. All of the top-ten products for the EU-15 in 2014 were knitwear items, while there were four woven items among the top-ten US ones, according to data obtained from the UN International Trade Statistics Database.

The majority of export firms are CMT, but there is a wide range in respect of future forms of adaptation—indicating a potential for functional upgrading. Most foreign transnational firms are undertaking CMT in Ethiopia, with their head offices abroad conducting higher value functions. But some, particularly the new wave of Indian investors, have a more flexible division of labour and are also planning to bring textile production to Ethiopia. Other foreign firms have offices abroad but already pursue a more flexible division of labour, with Ethiopia being their only foreign production location. Local export firms are CMT, or full package—'free on board' (FOB).[3] For some, CMT is the preferred option because FOB is too risky in the current business context in Ethiopia. Hence, they prefer buyers in charge of input sourcing, design and specifications. For local FOB firms, a challenge is that competitive fabric inputs are often not available locally. They have to be imported. Few local firms provide their own textiles for apparel exports. Buyers increasingly want to work with full-package suppliers; upgrading to FOB will be important, then. Most locally owned firms do full-package production or even original design manufacturing for the domestic market, meaning that they provide the design themselves; some firms also have own-brand products in the domestic market too.

While the sector exhibits some important characteristics of integrated value chains, this is still at a very early stage with regard to backward and subcontracting linkages among export firms. There are minimal linkages between foreign and local firms in the export business. There are, however, more linkages between firms supplying the domestic market and local apparel ones sourcing fabric from domestic mills. Foreign apparel firms generally do not source from local textile mills in Ethiopia. They prefer using their own global textile mills or suppliers nominated by their buyers. Subcontracting relationships between foreign and local firms are also very limited. Due to a lack of experience and the sole focus on domestic sales, many fabric qualities are based on carded cotton, have an inferior quality and do not comply with international standards on chemical use, restricted substances and shrinkage. Hence, local fabric can only be used to produce made-up textiles, uniforms and workwear for the domestic market (Van der Pols 2015). There is also a mismatch between knitted and woven fabric. The former state-owned textile mills are all in woven manufacturing. Exports are, however, concentrated on knit apparel products. Thus, apparel exporters are forced to import accessories and fabric to meet international standards.

Given Ethiopia's very recent development of export-oriented manufacturing workers from the countryside have little experience in industrial employment, and basic labour skills are absent. All firms interviewed mentioned this, but also the high potential of Ethiopian workers to develop their skills—not only at the operator but also management and technician levels. Some FDI firms pointed out that they were

[3]Under CMT, buyers are in charge of input sourcing and financing as well as the suppliers get a fee for producing the apparel product. Under full package, or FOB, suppliers produce to the design specifications of the respective buyers—but the former are in charge of sourcing and financing inputs, most importantly textiles. Suppliers are also responsible up to the point of loading onto export carriers.

positively surprised by the good trainability of local workers. Most are trained on the job, as there are limited high-quality training institutes. Skilled labour at higher levels is increasing as a result of fast-growing education and emerging training institutions. Managers and technical graduates are particularly recruited from the aforementioned EiTEX. In foreign-owned firms, there is a mix of expatriate and local workers in management and technical positions. Notwithstanding the limited development of the export-oriented industry, the share of expatriates is, however, low compared to other apparel-exporting countries (Morris et al. 2016). In most firms, the objective is also to train locals and replace expats. Local export firms can access matching grant and other government support schemes to use foreign experts for a certain period of time.

5 Conclusion

In summary, the Ethiopian government needs to address a number of challenges to make the apparel export sector more internationally competitive and to improve its developmental outcomes:

- Access to local inputs is a major impediment, and contradicts the integrated value-chain approach of the Ethiopian industrial development strategy.
- The challenges in offering FOB production, larger volumes and product diversity restrict locally owned firms with regard to upgrading processes and the creation of stable buyer relations.
- Infrastructure deficits discount the country's wage advantage and—together with lead-time issues internal to the firms—prevent companies from entering the higher-value, time-sensitive segments of the export market.
- Basic skills gaps are being met through a variety of interventions, but productivity is a more crucial issue related to higher production, managerial and technical skills and labour turnover; it particularly affects more complex apparel products.
- Social upgrading, especially in terms of working conditions, is another issue that merits more attention, because it constitutes a concern that is not addressed as strategically as environmental upgrading is.

In many senses, what has been happening in the Ethiopian textile and apparel sector is exceptional for a low-income country. Despite starting from a very low base, Ethiopia has seen impressive progress through an active export-driven industrial policy, based on understanding the strategic importance of GVCs and of linkages between end markets, lead firms, large foreign producers and knowledge transfer to locally-owned firms to build domestic industrial and export capabilities. The government has developed a holistic industrial policy to promote industrialisation through developing the manufacturing industry, with textile and apparel being among the key priority sectors. It has used state levers to provide support for exporters, without opening up the domestic market to foreign imports and FDI firms—leaving it to local firms instead. The government has strategically

attracted buyers to come to Ethiopia and sought FDI from major apparel-producing countries. Sector-based, serviced industrial parks with targeted incentives for export firms are a central mechanism to attract investment. The government has created sector-focussed institutions that concentrate on skills and technological capacity-building for targeting entrepreneurs and workers. It furthermore tries to encourage integration between textile and apparel production and the cotton sector, with the aim of creating domestically integrated value chains.

Thus far, Ethiopia has shown some remarkable success in creating an apparel-exporting sector. The growth rates of exports over the past 5 years are impressive. The goals to force the pace of this are admirable. The sector has also experienced upgrading initiatives regarding functions, processes and products. They remain focussed on new foreign firms, though. Localisation processes in terms of local linkages and skill development exist but are at an early stage. The government moreover pursues an active approach in terms of environmental sustainability; this is, however, in contrast to social sustainability. Providing Ethiopia with a niche as a green textile and apparel production location is seen as a competitive edge, and a way to leapfrog the global position of Asian and other sub-Saharan African producers.

However the field research that we carried out in Ethiopia has revealed that challenges remain, particularly in terms of limited local linkages of apparel exporters, the focus on CMT production, long lead times, low production and product flexibility, skills issues as well as insufficient infrastructure. Most worryingly, backward linkages from apparel to textile and cotton are quite limited, even though an integrated value-chain approach through ADLI has been a main feature of the Ethiopian development strategy. Also, linkages between foreign and local firms remain limited. Hence, despite important progress, it remains to be seen how sustainable the process will be—and to what extent the policy objectives will be realised. The jury is still out on whether the ambitious policy goals and initial successful performance will achieve the envisaged industrialisation targets in the long run. Yet, one thing is for certain: this is a production location that differs markedly from other apparel producers in sub-Saharan Africa.

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Mozambique's Megaproject-Based Economic Model: Still Struggling with Uneven Development?

Eduardo Bidaurratzaga Aurre and Artur Colom Jaén

1 Introduction

It was certainly difficult to foresee at the end of the civil war in 1992 what Mozambique's situation would be like in 25 years' time, both in political and socio-economic terms. There is no doubt that plenty of achievements have been made. Yet, at the same time, the drawbacks and limits to Mozambique's current development model—with it lagging behind much of the rest of the world—are becoming more and more obvious. It has not been hard to enhance the satisfaction of basic needs, coming from a background of an armed conflict. For instance life expectancy increased from 43 years in 1990 to 58 in 2016, and the primary education completion rate rose from 27% to 48% in the same period. Something similar happened with per capita income levels: gross national income per capita (in purchasing power parity) increased from USD 240 in 1990 to USD 1190 in 2016 (World Bank 2017). Nevertheless, Mozambique ranks 181 out of 188 on the Human Development Index (HDI) (UNDP 2016), as an expression of its low levels of development—as measured by education, income and health indicators—in comparison with the rest of the world.

After long years of considerable financial dependence on the international donor community, as well as only limited economic activity until very recently, Mozambique has lately experienced high economic growth and increasing foreign direct investment (FDI)—closely linked to natural resources as well as to megaprojects in a number of sectors. Among others, the following should be mentioned in this regard:

E. Bidaurratzaga Aurre
Department of Applied Economics, University of the Basque Country, Bilbao, Spain
e-mail: eduardo.bidaurratzaga@ehu.eus

A. Colom Jaén (✉)
Department of Applied Economics, University of Valencia, Valencia, Spain
e-mail: artur.colom@uv.es

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the discovery and exploitation of large reserves of coal and natural gas; investments in infrastructure for the enhancement of the country's hydropower capacity at Cahora Bassa (Tete Province) and other dams; and, the emergence of the country as one of the leading aluminium exporters across Africa due to the huge investments made in the smelter Mozal, located near Maputo. Megaprojects and the dynamics around them—with a high level of attraction of FDI—have become an essential feature of Mozambique's current economic model. This has been particularly noticeable since the year 2000, with the aluminium, coal and natural gas sectors becoming the country's industrial backbone (Almeida Santos et al. 2017). There is concern, however, regarding the effects of this development on the rest of the economy, in particular because of the low-value-added nature of mostly outward-oriented and geographically highly concentrated economic activities (Castel-Branco 2010, 2015; Massingue 2015). It begs the question of to what extent these megaprojects can really make a difference when it comes to the structural transformation of the economy through linkages with other sectors, moving up in global value chains (GVCs), the creation of higher value-added activities, more and better jobs, positive social change and, in short, better living conditions for the majority of Mozambicans.

In order to answer this question we first review different theoretical approaches regarding the possibility of economic diversification and transformation, focussing on GVCs and linkages. We then analyse the antecedents, recent developments and current as well as potential effects of the changes that have occurred due to megaprojects in Mozambique related to coal, hydropower and natural gas, as well as the aluminium industry. We show that remarkable transformations are taking place in all of these, including the expansion of production, the attraction of high levels of FDI and the emergence of new players from the Global South that now compete with transnational companies (TNCs) from traditional economic partner countries of Mozambique. Next, we apply the aforementioned approaches to the specificities of the Mozambican case. We highlight the potentials of, as well as the limits and drawbacks to, the country's current economic model. We finally draw conclusions, and provide recommendations for improving this model.

2 Conceptual and Theoretical Considerations

One of the dimensions of economic globalisation that has considerable implications for developing countries is the emergence of GVCs. The possibility of fragmenting the production process and offshoring parts of it has given opportunities to developing countries to join GVCs, as China and other Asian countries besides have done. In fact, Asian integration into GVCs is often cited as a model for promoting economic transformation in Africa. The abundance of labour and low-to-moderate requirements in terms of infrastructure, skills and technology in some industries potentially open the way for this (Gereffi 2014; Gereffi et al. 2005). The concept of backward integration serves to better assess a country's participation in GVCs. A

high backward integration level means that domestic industries add value at more complex stages. Reflecting its high dependence on resource exports, Africa's exports embed only 15% of foreign value added, whereas the figure is, on average, 20% for developing countries; so there is certainly room for the continent to move forwards. Regarding the specific situation of Mozambique, the corresponding figure stood at 13% between 2008 and 2012, down from 17% for the period from 1991 to 1995 (Allard et al. 2016).

Approaching value chains from a regional perspective offers interesting insights, since it is part of the regional integration debate. In Africa regional backward integration—that is, foreign value added coming from the continent as a percentage of total exported foreign value added—was 9% in 2011, and merely 6% in the case of Mozambique itself. The corresponding figure for Asia, meanwhile, was 39% (UNECA 2015), indicating a much higher share of manufactured exports. In short, Mozambique appears to have lots of potential to increase its participation in regional value chains (RVCs). Participating in global or regional value chains is regarded as a tool for creating linkages between different economic activities, and promoting economic diversification and structural transformation, a topic that has recently received particular attention from international institutions—especially when it comes to outward-oriented economies specialised in commodity production (UNCTAD 2012a, 2017; UNECA 2013, 2016). The World Bank, in particular, supports the idea of the insertion into GVCs by developing countries as a way to become more competitive, and as an alternative to inward-looking, protectionist strategies (Farole and Winkler 2014; Taglioni and Winkler 2016).

The importance of creating linkages—a proposal first put forward by Hirschmann (1958), and recently applied to the specifically African context by Morris et al. (2012) and Morris and Fessehaie (2014)—to some extent shows the return to structuralist economics after three decades of neoclassical dominance in the field of development economics. In our reading of this literature, this implies that promoting competitiveness and setting up a sound macro-economic framework is not necessarily a priority. Development is rather about balancing the sectoral structure of the economy through diversification. This would create productive employment in higher value-added economic activities—that is, transforming low-productivity activities into more productive ones. Most research on GVCs accordingly focusses on the manufacturing sector and on the success stories of emerging economies in Asia and Latin America, as well as on the competitiveness of companies in particular sub-sectors such as the apparel industry. Those examples are not relevant for countries like Mozambique, given that manufacturing is still in its infancy there and general levels of competitiveness displayed by local firms are low (World Economic Forum 2017); problems that are, at least partly, due to megaprojects, for example through 'Dutch disease' effects (more on this later). The services sector has recently grown, but essentially only for the provision of the domestic market and disconnected from GVCs (UNCTAD 2012b).

Given these differences between Mozambique, on the one side, and typical cases in GVC studies, on the other, for those countries in which outward-oriented commodity or energy production is the norm—with a high degree of participation therein

of TNCs—other theoretical contributions can also be appealing. By this we mean the literature about enclave economies, starting with Singer (1950). Also significant is Bair (2005) and her critical view of the GVC approach, especially when it comes to recognising structural factors such as the international political economy of dependency and uneven development.

3 Mining Megaprojects: Emerging Coal and Natural Gas Extraction

Coal and natural gas are the mining sub-sectors that have been most radically transformed in the last two decades, with potential for further expansion in the foreseeable future too. All this has come as a consequence of the discovery of immense reserves of coal and natural gas in the central and northern provinces, and the subsequent attraction of large-scale FDI from some of the largest TNCs in the mining sector. Although the extractive sector holds a share of gross domestic product of only 4%, it grew by 11% in 2016 and is believed to be the main driver of economic growth in Mozambique now (Almeida Santos et al. 2017).

3.1 Coal

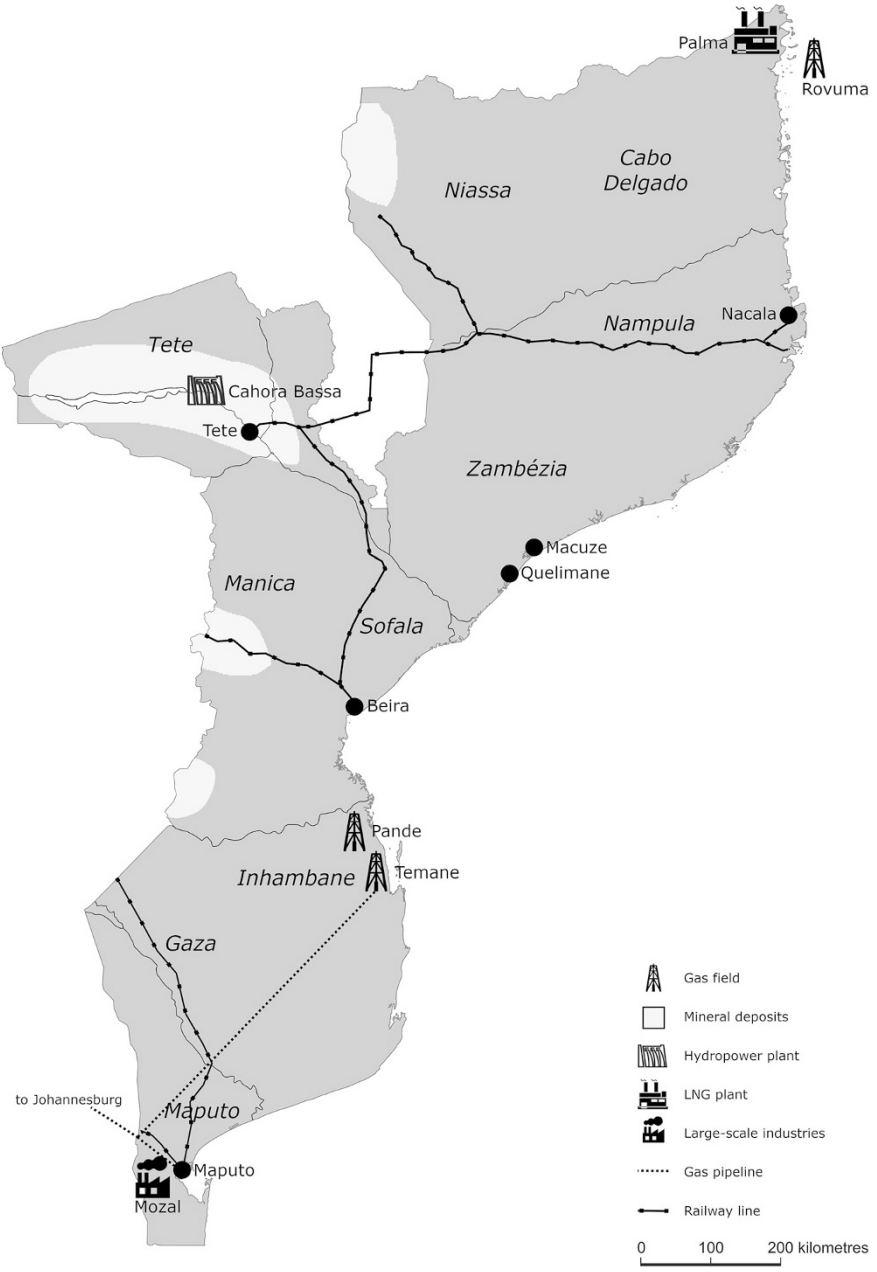
Coal has traditionally been exploited in north-western Tete Province in the form of small-scale mining, for both domestic consumption and export purposes. Production levels were very low during the civil war (1977–1992). Later on, small amounts of coal were mined and exported to Malawi by the state-owned Carbomoc Company. All that began to change in 2004, when the Brazilian conglomerate Vale won the right to exploit the Moatize Coal Field, considered to hold one of the largest untapped reserves of this resource anywhere in the world. After a major investment of USD 1.7 billion by Vale in an open-cast mining project, it commenced production and exportation via the Sena Railway Line to the port of Beira in 2011. Vale's production in Moatize went from 3.7 million tonnes in 2012 to 5.5 million in 2016, still far from the estimated maximum capacity of 11 million tonnes a year (US Geological Survey 2012; Vale 2017a). Following the increasing trend of previous years, production reached 2.4 million tonnes in the first quarter of 2017—setting a quarterly record in the process (Vale 2017b).

The other main company involved in coal extraction in Mozambique was initially United Kingdom-based Rio Tinto, since it bought the Australian company Riversdale some months after the latter had opened a mine near the village of Benga with its Indian joint venture partner Tata Steel, in 2011. Rio Tinto, which owned 65% of the project, sold it to the Indian state-owned consortium International Coal Ventures (ICVL) in 2014. ICVL also bought the Zambeze Coal Project from

Rio Tinto in the same year, thus becoming the second major player involved in coal mining in Mozambique alongside Vale. By now, an increasing number of other firms such as Anglo American from South Africa, the Eurasian Natural Resources Corporation from Kazakhstan, Jindal Steel & Power from India and the Nippon Steel & Sumitomo Metal Corporation are also involved. As a result of the spread of coal mining in Tete Province in recent years, production would grow from almost one million tonnes in 2011 to eight million in 2016 (Deloitte 2016). It is believed that further expansion of local coal mining will take place in the near future, in order to satisfy the demand of the emerging Asian markets. Furthermore there seems to be high potential for the discovery of new coal reserves in other provinces, especially in Niassa and, to a lesser extent, in Cabo Delgado and Manica (Selemane 2013).

Apart from the large volume of reserves discovered, which amount to around 23 billion tonnes, the other factor that explains the rapid expansion of coal mining is its high quality. This is particularly noticeable in the case of metallurgical coal, which is more abundant in Mozambique and also of higher quality than that of competitors such as Australia, South Africa and the United States. Among all the reserves found so far, around 70% are made up of metallurgical coal and the remaining 30% of thermal coal. Most of this coal extracted—and especially the type used for the aluminium, iron and steel industries—will be oriented towards the export market. The location of the Mozambican ports on the Indian Ocean makes its coal even more suitable for the supplying of Asian markets, China and India in particular. Mozambique can become, in that way, a suitable alternative to established large exporters like Canada and the US. Lately though, the expansion of coal mining has been affected by the decreasing prices for coking coal in international markets, due to the slowdown in China's and India's demand for it. In consequence Beacon Hill Resources, for example, suspended production in 2013.

In any case the most restrictive factor for the further expansion of coal production in Mozambique has been transport infrastructure, limited for some years to the Sena Railway Line (Scholvin and Plagemann 2014). That has changed very recently due to some massive investments made: after 3 years of works and prior to Beira's seaport coal terminal upgrade, the expansion on the Sena Railway Line was completed in 2016. It has increased its annual capacity from 6 million to 20 million tonnes (Macauhub 2016). Also in 2016, work on the Nacala–Tete Railway Line—which had begun in 2012—was finally completed. This new transport infrastructure is now capable of handling 22 million tonnes of cargo a year (Almeida Santos et al. 2017). The construction of the Nacala–Tete Railway Line, through Malawi, has been led by Vale and by Mozambique's state port and railway operator, Caminhos de Ferro de Moçambique. The project also includes a new export terminal at Nacala-a-Velha, able to store around one million tonnes of coal and reaching a capacity of approximately 150 ships a year (Railway Gazette 2017). Despite these significant improvements, there is still talk of building a new railway line, rehabilitating the port of Quelimane and constructing a new offshore floating terminal in Macuze, north of Quelimane, a plan initially proposed by Rio Tinto (Hanlon 2015; Macauhub 2016; Selemane 2013). Map 1 provides an overview of Mozambique's resources and related transport infrastructure:



Map 1 Megaprojects, resources and transport infrastructure in mozambique. Source: Compilation by Sören Scholvin

What is more, the expansion of coal production is going to be extremely welcome—not only in terms of increasing export capacity but also in order to satisfy the increasing demand that results from new coal-fired power stations in Mozambique, likely to commence operations between 2018 and 2025. These are projects such as ICVL's 300-megawatt (MW) plant, which could be expanded to 2000 MW later on, Jindal Africa's 150-MW power station, with a possible capacity of more than 2500 MW in the future, Ncondezi Energy's 300-MW plant, which could expand to 1800 MW, a 300-MW plant to be built by the Saudi Arabian firm ACWA Power and the government's planned 1200-MW plant in Nacala (Deloitte 2016; US Geological Survey 2014). Considering the rather low electricity demand in Mozambique, it appears, however, that not all of these projects will eventually become reality. They rather constitute alternatives to one another.

3.2 Natural Gas

Extraction of natural gas in Mozambique is not new either. It began with the discovery of reserves in the provinces of Inhambane and Sofala in the 1960s, but large-scale production had to wait for several decades until the South African firm Sasol started extracting natural gas from the Pande and Temane Fields in Inhambane in 2004. Since then, about 90% of production has been exported through a pipeline to South Africa in order to satisfy the demand of the industrial complex around and close to Johannesburg, in particular of the chemical plant of Secunda (Amanam 2017; Chambal 2010). Later on, intensive exploration took place in the north of Mozambique and, since 2010, it has become clear that reserves discovered in the province of Cabo Delgado are far larger than those in Inhambane and Sofala—indeed, among the largest in the world.

In fact, since the government contracted exploration and production agreements with several overseas partners in 2006, the extensive offshore reserves found in the Rovuma Basin have significantly transformed the hydrocarbon sector in Mozambique. Two companies have played a leading role: US-based Anadarko and ENI from Italy, the latter holding the rights to the offshore areas where most of the recoverable reserves have been found so far. Many other firms from a variety of different countries are involved, having obtained smaller concessions. Especially significant in this regard is the increasing presence of companies from emerging economies—and from Asia in particular, as a reflection of the importance of those large reserves to meeting the future needs of Asian markets (Frühauf 2014; Gqada 2012; Selemane 2013). The state-owned Empresa Nacional de Hidrocarbonetos (ENH) holds a share of between 10 and 15% in all concessions granted to these TNCs.

Initially, Anadarko and ENI had plans to jointly build a large liquefied natural gas (LNG) plant at Palma in Cabo Delgado. The original plans also included shipping LNG by 2018. However these deadlines have been postponed for a number of reasons, including a scandal related to the disclosure of government-hidden debts in 2016 as well as the downward trend of hydrocarbon commodity prices in recent

years (Deloitte 2016; US Geological Survey 2014). Both companies have finally decided to work separately on two different megaprojects, considered to be among the most ambitious of their respective type worldwide: Anadarko plans to develop Mozambique's first onshore LNG plant at the Afungi Peninsula in the district of Palma. This will consist of two initial LNG trains, with a total capacity of 12 million tonnes a year (*Oil and Gas Journal* 2017a). ENI is developing, meanwhile, a floating LNG facility that will be fed by six subsea wells and is expected to produce 3.4 million tonnes of LNG a year (*Oil and Gas Journal* 2017b).

Given these circumstances, the first shipping of LNG from the Rovuma Basin is unlikely to become reality before 2022, as at least 5 years will be need to build the necessary infrastructure after the final investment decisions are made. Once these major infrastructure undertakings are concluded and production reaches its maximum output (probably around 2025), optimistic estimates suggest that Mozambique will become the third-largest LNG exporter in the world, after Qatar and Australia (Deloitte 2016). Additionally, apart from the above-mentioned onshore Pande and Temane Fields, Sasol holds interests in several other offshore fields both in Inhambane and Sofala (Selemane 2013). The South African company recently discovered new oil and gas deposits—both off- and onshore—in Inhambane, whose exact sizes are still unknown (Club of Mozambique 2016; *Oil Review Africa* 2017). The related drilling is the first phase of a megaproject that includes 13 wells and a liquefied petroleum gas facility that is expected to produce, among other outputs, 20,000 tonnes of cooking gas a year (Amanam 2017; Export.gov 2017).

Beyond export opportunities, the Mozambican government has, in recent years, tried to improve the currently poor access to electricity throughout the country and to reduce energy imports by making use of its abundant natural gas reserves. The most significant natural gas-fired, power-plant projects are a 120-MW power station in Ressano Garcia (Maputo Province), which has been in operation since 2016, a 100-MW plant close to Maputo, whose construction began in 2016 and has been funded by the Japan International Cooperation Agency, a 400-MW power station proposed by Sasol to be built in Inhambane in the near future as well as two other smaller power plants proposed for Kavaninga (Gaza Province) and Palma (Amanam 2017; Deloitte 2016).

4 Non-mining Megaprojects: Hydropower and Aluminium Smelting

The dynamics of megaprojects are also remarkable beyond the mining sector too, mainly in hydroelectricity generation and aluminium production. The former has a long tradition that began with the construction of the Cahora Bassa Dam during the last years of colonial rule. As for industrial megaprojects, Mozal, a world-class aluminium smelter, commenced production in the year 2000. Both the Cahora Bassa

Dam and Mozal were designed to be outward-oriented, and used to be the main exporters until the mining boom arrived.

4.1 Cahora Bassa

The first megaproject undertaken in Mozambique was the Cahora Bassa Dam, which first began to operate in the mid-1970s, turning the country into one of the main producers of hydro-energy in Africa. Today, the Cahora Bassa Power Plant is still one of the largest on the continent—with a generation capacity of 2025 MW. Hidroeléctrica de Cahora Bassa (HCB), the company exploiting the dam, was jointly owned by Mozambique and Portugal—with 18% and 82% shares therein respectively—until 2007, when Mozambique took control of the dam by increasing its share to 85%. In 2012 Mozambique increased its holding in HCB up to 92.5%, while Portugal retained the remaining 7.5%. Up to 65% of the electricity produced at Cahora Bassa is exported to South Africa. The rest either goes to Zimbabwe or is sold domestically. In 2015 electricity ranked third on Mozambique's exports list, only behind aluminium and coal, with a value of USD 317 million, equivalent to 9.9% of total exports (Banco de Moçambique 2015).

As noted, domestic electricity demand has been growing and Mozambique is trying to increase its energy capacity to meet the needs of industrial activities—especially aluminium production. On top of this, an increasing number of households in the country's main towns and rural communities are now being connected to the national grid. The electrification rate increased from 12% in 2005 to 21% in 2014 (World Bank 2017). It is expected to grow even further in the coming years. Due to these developments, there are plans to increase the current power capacity of Cahora Bassa by 850 MW, as part of a continuing project for further expansion via the construction of another unit on the north bank of the dam. A project to build a further hydropower scheme in Mphanda Nkuwa, downstream from Cahora Bassa, is also moving ahead. It is expected to reach a capacity of more than 2400 MW by the end of its second phase of implementation (Chambal 2010). On top of all this, the Ministry of Energy has identified unused potential for hydropower generation—for both medium-sized and large plants, as well as for micro-hydro schemes in the central and northern provinces.

In 2011, the Mozambican government launched an ambitious project called 'Centre South' (CESUL in Portuguese) to connect the hydroelectric stations to the grids of neighbouring countries and domestic rural areas on the way to Maputo (African Development Bank et al. 2012). Aside from their importance for Mozambique and the neighbouring countries, these projects initially appeared of great importance for South Africa too, since a significant proportion of their future output was likely to be sold to Eskom—the state-owned electricity provider of that country—to alleviate its own national electricity shortages. Nowadays, South Africa no longer suffers from electricity shortages however. Eskom has even blocked renewable energy projects at home, indicating that this once-lucrative market for Mozambique

is, at present, off limits. This situation may, of course, change if the South African economy recovers.

4.2 Mozal

The first industrial megaproject established in Mozambique was Mozal, a world-class, export-oriented aluminium smelter located 20 km west of Maputo near the port of Matola. Mozal commenced operations, as noted, in the year 2000. It was a key part of the post-war recovery programme, which included attracting FDI to strategic sectors. Mozal is the outcome of an initial USD 2.4 billion investment made in a joint venture by the Australian company BHP Billiton (47.1% ownership), Mitsubishi (25%), the Industrial Development Corporation from South Africa (24%) and the government of Mozambique (3.9%). Interestingly enough, the availability of cheap electricity from South Africa, which is compensated for by exports from Cahora Bassa, was instrumental to convincing investors to establish Mozal—and later expand it. It is estimated that the aluminium smelting megaproject uses the equivalent of around 45% of all the electricity produced in Mozambique, and is responsible for 65% of overall domestic electricity consumption (Justiça Ambiental 2012). Due to the lack of domestic transmission capacities Mozal paradoxically uses electricity from South Africa, even though Mozambique is a net electricity exporter—turning Eskom into a key player. So, to some extent, we can take Mozal as a linkage produced by the Cahora Bassa Dam.

Mozal holds major relevance in the economic structure of Mozambique, accounting for almost 36% of total exports and 39% of total industrial production in 2015 (Banco de Moçambique 2015). The plant works essentially as an enclave economy, using imported inputs and exporting the output. Although the company directly employs 1150 mostly local workers, it displays limited linkages with the rest of the economy—in spite of efforts to promote them. A set of policies focussing on linkage creation around Mozal emerged as early as 1997, even before the actual investment in it. At that point, a study supported by the World Bank across a pool of 370 selected Mozambican companies that could potentially participate in the construction of Mozal found weak capabilities among them. As a consequence, it is not surprising that the participation of local companies in the construction phase fell short of earlier expectations (Buur 2014). Another programme was set up in order to encourage local participation in the procurement of Mozal's enlargement: the Small and Medium Enterprises Empowerment Linkages Programme ran between 2001 and 2003, and was slightly more successful because it involved technical training and Mozal standards were redesigned to fit better the actual capabilities of Mozambican firms. Mozlink I, the continuation of the programme, concentrated on getting local firms into the regular operations of the smelter. It included the establishment of the Beluluane Industrial Park. An extension of this programme, Mozlink II, also included firms not directly tied to Mozal, like those from the natural gas sector for example (International Finance Corporation 2011).

The achievements of all these efforts have remained limited, because the structural impediments were and are significant. A missing stepping stone has been identified in terms of firm size in Mozambique: most potentially available firms are too small to cope with Mozal's requirements. On the other hand, large firms are not flexible enough to adapt to these requirements. Apart from technical problems, corruption and vested interests have constituted another major bottleneck—as firms awarded contracts are often linked to the ruling party (Buur 2014).

5 From Megaprojects to Structural Transformation and Diversification

Since colonial rule many developing countries have long specialised in the production of commodities to supply the markets of industrialised countries, usually former metropoles. Nevertheless, in recent decades, some of them—particularly in Asia and Latin America—have managed to transform and diversify their economic structure and scale up in the process of fostering and creating higher value-added, domestic economic activities. Mozambique, like other African countries, has not been part of this kind of structural transformation. This situation should not be interpreted without considering the neoliberal policies applied in previous decades, mainly promoted by international financial institutions and major donors. The first structural adjustment programme in Mozambique was put in place in 1987, even as the civil war continued to rage on. Since then, restrictive monetary and fiscal policies, a pro-market approach, outward orientation and the promotion of FDI as the main means to foster development have been the norm.

In that context economic growth has had more to do with the promotion of an outward-oriented, megaproject-based economic model, restricted to the energy sector and to the aluminium smelting industry. On that note, the main fears and criticisms have been with respect to the establishment of enclave economies, with few connections to—let alone positive effects for—the rest of the economic activities in the country. In general, it appears that industrialised countries such as Australia, Norway and the US have managed to establish links between manufacturing and the commodities sector, which is less common in developing countries (Morris et al. 2012). In addition, the high dependence of Mozambique's economy on these sectors makes it vulnerable to international price volatility—which ends up affecting the performance of the economy as a whole.

The positive effects of megaproject-driven dynamics on economic growth, attraction of FDI and expansion of exports have proven to be significant in Mozambique in recent years (Almeida Santos et al. 2017; Deloitte 2016). Nevertheless, beyond macro-economic effects, megaprojects have certain limitations and drawbacks that should be considered when it comes to participating in global or regional value chains or to creating linkages. First of all, megaprojects tend to become enclave economies, severely limiting the creation of backward linkages with small and

medium enterprises (SMEs) as a result of the high requirements imposed on suppliers. The conditions established for the provision of goods and services to the TNCs involved in megaprojects are usually difficult for Mozambican SMEs to meet, both in terms of quality and quantity, with the exception of some very basic services such as security or cleaning (UNCTAD 2012b). Evidence given above for Mozal shows these limitations clearly in terms of the creation of linkages with SMEs. Thus, most goods and services for foreign companies come from their own countries of origin or from more developed and diversified regional neighbours. In the case of coal mining in Tete Province, for example, Brazilian and South African sub-contractors predominate. This reinforces Mozambique's strong dependence on manufactured imports (Castel-Branco 2015; Southern Africa Resource Watch 2012).

This does not mean that domestic backward and forward linkages from megaprojects are entirely absent, though. Despite their weakness in comparison with other countries, there are examples of local SMEs integrating into the dynamics of megaprojects through outsourcing. Soradio, a domestically owned electric contractor, is an example of this. It has supplied services to foreign investors, initially at Mozal and then later on in the agricultural and mining sectors too. Some other Mozambican SMEs have also managed to benefit from megaprojects, such as Ilulifemo Construções and Malacha Construções in the area of civil engineering and also Ferro & Ferro Comunicações, as a marketing and communication company (SAPO 2018). However, lack of financing for further expansion and the need to learn English hint at limits to SMEs trying to integrate with the outsourcing networks of TNCs (Farole and Winkler 2014).

What is more, some linkages that go beyond the sectors benefitting from FDI can be developed, as in the case of the aforementioned enhancement and rehabilitation of transport infrastructure for the mining industry. In principle, local SMEs benefit from better transport infrastructure—decreasing their logistics costs and offering their products and services to a wider geographical area. The new coal- and natural gas-fired power stations are also representative of forward linkages, as the electricity that they will produce constitutes a basic precondition for local companies to become competitive. However, transport infrastructure projects primarily serve the mining companies (Scholvin and Plagemann 2014). The yet-to-be-built power stations are still oriented at the regional market, and have only recently started to link to domestic customers as well (Amanam 2017).

Investments in energy infrastructure so as to provide better access to electricity is central to development processes, as this could enable the structural transformation of the Mozambican economy. With electricity being largely available, the spectrum of economic activities attractive to local and foreign investors alike would increase—leading to economic diversification. This could help Mozambican firms to shift from lower to higher productivity and to value-added activities. At the same time, such a development would increase domestic demand for electricity, enhancing—in a best-case scenario—the viability of further investments in electricity generation. That is why coordination between energy and development strategies is so important, in order to make energy supply and demand match (UNCTAD

2017). However the facts that Mozambique already exports electricity and that Mozal, which is based on cheap electricity, heavily depends on public subsidies somewhat call an electricity-based development path into question.

On another note, megaprojects usually involve very capital-intensive activities, ones that have scarce capacity for job creation—and particularly for women—in comparison to their relative size in the economy: megaprojects licensed in Mozambique between 1992 and 2010 are estimated to represent only 5% of total formal employment, while accumulating 70% of total capital (UNCTAD 2012b). Formal employment is only a fraction of total employment, further weakening the per capita job-creation effects of megaprojects. In a country in which unemployment and a lack of formal forms thereof are serious issues, the aforementioned projects—especially Mozal, but also the investments made by Sasol, Vale and other TNCs—appear to be off target. They miss the actual needs of the country, and of the majority of Mozambican citizens. What is more, as skilled labour is scarce in Mozambique then the demand for qualified foreign workers in megaprojects tends to be too high—with the local economy unable to meet the corresponding demand (at least immediately). However, this problem can be handled partly by proper legislation. In fact Mozambique's law regulating the recruitment of foreign workers was revised in 2007, establishing maximum shares of foreign workers based on the size of the respective company: 10% for small companies and 5% for large ones (UNCTAD 2012b).

Another factor to take into account when assessing the effects of megaprojects is fiscal linkages. Tax incentives granted to those large companies involved in certain megaprojects have been controversial, as they are widely considered to be far too generous. They are offered on the understanding that their investments will bring almost automatic spillover effects, and therefore benefit the rest of the economy. Given that these effects hardly ever become reality, the controversy about the insufficient tax revenue collected by the government is certainly pertinent. Fiscal linkages have remained weak in the case of Mozal too. The initial scheme—settled in 1997 by the government and encouraged by the Bretton Woods institutions—provided tax exemptions to virtually everything relating to the company, except a miniscule 1% tax levied on gross revenues. Even Mozal's foreign suppliers, accounting for more than 70% of its externalised services, are also exempt, preventing the taxation of the now-increasing economic activity in these sectors (Castel-Branco 2015; *Mozambique Mining Journal* 2017).

Tax incentives do not apply in a similar way to mining activities in Mozambique, apart from the 5-year tax exemption period granted at the start of exploration activities. Royalties are charged at a low 3% of sales for coal and other mineral products. For natural gas, they stand at 6%. To give a comparison here, the corresponding rates are 12.5% in Chad and 18% in Bolivia. In Mozambique, foreign investors are also allowed to import certain products—mainly equipment and spare parts—without paying either import duties or sales tax (UNCTAD 2012b). While the reason for this generous treatment is the low quality of local suppliers, it ultimately undermines policies seeking to foster backward linkages (Morris and Fessehaie 2014). Higher tax revenues would also be very welcome to channel additional

funds to the promotion of economic activities that are, at the moment, either almost non-existent—such as manufacturing—or of only low productivity—such as agriculture and fisheries. These sectors have higher potential for job creation in general, and among women in particular.

Another well-known economic risk linked to the exploitation of natural resources is the so-called Dutch disease. This refers to a situation in which massive inflows of foreign currency lead to the over-appreciation of the national currency, damaging the competitiveness of domestic economic activities in tradable goods and services. This problem can be properly handled with the help of a stabilisation or sovereign wealth fund, introduced by some resource exporting countries such as Chile, Kazakhstan, Norway and Oman. Mozambique's government is also considering the creation of such a fund. As an alternative, the income from resource exports may be channelled into the sectors damaged by currency over-appreciation and into more advanced, higher value-added and/or more job-creating activities—which would require a suitable strategy and an appropriate set of policy measures (Saad-Filho and Weeks 2013).

Therefore, a well-designed and active industrial policy is very much needed in order to diversify the Mozambican economy and generate positive spillover effects. Measures such as rehabilitating important infrastructures for the industrial sector, in particular energy, transport and water supply, easing access to financial resources and evolving local content policies—ones that also comprise vocational training and skills upgrading in new or insufficiently advanced sectors—will help to foster the development of productive capacities, diversification and employment (Castel-Branco 2015; Morris and Fessehaie 2014; UNCTAD 2017). Significant barriers to success exist though, since the starting level for Mozambique in general and for local SMEs specifically is low in many respects. Some researchers conclude that industrial policy will not be successful in the short term in Mozambique—or in other resource-rich African countries such as Ghana, Tanzania and Uganda alike (Whitfield et al. 2015).

As indicated above, it is important to note that constraints to development within GVCs are not only domestic—as the international political economy also constitutes a barrier to resource-based economic development. The current outward-oriented policies and pro-market international arrangements give limited policy space to poor developing economies like Mozambique when it comes to making efforts to diversify the domestic economy, promote manufacturing and investments by local firms, and move up within GVCs into higher value-added activities. Emerging trade regimes like the Economic Partnership Agreements that the European Union and various African states, including Mozambique, have signed erode the traditional advantage that developing countries have under preferential trade agreements with the Global North. On top of that, regional integration—which may create markets for products and services with local content made in Mozambique—is now being pursued in Southern Africa and beyond, but results so far are hardly satisfying from a perspective of economic development through RVCs.

Apart from the effects related to macro-economic developments, to GVCs and to linkages, some incidental issues should also be mentioned. Megaprojects increase the risk of over-indebtedness as a consequence of the need for public investment in infrastructure and for the participation of government-owned companies (Castel-Branco 2017; Melina and Xiong 2013). Mozambique's total debt service rose from 0.34% of GDP in 2007 to 4.54% thereof in 2016, while gross public debt grew from 37.5% of GDP in 2011 to 120% thereof 5 years later (World Bank 2017). The resulting problems are reinforced by Mozambique's notorious traditional lack of transparency and poor accountability in government spending, related to corruption and nepotism (Deloitte 2016; Mosca and Selemane 2012). In 2016, it became public knowledge that three state-owned companies had received loans of more than USD 2 billion from the government without the national parliament, the International Monetary Fund or major donors even being aware of their existence (Castel-Branco 2017; *Financial Times* 2017). These nefarious activities often serve to consolidate the capture of resource rents by the elite, and prevent the fair distribution of the benefits resulting from megaprojects (Buur and Monjane 2017).

Most megaprojects in Mozambique, furthermore, come along with serious environmental risks. The exploitation of fossil fuels means a firm commitment to unsustainable sources of energy that account, to a large degree, for climate change. On the local scale, the destruction and radical transformation of the landscape, the impact of megaprojects on water quality—especially in the case of open-pit mining in Tete Province—as well as the dangers to human health that ensue from air pollution produced by fossil fuel-fired power plants are serious issues of concern (Justiça Ambiental 2016). In recent years, the occurrence of forced displacements and resettlements has been very controversial too. Mostly related to coal mining, these events have prompted demonstrations and even riots by local people. Critics argue that resettlement processes lack consultation and local participation, and hence are considered grossly unfair. They fail to provide an adequate voice to those who have to leave their homes. Compensation appears to be too low as well (Human Rights Watch 2013; Southern Africa Resource Watch 2012). As for natural gas, the situation for the inhabitants of the Afungi Peninsula, where Anadarko's aforementioned LNG plant will be built, has not been free of conflict either. A plan to relocate 5000 people has been strongly contested by local communities and civil society organisations, which claim to have had their activists harassed by both Anadarko and the police (Simons 2016).

6 Conclusion

Since the end of the civil war 25 years ago, Mozambique's economy has gone through a number of major transformations. Megaprojects in aluminium smelting, hydropower generation and coal and natural gas mining have been key drivers of FDI and GDP growth. However, the effects of these megaprojects on the economy as a whole remain limited. It appears that expectations about upgrading within GVCs,

creating linkages with other sectors, job-creation effects and the improvement of living conditions for the majority of citizens have been overly optimistic. In this chapter, we have assessed the impacts of megaprojects on the Mozambican economy and their potential role in economic transformation:

- The massive coal reserves in Tete Province have prompted large investments that are fostering the expansion of transport infrastructure as well as of power stations.
- Tremendous deposits of natural gas have recently been found in the provinces of Cabo Delgado and Inhambane. They have ignited plans to carry out major investments. As this is an activity with enclave characteristics, the creation of linkages that would lead to economic transformation is limited. However, as in the case of coal, several power plants are under consideration at least. Tax incomes could be channelled into other sectors. Both in coal and natural gas mining, TNCs from the Global North and from some emerging economies dominate—with Mozambican state-owned entities being smaller shareholders.
- The Cahora Bassa Dam is Mozambique's main source of electricity. Its output is mostly exported, though. The ongoing planning to increase the capacity of the dam or to build new ones along the Zambezi River is linked to an expansion of the national electricity grid, aiming to create linkages with other economic activities.
- In the case of Mozal, despite some explicit policies that encourage the participation of local SMEs, results in terms of economic linkages are still scarce. Effects are also limited with regard to fiscal linkages, which is less so for mining megaprojects.

In sum, this chapter has shown that there is plenty of room for policies aimed at creating conditions favourable to fostering economic and social inclusion in megaprojects. Such policies should focus on more and better-paid jobs, economic diversification—especially through opportunities for SMEs to integrate into GVCs—and on domestic value-addition in activities other than resource extraction. In that respect the most important factor appears to be the development of economic linkages, still restricted to only a few sectors and SMEs. In other words, the megaproject-based development model of Mozambique is far from ideal. It involves serious economic, political and social problems (the latter two were only addressed as a side issue in this chapter). However, these afflictions are not necessarily an insurmountable curse. Under favourable conditions, which can only partly be brought about by improved governance, megaprojects may be instrumental to transforming the economy. For that to happen in Mozambique there is still a long way to go—and it will also require appropriate conditions at the international level too. Furthermore, the better distribution of economic and social costs, as well as of the benefits of megaprojects and of resource exports, is a necessary condition to lift Mozambique out of its currently unbalanced development model.

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Electronic-Waste Circuitry and Value Creation in Accra, Ghana

Richard Grant and Martin Oteng-Ababio

1 Introduction

Over the last 20 years, research has flourished that examines and captures value by actors along global value chains (GVCs). The GVC approach has been applied to agro-food, automobile, electronics and textile industrial production, and it has shed light on intra- and inter-industry trade along the continuum from production to consumption (Coe et al. 2008; Gibbon 2001). A major shortcoming, however, is that corresponding research does not take into consideration post-consumption and its intrinsic valuing of related economic activities—pre-processing, processing, refurbishment and reuse—and the ongoing flows of secondary materials and waste (Lepawsky and Billah 2011; Lepawsky and McNabb 2010).

Much has been made about the negative economic implications of transboundary electronic-waste activities in Africa, especially the deleterious and non-valuable components that are left behind and their drastic effects on the environment and human health (Asante et al. 2016; Daum et al. 2017; Greenpeace 2008); they may have escalated cybercrimes too (Doyon-Martin 2015; Warner 2011). A substantial literature on e-waste and informs exists (Khan 2016; Oteng-Ababio 2012; Oteng-Ababio et al. 2014) but, to the best of our knowledge, there is no published research on formal enterprises and e-waste in Ghana. Also, beyond Ghana, the contribution of recycling and waste economies to livelihoods, their achievements in reducing the digital divide and the spontaneous ways that they link formal and informals economies as well as contribute to economic output are all under-acknowledged. The value embodied in e-waste is often country-specific and depends on the national

R. Grant (✉)
Department of Geography and Regional Studies, University of Miami, Coral Gables, FL, USA
e-mail: rgrant@miami.edu

M. Oteng-Ababio
Department of Geography and Resource Development, University of Ghana, Accra, Ghana

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policy regime, the constellations of different actors and on the creativity of the informals economy to extract value. Countries such as Ghana and Nigeria are major importers of e-waste, but global comparative data is not readily available and the state of the art depends on the efforts of organisations and researchers to collect information and assess trends (Baldé et al. 2017). The size and vibrancy of the refurbishment and repair sector is also related to this. The latter is often city-specific, and depends on the waste management landscape as well as the range and scope of actors and the degrees of specialisation and expertise in various waste streams. They also depend on the ability of domestic manufacturers to use constituent inputs from e-waste processing and incorporate them into plastics recycling (in the remanufacturing of plastic chairs, piping and other product lines), glass and metal recycling assemblages. In particular, lead–acid battery recovery and copper smelting have been at the forefront of e-waste recovery in Ghana. Plastics remanufacturing is emerging as an area of focus, while other sectors such as gold extraction are non-existent.

The global e-waste economy is increasingly recognised as both lucrative and strategic. According to Baldé et al. (2014), it forms part of the USD 52 billion global industry of processing and recycling of electronic devices and the re-export of retrievable metals. Moreover, the repair, refurbishment and reuse market is also significant: the mobile phone repair segment, for example, is a USD 4 billion industry (Le Moigne 2017). There is now an emerging interest in urban mining and valuable metals (and some rare earths in mobile phones) that are circulating and in storage. Some scientists have called for new equipment that can pulverise e-waste at low temperatures so that it can be sorted and processed appropriately, so that valuable and non-value parts can be extracted and circulated so that they do not end up in landfills or wasted (Tiwary et al. 2017). While various experts have called for the end of the e-waste phenomenon, often by applying the latest technology while only piecemeal corporate initiatives abound, international and national regulations are a long way from dismantling this intricate and multilayered economy.

Our chapter assesses the value of e-waste processing in Ghana, by examining the roles of formal and informal enterprises therein. We collect new knowledge about the role of formal companies in e-waste that was obtained from open-ended interviews with ten formal companies engaged in e-waste. We review recent government efforts to manage e-waste by the 2016 E-Waste Management Bill (officially known as the Hazardous and Electronic Waste Control and Management Act, 2016), which attempts to regularise e-waste industries. We conclude that government policies to date have not been suitable for the economic development of this sector and for upgrading e-waste activities. Given the low state of technology available in Ghana and the key role that informal labourers play in e-waste collection and processing, we advocate that the tacit knowledge and learning by doing present in the informal economy require greater understanding. We therefore call for a refocus on these informal activities, so that informals can operate in better, greener, healthier and safer working conditions—ones that would ultimately produce better outcomes in terms of sustainable development.

2 Confusion Surrounding E-Waste and Second-Hand Imports

Global regulatory regimes such as the Basel Convention and those imposed by the World Trade Organisation can be interpreted differently when dealing with e-waste. The latter seek to liberalise trade, whereas the former aims to restrict and impose a ban on items that are deemed hazardous. Although this may seem straightforward, it becomes even more difficult to implement in the era of complex industrial systems in which wastes are produced at various intervals along cross-border value chains and are subsequently transformed into secondary resources. As Khan emphasises, 'in a world where all commodities eventually turn into waste, and waste itself is increasingly turning back into commodities, the legal division between these two material categories is inevitable and confusing' (2016: 154).

Such conceptual confusion occurred when the Ghanaian government permitted computer donations after 2004, in an effort to reduce the price of them and accelerate the diffusion of second-hand devices into the marketplace so as to reduce the digital divide in a country where most people cannot afford to purchase new computers. Liberalising the economy for imported computers inadvertently enabled the arrival of various working and not-working devices, and opened the floodgates to second-hand imports that contained various hazardous materials within these shipments. Brokers, charitable organisations, large and small companies are all enmeshed in sourcing computers for export but trans-shipment also necessitates the role of waste dealers, shipping lines and other intermediaries who remain largely unacknowledged in regulatory contexts. As a consequence, the possibility for transnational actors within this global trade to engage in transactions with little accountability—and oftentimes preserving their anonymity—inevitably expands opportunities for cross-border criminal activities. Höltl et al. (2017) emphasise how small companies dominate this trade, exporting devices amassed from flea markets, online sales, waste transport companies, reuse organisations and from auctions and lot-buying unseen. The networks also consist of Ghanaians abroad sending shipments to friends and relatives who participate in the Ghanaian e-waste economy. Low transport costs support the possibility of the economic benefits from e-waste trading enabling post-consumer markets to function.

No universal definition of e-waste exists. In its broadest sense, e-waste may be understood as any appliance using an electric power supply that has reached the end of its life cycle. Every country establishes its own list of consumer products considered to be e-waste, and there can be a great degree of variation. The compilation of listings of computerised products is difficult, as electronic components are continuously being integrated into an increasing scope of commodities that were not, traditionally, computerised—such as clothing, fitness bands and running shoes (Khan 2016). Therefore, e-waste ultimately encompasses all discarded objects with an electronic chip.

At the same time, there is no universal definition of used products either. 'Out of warranty' refers to a consumer contract with a manufacturer, rather than to

functionality. Factory- or store-rejected goods and partial functionality have value for poor urban and rural dwellers in Africa, but the same condition might not be acceptable in the Global North. Moreover in Africa, there is a culture of importing, as well as passing on, unwanted items to relatives and friends. Medium-sized and small companies often hold and stockpile redundant equipment. The presence of material defects, physical damage, inappropriate packaging and the lack of a regular market for the goods in the exporting country does not mean these items are worthless in Africa. As noted, the WTO also seeks to open markets to allow imports but the Basel Convention aims to regulate hazardous imports from the developed to the developing world. While, in essence, these principles could be aligned, in reality they create a grey area that enables second-hand imports and e-waste to even proceed (because not all e-waste has to be toxic, so on paper the non-toxic portions could be exported). Moreover, the legislative gaps in e-waste management between countries as well as the relatively weak customs control in Ghana also enable opportunities for the illegal entry of e-waste into the West African country.

The growth of a global electronics market has spearheaded the surge in e-waste trade. Besides this, increasing global demand is another driver of the fast growth of electronics second-hand markets due to the significant reduction of the life span of devices. Planned obsolescence has become the industry norm. According to Baldé et al. (2017), 44.7 million metric tonnes of e-waste were generated in 2017—an amount equivalent to 4500 Eiffel Towers. Globally generated waste streams contain a significant portion of the world's supply of valuable metals such as copper, gold and silver, along with a wide range of environmental contaminants like beryllium as well as lead and mercury. A single smart phone, for example, has between 500 and 1000 components—and their separation is complicated and costly. Far from being useless or worthless, these post-consumed objects present significant economic value for both formal and informal waste systems. These are often linked in intricate ways and at various stages of processing, depending on the metal, the nature of the recycling entity and the scope of its activities.

3 Ghana in E-Waste and Second-Hand Trade Circuits

E-waste recycled in Ghana comes mainly from three sources: e-waste imports, imports of second-hand electronics and from domestic consumption (utilising a mix of new and used products). No direct source from industrial manufacturing exists—due to an absence of electronic manufacturing—but domestic firms do contribute e-waste, in particular air conditioners, batteries and used equipment. Data on e-waste imports is imperfect. Volumes and flows can be estimated by analysing trade statistics, making observations on the ground and by interviewing importers and recyclers. Import statistics are compromised by the mixing of not-working and working devices in shipments, mislabelling and misclassifying. Import documentation is incapable of making a determination of what can be salvaged and what can be

repaired and/or used in refurbishment. Mislabelling can be extreme. For example, in 2010, 5000 containers of scrap metal (worth USD 40.1 million) were mislabelled as exports of cashew nuts, shea nuts, teak wood and other products (Bloomberg 2011). In general, exporters and importers detected deliberately mislabelling contents face consequences only in exceptional cases, and routinely they export and re-import via a different firm and/or a different port.

Most of this pre-processing and processing of e-waste is dependent on informal economic actors and local-market-demand conditions. Oteng-Ababio (2010) notes a new Toshiba A110 laptop costs USD 1200, whereas a refurbished identical model can be acquired for USD 150. Ghana's dynamic informal refurbishment industry lacks any form of oversight and quality control. It permits free market entry of unqualified and untested products. New and used electronics companies are also integrated into informal economy circuits for parts, components and models requiring small repairs. Ghanaian recyclers prioritise device or component reuse because, economically speaking, the remaining functional value of these products is usually higher than the inherent recoverable material one. Approximately 20% of all refurbishing and repair businesses are registered with the formal national bodies (World Bank 2015). Estimates of monthly e-waste shipments to Ghana range from 300 to 600 containers, arriving at the port of Tema (Afrol News 2011). Smaller amounts arrive overland from neighbouring countries (Grant and Oteng-Ababio 2016). Using data from the Ghana Customs, Excise and Prevention Services, Amoyaw-Osei et al. (2011) estimate e-waste imports of 215,000 tonnes and per capita ones of 9 kg for 2009. Approximately 30% comprise new products and 70% second-hand e-waste. Around 15% of the second-hand imports are estimated to be unsellable—meaning broken, non-responsive to power or simply outdated—and significant portions thereof are channelled to informal recycling. However, importantly, 85% of second-hand imports are nevertheless sellable as used electronics (Amoyaw-Osei et al. 2011).

Data on imports within the new and used categories of electronics is shown in Table 1. Over the 5-year period covered herein, 157,000 tonnes of electronic goods

Table 1 Top-ten used-electronics imports of Ghana, 2010–2014

Category	Quantity	Used share (%)
PCs	66,756 tonnes	8
Refrigerators	66,190 tonnes	62
Air conditioners	13,330 tonnes	99
Radios	5387 tonnes	95
Mobile phones	701 tonnes	1
LCD monitors	700 tonnes	50
LCD TVs	690 tonnes	15
Irons	416 tonnes	25
Stereos	371 tonnes	88
Kettles	113 tonnes	19

Source: Amoyaw-Osei et al. (2011)

were imported. Large household appliances accounted for almost half of the volume in weight while used ones were (and still are) the norm in several product categories such as air conditioners, radios, refrigerators and stereos. In 2013, the Ghanaian government introduced a ban on second-hand refrigerators with the aim of reducing emissions and enhancing energy efficiency in order to decrease pressure on the national grid (Atiemo et al. 2016). Second-hand imports provide some indication of the amount of e-waste in store. Thus, the second-hand market generates a sizable domestic e-waste stream: some 1.1 million tonnes, according to estimates by the World Bank (2015).

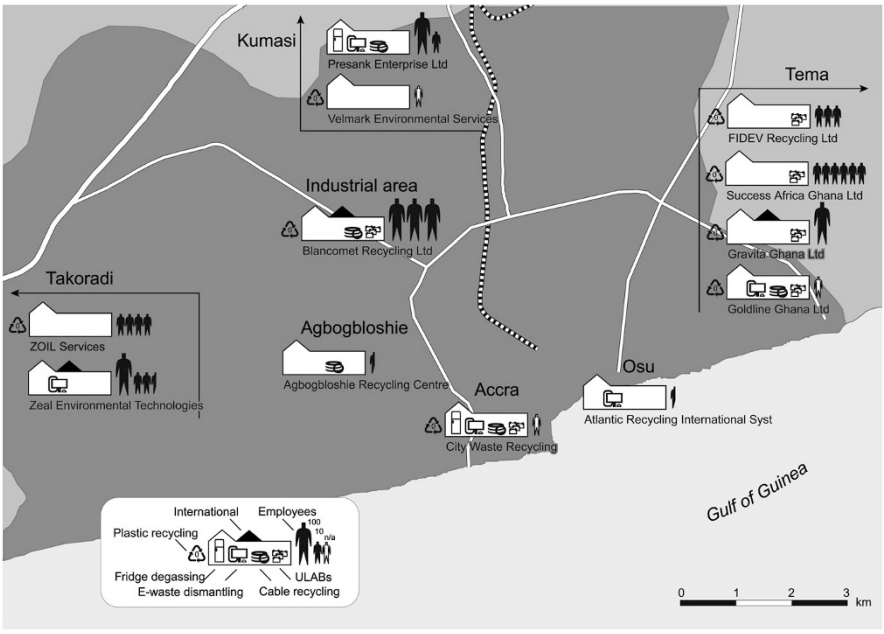
4 Informal Economy and E-Waste-Related Industries

There is a large, well-organised but brittle informal economy centred on e-waste recycling in Ghana. We purposively employ the term 'brittle' because each node in corresponding value chains can be disrupted by state intervention, market forces (for instance, scrap-metal price fluctuations, intermittent flows and intense informal competition) and by formal firms entering the arena. After importation and wholesaling, there are four conduits along which waste electronics are moved in order to recover as well as create new value: resale, refurbishing, repair and dismantling. The first three conduits are situated within the informal economy, and can intersect with second-hand market sellers who cherry-pick the most sellable items. For example, the large importers of new and used electronics into Ghana such as CompuGhana, Next Computers and Zepto have ties to both formal and informal circuits (Atiemo et al. 2016). At times, buy-back schemes have been implemented and pilot collection schemes have been introduced—but only around 1% of e-waste is currently handed in at public waste-collection points (Höltl et al. 2017).

Based on local field research, we found that most e-waste collection and processing is undertaken by low-paid, low-skilled informal workers. Informal e-waste hubs, such as Agbogbloshie in Accra, reflect the stage in value chains at which profits are low, health-risks high and occupational resources few and far between. While workers are cognisant of higher education leading to occupations with greater pay and lesser workloads, the allure of a starting salary that is upwards of five to seven times that of the Ghanaian minimum wage is often too attractive to resist. Many of the entry-level tasks are undertaken by marginalised urban migrants from the north of Ghana who participate in these activities because they offer a rapid cash flow, as revenues materialise immediately (that is, the same day) when the recycled elements are sold. An army of informal scavengers are efficient, and collect 95% of e-waste (Grant and Oteng-Ababio 2016). This means that the formal sector has supply challenges, because it cannot operate such efficient collection of household appliances or treat supplies in informal workshops at low cost either. As the e-waste informal economy has grown, it has expanded from Agbogbloshie to secondary sites in and near Accra (for example, Ashaiman in Tema and Madina in

north-east Accra) as well as to ones in distant cities such as Koforidua, Kumasi and Takoradi too.

According to Prakash and Manhart (2010), e-waste scavenging plays a pivotal role in contributing to Accra's economy, employing 4500–6000 individuals directly and approximately 30,000 more throughout the broader e-waste chain of activities. About 400–600 informal recycling firms operate in Accra, all with strong ties to scavengers, as shown by Map 1 below. Subsets of these firms maintain links to larger formal firms, but most informal scrap operators are survivalists and depend on intermediators. Oteng-Ababio et al. (2014) calculate that Ghanaian e-waste activities sustain the livelihoods of some 200,000 people nationwide. Prakash and Manhart (2010) estimate that the e-waste economy is equivalent to 0.55% of Ghana's gross domestic product. Collectors, recyclers and firms involved in refurbishment contributed USD 416 million to the national economy in 2015, according to estimates by the World Bank. The informal sector is organised. Some of this has been formalised, but not all. The Agbogbloshie Scrap Dealers Association, for example, has a membership of 4000 people and about half of them focus exclusively on e-waste. On average, each recycler in Agbogbloshie employs 30 workers. Between 6000 and 8000 informal recyclers are scattered across other areas. Those refurbishing have also begun to organise themselves: the GESTA–Repairers Association has 600 registered members out of 3000 refurbishment businesses scattered across Greater Accra (World Bank 2015).



Map 1 The e-waste economy in Accra. Source: Authors' own compilation

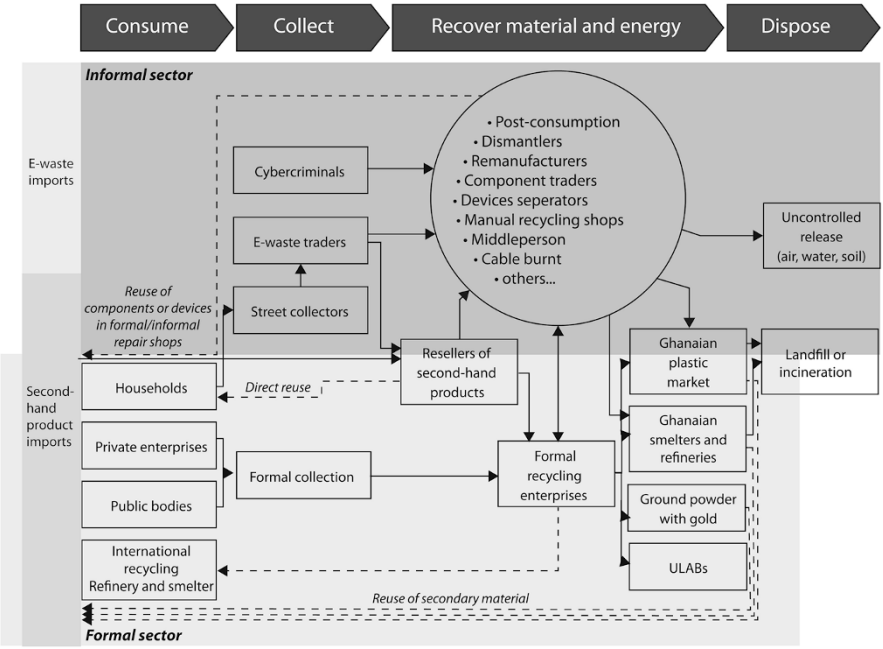


Fig. 1 Organisation of Ghana's e-waste economy. Source: Authors' own compilation

Figure 1 represents the networks and flows of e-waste processing in Ghana. Shading in the diagram designates informal from formal circuits. There may not always be a clear split between the entities, as the two sectors often overlap and sometimes highly correlate to each other. Obsolete electric products are sold to the informal sector, where components (compressors, power supply cables and the like) and devices such as handsets and processors are dismantled for reuse. After manual separation, material-specific recovery is applied. It eventually connects to a secondary-materials market after grading and separation. Generally these activities generate varying rates of recovery, and the rudimentary techniques used to extract the valuable fractions, in particular burning, cause significant pollution. Eventually, materials of extracted value are processed by formal entities abroad.

Beyond the more narrow economics of the phenomenon, a societal value to e-waste and second-hand imports also affords an opportunity to bridge the digital divide. This is in line with the ambition of the 'ICT for Accelerated Development Policy', which 'hopes to transform Ghana into an information-rich, knowledge-based and technology-driven, high-income country and society' (Oteng-Ababio 2012: 154). Ongoing policy discussion is also considering how to make Internet access more affordable. In 2016, Ghana had a population of 27.5 million people and 38 million mobile phone subscriptions. Its mobile phone penetration rate reaches 100%, the highest in Africa. One-third of the population use the Internet and the country is in the top position on the subcontinent in terms of average download

speeds. Ghana is now more articulated in the global Internet economy and the Internet's share of GDP stood at 1.1% in 2012 (McKinsey 2014).

Transboundary e-waste flows also provide opportunities for criminals to engage in cybercrime. Ghana is ranked in the top four of African countries with regard to incidents of cybercrime (Doyon-Martin 2015). Hard drives routinely not cleaned prior to export are penetrated by cybercriminals. Data is extrapolated from e-waste devices and used to keep up the ruse with their victims. Cybercriminals assemble portfolios of false documents, anticipating the proof that their targets may request before handing over sensitive account information. Ghana's cybercriminals operate a wide array of international money-making schemes: advance-fee fraud, credit card fraud, get-rich-quick schemes, identity theft and romance-related deceptions. In addition cyber fraudsters operate local *sakawa* scams, which threaten to inflict psychological or spiritual damage on victims if they do not comply with their demands and transfer money or material items. *Sakawa* is an ever evolving klepto-theological paradigm created for the perpetration of Internet crime. It marries twenty-first-century technology with traditional witchcraft. *Sakawa* boys have been glorified as superheroes in films, and *sakawa* has evolved as a subculture of music, flashy cars and dress styles (Morton 2011). Although it is complicated to explain the exact motivations of poor, unemployed and young Ghanaians involved in cybercrime, *sakawa* is a way out of industries like e-waste—and the participation in *sakawa* gangs is a deliberate exploitation of Westerners, due in part to their contribution to the e-waste problem in Ghana.

Not all cybercriminal activity can be attributed to the transboundary movement of e-waste and second-hand electronics, but these lawbreakers are a floating and hard-to-track group that connects within this circuitry. Not much is known on how they acquire hard drives, but the e-waste stream is bountiful for clandestine activities that can be run from any Internet connection. An important impact of these practices is the negative press, loss of credibility and disparaging images that incidents of cybercrime generate for Ghana and its public institutions (Duah and Asirifi 2015). As a result of cybercrime, it is extremely difficult to transact legitimate business online from Ghana with a legally acquired credit or debit card. Some companies have blacklisted all credit card transactions emanating from Ghana. The fallout dents foreign investment and both deprives the economy of private sector activities as well as channels already scarce governmental resources to combatting cybercrime. Estimates suggest that cybercrime inflicts a direct loss of USD 50 million a year (My Joy Online 2017).

5 The Formal Economy Around E-Waste

In recent years, formal firms involved in Ghana's e-waste economy have become more diversified and integrated; they have plans to become even more involved therein meanwhile (Atiemo et al. 2016). More than 20 registered companies operate across the electronic recycling and waste value chain, from collection to processing

to exporting, today. Some of these firms no longer restrict their activities to only one stage in the value chain but increasingly straddle two or more, focussing on one or more waste streams/service offerings and engaging in complementary activities such as export and recycling—that in response to increasing competition and variable flows of waste. In terms of collection and pre-processing, formal firms cannot compete with informal operators because the latter do not have to deal with non-valuable fractions in accordance with environmental laws.

Interviews that we conducted in Accra in June 2017 revealed that in the formal economy, e-waste is not profitable as a stand-alone business—with the exception of for large export firms, most of which are based in Tema. Most formal firms regard e-waste as a secondary activity. Beyond exporting, most profits are generated in the informal economy with metal accumulation. Trading among middlepersons is highly profitable, as are some aspects of refurbishment. What is more, the formal e-waste sector is not a large employer. Blancomet Recycling, being one of the larger companies in the sector, employs 300 workers and operates a diverse e-waste portfolio, including recycling of batteries, cable, lead and plastics as well as international scrap trading. However most private companies, for example Zoomlion Ghana, concentrate on solid waste instead. According to the information that we gathered, fewer than five formal firms presently work in e-waste-related activities. The main output produced by large firms in 2015 were ferrous metals (50%), non-ferrous metals (16%) and printed circuit boards (16%) (World Bank 2015), with the later grinded down for more sophisticated mechanical processing in Europe and elsewhere.

Still, our interviews indicate that some private companies like City Waste Recycling have steadily increased their activities, for instance the recycling of acid batteries, fridge degassing, cable recycling and e-waste dismantling. In other words these companies are expanding their expertise and portfolio, thereby engaging in a socially responsible business. City Waste Recycling has previously received financial support from the German government to purchase a cable granulator, to help recycle copper in an effort to pioneer sound e-waste recycling. The company has very ambitious plans to build the Recycling Village, a two-hectare state-of-the-art recycling plant. To help support its supply chain with sufficient quantities to operate that plant, 12 collection points will be established across the country: one in each of Ghana's nine regional capitals, and three at major border crossings. Generally speaking, an upturn engagement with e-waste is also reflected by firms engaging in business development and research, as they anticipate increasing streams of green funding.

The place of Ghanaian formal firms in the global e-waste value chain reflects opportunities for value capture and limited health risks. Private formal firms are linked upwards to international processors and refineries, while they link directly downwards to the metal-buying industry from which they purchase their inputs. In the Agbogbloshie hub, informal e-waste dismantlers (who are mostly from northern Ghana) sell recovered materials to Nigerian middlepersons directly on-site and, in turn, these intermediaries trade with businesses located in Tema. Most of the latter are foreign companies that have been granted trading privileges meant to attract

foreign investment (Grant and Oteng-Ababio 2016). Following the information that we gathered during our field research, materials are exported from Tema to Belgium, China and the United Arab Emirates. At the apex of the e-waste export economy are a handful of formal recyclers based in Tema: Commodities Processing, Gravita, N.N. EST Metals, Success Africa (all registered as Indian companies) and Goldline, which is a Saudi Arabia-registered enterprise. A few other foreign firms have established operations outside Tema's free trade zone. The most prominent ones are, however, the free-trade-zone companies that enjoyed exclusivity in scrap exports from 2004 until 2010 due to specific policies, virtually permitting a state-sponsored monopoly. Their dominance was further bolstered by virtue of the Ghanaian scrap-sector base being largely composed of survivalist informal operators that lacked the capacity and knowledge to participate in national and global scrap markets.

As noted, no formal take-back public infrastructure exists in Ghana. Different pilot schemes have been tested. Ericsson in 2014 operated such a scheme to recover 100,000 obsolete mobile phones and forward them to South Africa for dissembling prior to final processing in Belgium. A programme by Fairphone has collected three tonnes of waste phones since 2014, using a local partner called Recell. The latter has adopted a two-pronged approach of repair and recycle. This way, 279 kg of copper and 2.68 kg of silver have been recovered.[1]

E-waste also provides feedbacks into other manufacturing operations. For example, plastics derived from e-waste can serve as a feed into other waste plastics. Formerly, e-waste plastics were viewed as waste that gets in the way of more valuable fractions. Plastics firms in Ghana are now examining ways to integrate e-waste plastics in their respective businesses and there is evidence of some being incorporated into car bumpers, chairs, coat hangers, printers, vacuum cleaners and wheel covers. Feedbacks also occur in lead–acid battery recycling. Lead–acid batteries are used in vehicles. Because of blackouts and power shortages in Ghana, many electric appliances require backups; so does critical infrastructure such as hospitals and radio towers. While most lead–acid batteries are passed onto recyclers, some devices undergo reconditioning practices for sale as second-hand batteries. There is no lead–acid battery production in Ghana, so domestic downstream markets for lead are tiny (mostly becoming ammunition and weights for boats and fishing nets). Therefore, most secondary lead is exported from Ghana. In terms of metals, copper and lead are the foci of many informal recyclers and middlepersons. There are presently four secondary lead smelters in Ghana (Goldline, Gravita, Non-Ferrous Metals and Success Africa) that can deal with the recycling of used lead–acid batteries. They deal with a monthly capacity of about 1200 tonnes each, purchasing used lead–acid batteries on the domestic scrap market and producing raw lead ingots for export. Plastics from battery cases are recycled and sold on domestic and international markets to become inputs for the production of consumer goods such

[1]More information on this programme is available online at: www.fairphone.com/en/2017/07/31/collecting-used-phones-from-africa-to-europe.

as chairs, kitchenware and tables. The smelters in Ghana also import batteries from Burkina Faso and Mali too. However this trade is subject to price fluctuations; in 2015, for example, low lead prices caused two smelters to shut down for three months until prices recovered.

6 Formalisation and the Policy Environment

Increasingly, the government of Ghana is seeking to formalise the e-waste sector. However, it is conceptualising future e-waste management solely from a top-down perspective, advancing a capital- and technology-intensive solution that appears to undermine the existing informal collection and processing systems that exist on the ground. The centrepiece of this approach is the E-Waste Management Bill. Principally, the bill strives to ban the export and import of waste but affirms that it abides by the Basel Convention; accordingly, it sets out the conditions under which hazardous waste may be imported. The government's heavy-handed approach denies opportunities for the informal sector to participate in the e-waste economy and forgoes opportunities for development along the existing value chain. Furthermore recent political regulation has been undertaken without consideration of whether replacing the existing value chain with a government-controlled one makes economic and social sense, given the context of endemic poverty in Ghana.

According to the new legislation, registered formal companies can apply to be given the right to import hazardous waste; such imports are permissible if the entity can dispose of and manage the waste in an environmentally friendly way. Surprisingly, the bill lacks any coherent linkages to the existing waste chain. The new top-down system helps the larger formal companies to secure a foothold in the e-waste industry by the government facilitating their presence in the sector and, hence, helping them to secure loans from foreign governments and NGOs. Such loans are critical to purchase high-tech equipment for separating and shredding. Apart from that, the new legislation heavily relies on the Environment Protection Agency having increased powers to disarm informal operators and close sites, while the Accra Metropolitan Assembly is authorised to close e-waste markets and ban informal collectors' push carts from the streets under the guise of decongestion.

In place of the informal system, the E-Waste Management Bill establishes a state-led e-waste collection one totally delinked from the current reality—characterised by firms and households selling e-waste to informal collectors and publically recognised related markets. Existing social arrangements surrounding e-waste, involving transactions between formal and informal actors at multiple scales, are buried beneath this new vision for e-waste management (Khan 2016). Rather than incentivising manufacturers and importers to develop efficient closed-loop systems and to foster sustainable relationships with informal collectors, the legislation instead grants the government immense discretion to control e-waste management. It advocates a state-led management chain for collection to processing, and offers no clarity on potential opportunities for the legal recognition of the small-scale informal

collectors who currently dominate the system. The government has become involved in establishing new sites of recycling such as the Agbogbloshie Recycling Centre. Lauded in the Ghanaian press and on social media (*Ghana Business News*, 17 October 2016), this centre plans to extend the scope of its activities—but with only two full-time workers, scaling-up seems highly improbable.

Ghana's new e-waste legislation appears to create an imaginary space in which the informal sector does not exist. It is a space under the strict control of government authorities, who are empowered to order the sealing up of any 'area, site, facility or premises' suspected to be a place of hazardous waste disposal. Law enforcement officers are granted 'a power of search, seizure and arrest', over persons or places suspected of keeping or transporting hazardous wastes (Government of Ghana 2016). Search areas that fall under the auspices of governmental powers include building structures, ditches, lagoons, landfills, ponds, storage containers and vehicles. This vaguely configured authority further legitimises the persecution of informal e-waste collectors, who are already subject to constant harassment, hostility and seizures by public authorities. The government already acted in 2015 to demolish parts of the informal Agbogbloshie e-waste scrapyard in a clean-up exercise to prevent flooding by clearing a 50-metre channel along the Korle Lagoon. This resulted in the forced evictions of thousands of residents, and the demolishing of hundreds of shacks and parts of the e-waste scarpyard. Despite the absence of additional bulldozing operations since, the municipal authorities have given notice of future demolitions. Even more bizarrely, the government has located a waste station in the same vicinity as the Agbogbloshie scrapyard and informals claim that they are blamed for ever more waste in the area.

While pressures to curb some informal activities are ongoing in the national policy arena, opportunities for informals have been opened up in the international one. International recycling organisations assisted by international NGOs and foreign firms are facilitating new roles for these informal operators. For example, an award-winning social entrepreneurship intervention known as the 'Agbogbloshie Makerspace Platform' aims to generate alternative income and amplify informal participant workers' reputation as 'makers'. It involves up to 75 informals. This youth entrepreneurship project aims to take e-waste and refashion it: cables and wires become bracelets, radiators become pots, oil drums and refrigerators become grills. Such an innovation in upcycling focusses on transforming e-waste into consumer commodities and/or objects of art, hoping to tap into a niche market.[2]

Increased degrees of manoeuvrability are also reflected in formal and informal domestic scrap firms, bypassing intermediators that hitherto they had been required to engage with under trade law if they wanted to participate in legal exports (Grant and Oteng-Ababio 2016). The grinding of motherboards into fine powder—whereby integrated smelters abroad employ sophisticated technology to sort and separate valuable metals, with high recovery rates for export—has become common as a means to circumvent trade restrictions, as well as outwit customs officials. As the

[2]For further information, see: https://qamp.net.

sector has become more crowded and as profits from this practice have risen, especially compared with those earned from domestic scrap (local prices, with the exception of steel, are 40–150% below international market prices (Amankwaa 2013)), firms not located in the aforementioned Tema Free Trade Zone have begun to call for being granted the authorisation to export.

7 Conclusion

Ghana may be an emerging market but it is not an industrialised economy. Presently, the share of manufacturing in GDP is about half of what it was in the 1970s (Aryeetey and Kanbur 2017). The most important statement on industrial policy has been set out within the context of Ghana's long-term vision to achieve middle-income status by 2020 through the transformation of the country into an industry-driven economy. This strategy acknowledges the role therein of innovation, and has put in place policies aimed to increase the overall levels of science and technology development.

Despite policy pronouncements, the majority of Ghanaian firms are small and embedded in the informal economy. Larger firms remain constrained by financial, managerial and technological deficits, as our interviews confirmed. Indeed, the government's industrial perspective is myopic in considering factories and making commodities to be the core activities of manufacturing, whereas refurbishment, repurposing and reinserting materials into industrial production are overlooked. Arguably, with regard to these latter activities, countries such as Ghana might be more suited to develop and upgrade in existing value chains rather than engage in global competition to attract new manufacturing enterprises. Establishing a state-of-the-art e-waste recycling facility would be a bolder step in industrial development, in fact. China and India, both developing countries, are earlier adopters in attempting to formalise parts of the e-waste industry by applying more high-tech solutions to processing valuable metal fractions. They may provide some lessons about what has worked and what has not to date. South Africa's experiment with developing formal recycling centres also offers valuable insight into addressing the challenge of securing ample and reliable supplies of e-waste, and the need to source from a wider region in order to have stable and steady flows thereof—which is a basic requirement for operating an industrial e-waste plant (Lydall et al. 2017).

As has been shown, there is enormous value in Ghana's e-waste economy. Up to USD 416 million worth of discarded electronics, which do not show up in official accounting of GDP, are brought into conjunction with people's capacities to reimagine and rework them—even though this takes place within the context of undignified work, whereby informals are exposed to multiple environmental, health and workplace risks (World Bank 2015). Some 200,000 Ghanaians benefit from a livelihood supported by this economy. These endeavours represent a spontaneous vehicle of industrial activity, with some evidence of innovation and upgrading. E-waste workers have developed their practices over many years, operating in a relative

regulatory vacuum. Herein lies a hidden engine of innovation: corresponding processes are rooted in experienced-based learning (by doing, improvising and interacting), as opposed to the formal mode of innovation directly linked to science and technology. The social realities of the informal economy are very distant from the imagining of an industrial policy that seems to be taking its cues from the development experience of wealthy countries. The second-hand and refurbishment sectors thrive largely because of informal activities in rekindling value and enabling access to consumer durables that poor people otherwise would not be able to afford.

Many commentators have rushed to pass judgement in conceptualising the e-waste economy as based on the survivalism of the poor. It may be in part, but the absence of a modern industrial sector has enabled a vacuum to be filled by spontaneous grass-roots activities, which also provide a small feed into industrial production. There is a dearth of studies on worker organisation in the e-waste sector, and it is not clear if this is due to the absence of organisation or a lack of scholarly research. No systematic study has tracked learning, social mobility and how formal firms network with informal entities. Recent regulatory efforts to 'green' the economy, protect the environment and formalise the e-waste sector are fraught with contradictions. Their efforts simply cannot lead to environmentally or socially just outcomes, because they fail to integrate and build upon existing social realities. There is little evidence of productive engagement with the informal economy, which enables its protagonists to deploy their comparative advantage in the labour-intensive segments of e-waste collection, processing and separation—also shifting from exploitation to productive engagement. This circuitry deserves more attention, and can contribute to more successful e-waste policy and management in the long run.

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The Impact of the United States Energy Revolution and Decarbonisation on Energy Markets in Africa

Stefan Andreasson

1 Introduction

Given the extraverted nature of many African economies (Bayart and Ellis 2000), shifts in global energy markets are likely to have a significant impact on energy value chains and, consequently, prospects for development across the continent. Commodity value chains have always played an outsized role in Africa's resource-dependent economies. Deaton's conclusion that 'African economies export primary commodities, and most export little else' (1999: 23) remains all too relevant today. Moreover, debates about whether resource-led economic growth can translate into long-term, structurally transformative socio-economic development—despite the recognised (if contested) dangers of the 'resource curse' (Auty 2002, Gochberg and Menaldo 2016)—are integral to policy and scholarly debates about the continent's developmental potential (Ovadia 2016a). Alas, recent research suggests that even mere expectations of resource booms have caused resource-curse effects in Africa even in locations where the expected booms did not actually occur (Frynas et al. 2017).

Recent changes to African commodity flows, including in oil and gas, are partly the result of shifting flows of trade away from the West and towards the emerging markets of the Global South, especially China. But internal factors matter as well: impressive economic growth rates across Africa for much of the twenty-first century, albeit slowing markedly with the end of the commodities supercycle and the 2014 oil price crash (World Bank 2016), have created a growing middle class and purchasing power across the region—meaning that it has become more attractive for investors beyond those importing commodities. These developments also affect energy value chains. For instance, the global oil trader Vitol has been targeting investments in

S. Andreasson (✉)
School of History, Anthropology, Philosophy and Politics, Queen's University Belfast, Belfast, UK
e-mail: s.andreasson@qub.ac.uk

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Africa's downstream sector to meet what it estimates will be a 3% annual growth in fuel demand across the continent. Investments in refineries, and in niche fuels like liquefied petroleum gas for regions with high urban population and consumption growths like Lagos, mean new opportunities for local firms and economies to benefit. Given concerns about slowing demand in China (Roberts et al. 2016), it makes sense—as argued by the South African mining company Exxaro—to promote inter-African commodity trade and to increase the amount of processing and refining being done on the continent itself (Reuters 2014).

In this context, the question of whether petro-developmental states can become a reality depends to some significant extent on the ability to upgrade energy value chains (Ovadia 2016b). In other words, will it be possible to disperse the benefits of Africa's oil and gas industries to wider segments of societies than has hitherto been the case? In countries like Angola and Nigeria, oil has become a byword for conflict, corruption and impoverishment—Ross's (2008) 'blood barrels'—rather than providing public benefits along the lines that Botswana's diamonds, producing what was once described as 'an African miracle' (Samatar 1999), were seen to be doing at least until recently (Hillbom 2008, 2012). As evidence from newer entrants into the ranks of African producer countries shows, ambitious local content policy law like that adopted in Ghana in 2013 has benefitted primarily established, large and medium-sized companies—with newer and smaller ones unable to gain access (Ablo 2015). A survey of countries anticipating the emergence of significant oil and gas industries (Mozambique, Tanzania and Uganda) strikes a more thoroughly pessimistic note, suggesting that 'in spite of high ambitions and strong expectations, local content is limited, shallow and inefficient' (Hansen et al. 2016: 201). By contrast, some research on Nigeria's mature energy industry rejects the conventional view that local content in energy value chains has been largely inconsequential by emphasising how local content policy combined with investments in infrastructure and telecommunication has indeed created backward linkages to local firms (Adewuyi and Ademola Oyejide 2012).

These questions of how value chains evolve and contribute to development must, moreover, be considered in an explicitly global context. However, for both proponents of resource-led development and its many critics, such as Gibbon (2001), 'there is a default to national-scale modes of analysis that pushes questions about the transnational organization of production into the background' (Bridge 2008: 393). This is because they perceive failure to stem 'primarily [from] state failure', and their 'difference of opinion is over whether these failures of the state are structural and necessary or contextual and contingent' (Bridge 2008: 393).

To gain a better understanding of the global context of current shifts in energy markets and associated value chains across Africa, this chapter focusses on the consequences of two crucial developments that, in combination, constitute a particularly significant threat to oil and gas-producing states. The first such development is the sharp increase in oil and gas production in the United States over the last decade—the so-called shale revolution (Aguilera and Radetzki 2014; Blackwill and O'Sullivan 2014; Wang et al. 2014). Together with the 2014 oil price crash, it resulted initially in a precipitous drop in energy export revenues across Africa's

producer countries—and constitutes a key exogenous effect on African energy markets (Brune 2015). The second development is the embryonic global transition away from fossil fuels towards a low-carbon economy which, while ultimately necessary for mitigating climate change, threatens to leave African producer countries with stranded—and therefore worthless—assets that currently contribute a major share of gross domestic product and export revenues (Cust et al. 2017). The push for decarbonisation, as manifested in the 2015 Paris Agreement on Climate Change, constitutes a more long-term and fundamental challenge to Africa's producer countries. Both of these developments have a strong impact on value chains in Africa given that the regional countries remain mostly at a lower segment of these chains, exporting energy resources but scarcely processing them. Thus, after providing overviews of the shale revolution, decarbonisation and their respective impacts on Africa, this chapter compares how an established and an emerging producer country, Nigeria and Uganda respectively, are attempting to deal with these fresh challenges.

2 The US Energy Revolution

One of the key exogenous developments impacting Africa's energy-producing states is the rapid and significant increase in US oil and gas production. Wang et al. declare that '[t]he biggest energy story that has happened in the twenty-first century so far is the extraction of natural gas from shale rock formations in the United States' (2014: 2). Indeed, US shale gas production increased ten-fold during the first decade of this century (Hart 2014). In 2016, 15.8 trillion cubic feet of natural gas was produced from shale and tight oil resources, contributing 60% of total US production. The Energy Information Administration (2016) projects that shale gas production will increase to 29 tcf by 2040, constituting 69% of total US gas production by then. Likewise, increases in shale oil production may allow the US to reach an all-time total oil production high of 9.9 million barrels per day by the end of 2017—surpassing the previous high in 1970 of 9.6 million bpd, with more than half of this production coming from shale oil (Energy Information Administration 2017). McKinsey (2017) forecasts that US shale oil production could reach nine million bpd by 2025. This transformation of the US energy landscape has produced shockwaves globally, including significant effects on the economies of key African energy producers and exporters (Brune 2015).

As the US produces more oil and gas, it will need to import less and less from elsewhere. Data from Oil & Gas 360 (2017) shows that whereas the share of the Organisation of the Petroleum Exporting Countries (OPEC) in US crude oil imports, currently at 40%, stands at the second-lowest value on record (down from 62% in 1990), it is exporters of light crude oil like Nigeria that have been impacted most severely. Nigeria's light crude oil is similar in grade to—and thus competes directly with—US shale oil. Consequently, the West African country experienced a massive drop in its crude oil exports to the US between 2010 and 2014: from 983,000 to 58,000 bpd. Medium-grade imports have been less severely impacted, but medium

crude oil exports from Angola to the US stand currently at less than one-third of the peak level in 2006.

The economic costs for major African producer countries have been significant: the *Financial Times* (11 June 2017) reports that, according to estimates by the Energy Information Administration, the reduction in annual oil export revenues between 2012 and 2016 amounts to USD 71.3 billion for Nigeria and USD 45.5 billion for Angola. As but one example of the difficulties caused, Nigeria's economy experienced for the first time in 25 years a contraction of its GDP (by 1.5%) in 2016. The country's oil minister, Emmanuel Ibe Kachikwu, has identified the need for Nigeria and other OPEC members 'to lower production costs to compete better with shale producers' (quoted by Reuters 2017b) as the key priority in reversing the destabilising trend of lower export revenues. His predecessor, Diezani Alison-Madueke, had likewise warned that US shale oil has become 'one of the most serious threats for African producers' (quoted in *Wall Street Journal*, 7 May 2013). Kitous et al. argue that Nigeria, 'a large, unstable and highly exposed exporter with a small [sovereign wealth fund, SWF] appears like the most vulnerable to a lasting low oil price', with 'other sub-Saharan African countries [. . .] also highly exposed, and without any back-up in the form of SWF, even if less unstable' (2016, 19). They continue to explain that:

> In sub-Saharan Africa, Nigeria, Angola and the smaller producers depend for about 20–30% on the fossil fuel sector and show a very high elasticity to oil price for their GDP (most countries) and their government revenues (all countries). Their SWFs are virtually non-existent while the reserves per capita are very low. This makes these countries very vulnerable for lower periods of low oil prices. (2016: 3)

In addition to needing less oil and gas, surging US production will impact producer countries in Africa in other ways as well—such as by exerting an overall downward pressure on prices, and by becoming a competitor in African export markets elsewhere (primarily Asia). While the effect of US production increases on prices are difficult to specify, in part because shale oil and gas influence markets and prices in different ways given that the former is a global market and the latter a regional one, US shale gas has had an impact on liquefied natural gas (LNG) markets in particular (Neville et al. 2017). Recent research also suggests that the US shale oil supply-shock has had a significant (downward) impact on global oil prices (Bataa and Park 2017).

With increased US production and competitiveness, that country's oil and gas products are becoming increasingly attractive to major importers—ranging from Europe (albeit a region where demand is stagnating) to the prized markets of East Asia, where demand is still increasing. Until recently the world's largest net-importer of oil, the US now exports both crude oil and—to an even greater extent—LNG. By 2017 US crude oil exports had reached a record high of nearly two million bpd, aided in part by the fact that it is trading at a discount to Brent—making it more attractive on global markets. To put this in perspective, US crude oil exports are now comparable to the entire production of major OPEC producers like Nigeria and Venezuela (DiChristopher 2017). LNG exports are likewise impressive. A first wave of LNG

export terminals are being built and will come on stream over the next few years, the first one being Cheniere Energy's Sabine Pass Plant in Louisiana, which began exporting in 2016. This first wave of LNG export facilities will have a capacity of nine billion cubic feet of natural gas a day, which amounts to about 12% of total US natural gas production. The project costs of these facilities are substantially lower than those of competitors in Australia, Canada, Mozambique and Russia and, with major buyers in China, India and Europe, there is a second wave of approximately 20 additional LNG export plants with global energy companies like ExxonMobil and Royal Dutch Shell providing investment (*Financial Times*, 5 October 2017).

Following the drastic drop in US demand, combined with contrariwise an increase therein across the Global South, Africa's producers have strong incentives to look for markets elsewhere. By early 2017 African oil producers, led by Angola and Nigeria, were exporting approximately two million bpd of crude oil to Asia, primarily China and India, the highest level of such exports since 2011. These opportunities are provided in part by production cuts across the Middle East in response to the persistently low oil price (Bloomberg 2017a). At the same time, there is emerging evidence suggesting that US crude oil and gas now entering Chinese and Indian markets (today the world's largest and third-largest oil importers, respectively)—as well as those of Australia, Japan, South Korea, Taiwan and Thailand too (Reuters 2017c)—will gain market share from OPEC countries, including African producers. This is part and parcel of the Trump administration's vision for US energy dominance, meaning that Africa's export revenues will come under pressure globally and not only in terms of direct bilateral trends in oil and gas trade with the US (*Financial Times*, 11 July 2017). As per a headline in the Nigerian newspaper *Vanguard* (5 August 2017), referencing India's Hindustan Petroleum Corporation: 'India considers dumping Nigeria's oil for US crude'.

Nor is there likely to be a let-up in these pressures on African producer countries. The early onset in increasing US shale oil and gas production was impressive in and of itself. The industry's ability to weather the 2014 oil price crash and subsequent expectations that prices may be lower forever, as per Royal Dutch Shell Chief Executive Officer Ben van Beurden's prediction, as the company readies itself to be profitable with long-term oil prices in the USD 40 range (which is less than 35% of the 2008 oil price peak; *Telegraph* 27 June 2017), may be even more remarkable and of greater consequence. While displaying many signs of a classic boom and bust cycle, the shale industry has also produced an impressive learning curve—improving production technologies, sourcing finance and, most importantly, reducing costs. Consequently, the break-even price of producing shale oil and gas in many of the country's shale plays makes it possible to yield profits even in a sub-USD 50 price environment (Business Insider 2017; *Wall Street Journal*, 13 September 2015).

These developments exemplify an oil and gas industry that is fully invested in and able to benefit across the entire value chain. They illustrate what is lacking in Africa's producer countries: leading companies involved in upstream exploration and production, from supermajors such as Chevron and ExxonMobil to globally prolific independents like Anadarko and Apache as well as global leaders in related services like Baker Hughes and Halliburton; a sophisticated domestic midstream

transportation and storage industry; and, given the status of the US as the world's largest consumer of petroleum products, an extremely diverse and sophisticated array of downstream marketing, distribution and consumer industries as well as markets. As a result, the great diversity of the US oil and gas industry (including more than 6000 independent companies), high degrees of technological innovation, the availability of sophisticated methods of finance as well as mature regulatory frameworks too have together made the US highly competitive (Bryce 2014). Due to its resilience to date, the shale revolution dynamic is likely to remain a significant force in global energy markets for the foreseeable future.

3 Decarbonisaton and Stranded Nations

If the US shale revolution has had a sudden and drastic impact on African energy markets, another development heralds more gradual and long-term—but nevertheless still fundamental—consequences. An accelerating global transition away from fossil fuels towards low- or no-carbon sources of energy will, over the longer term, leave African's producers—who are highly dependent on oil and gas export revenues—with assets that they will no longer be able to monetise, triggering a disastrous economic impact if the persistent lack of economic diversification impedes attempts to substitute the significant revenues accruing from energy exports.

So far, the evidence regarding economic diversification is not encouraging. The African Development Bank (2013) demonstrates that there has been little progress in diversifying exports, meaning that Africa's commodity exporters remain vulnerable to swings in prices—especially the oil-exporting countries in which this natural resource made up more than 85% of total exports in 2012. Moreover, a report by the International Monetary Fund (2016) discerns two distinct economic growth trajectories across the continent: the relatively high economic growth of non-oil exporters and little or no growth among oil exporters. The UN Economic Commission for Africa (2017) notes that in 2016, growth of oil-exporting countries—at a mere average rate of 0.8%—was decelerating and notably below that of oil-importing and mineral-rich economies (registering average growth rates of 2.5 and 2.2%, respectively). The African share of world manufacturing exports remains at below 1%. Diversification is simply not taking place at meaningful rates.

In addition to these challenges relating to the unfolding energy transition and consequent need to diversify, Bridge argues that the re-commodification of carbon consumption by means of tradable rights for carbon—for instance through carbon taxes—has introduced a new link in the hydrocarbon commodity chain. Such ostensibly progressive policies promise 'to redistribute value along the chain towards consuming governments. To the extent that carbon taxation encourages reductions in demand and/or substitution and decreases the price of oil, it involves a transfer of wealth from oil producing economies to oil consuming economies' (2008: 410). This will place an additional economic strain and risk burden on producer

countries that are already finding recent developments in energy markets difficult to cope with.

In this environment, hydrocarbon resources are increasingly viewed by governments and investors alike as liabilities and potentially stranded assets that could furthermore turn African producer countries into stranded nations should they fail to adapt to this transition (Cust et al. 2017; Van der Ploeg 2016). Indeed, these countries may find themselves in a no-win situation, where they either face climate disaster or a future in which their hydrocarbon endowments are turned into unburnable wealth. As Cust, Manley and Cecchinato argue:

> If there is no progress in combating climate change, poor countries are likely to be disproportionately harmed by the floods, droughts, and other weather-related problems spawned by a warming planet. But if there are successful global actions to address climate change, poorer countries that are rich in fossil fuels will likely face a precipitous fall in the value of their coal, gas, and oil deposits. If the world makes a permanent move away from using fossil fuels, the likely result will be a huge reduction in the value of their national and natural wealth. (2017: 46)

In other words, the question of how long there will remain fossil-fuel value chains along which to add value and extract increased public benefits remains increasingly unclear, even though these fuels are likely to remain a significant source of energy for the foreseeable future—even despite environmental consequences that may usher in a dystopia (Covert et al. 2016). Countries across Africa are, thus, trapped between the need to close an economically costly and developmentally detrimental energy gap between production capacity and growing demand (Andreasson 2017b; Kessides 2014), while at the same time also needing to reduce their dependence on fossil fuels that are environmentally and economically increasingly risky.

There is an embryonic and rapidly growing renewables industry in Africa, albeit emerging from a very low base and primarily driven by developments in a select few countries—notably Kenya and South Africa (Power et al. 2016; Shen and Power 2016). Embracing renewables is one important possibility for creating new (renewable) energy value chains across the continent, with a range of new opportunities for adding value. For instance, South Africa's Renewable Energy Independent Power Producers Procurement Programme (RE IPPPP) has attracted global investment into primarily the country's solar and wind industries. It requires energy-developer firms to meet a range of socio-economic development requirements, including black economic empowerment. Companies from Europe and the US, and increasingly also from China and India, providing renewables technology and infrastructure in South Africa via the RE IPPPP process are also involving that country's companies in joint ventures too (Power et al. 2016). Brazilian companies have likewise become involved in Mozambique's biofuels industry. The country's first solar panel plant was funded by the Export–Import Bank of India. Results have so far been less positive in terms of impacts on local value chains in Mozambique than they have in South Africa, as these niche spaces have not been able to support economies of scale and scope to thereby become competitive—this being due to a lack of regime backing, as well as support from Mozambique's wider (and fossil-fuel-dependent) energy landscape too (Power et al. 2016). Bos and Gupta weigh up the relative risks

and merits of investing in fossil fuels or foregoing such investments by focussing on Kenya as a prospective producer. They suggest that any short-term gains from new investments in fossil fuels are outweighed by the long-term ones from investing in renewables, as the latter come with less risk and are 'politically, socially, ecologically, and economically more rewarding' (2017: 436).

Ultimately what is becoming 'the new normal' in global energy markets poses multiple and interrelated challenges for Africa's producer countries, and prompts a multitude of questions. For instance, what is the potential impact of a persistently low oil price and waning demand? The most obvious effects are, first, lower revenues accruing to producer countries, which in most cases are already under significant pressure to improve economic performance and living standards, and, second, a future characterised by more precarious export markets—even if current demand in Asia is offsetting reductions therein elsewhere around the globe. And in terms of future production potential, who will provide much-needed investments in oil and gas industries across Africa, especially considering that less than 10% of such projects in that region can break even with an oil price below USD 50 a barrel (Addison 2016)? Many projects were placed on hold in the wake of the 2014 oil price crash, especially more expensive frontier ones (PwC 2015).

Furthermore, it is not clear what future strategies will be adopted by key actors in African energy markets—nor, indeed, who those key actors will even be. Will publicly held international oil companies (IOCs), which are mostly Western, continue to move away from high-risk assets such as those in the Niger Delta? Will other companies move in to fill any space left by IOCs, so that especially onshore production becomes increasingly dominated by African independent companies and African national oil companies (NOCs)—as well as NOCs from elsewhere across the Global South too (Andreasson 2017a)? Given current concerns about stranded assets, will there ever be a renewed demand for Africa's high-cost, ultra-deepwater resources and its unconventional energy ones—for instance shale gas, coal-bed methane and tar sands (Andreasson 2018a)? What, moreover, do trajectories relating to all of these questions portend for the ability of African producer countries to enhance backward linkages in their energy value chains, for instance by means of local content policies (Lange and Kinyondo 2016; Ovadia 2016a)? None of the eventual outcomes here are clear, while the future of production prices and, crucially, the future of fossil fuel demand remain increasingly uncertain too. What is clear, however, is that there is urgent pressure on established and emerging producer countries to respond to the key challenges indicated by these questions.

4 Recent Developments in Nigeria and Uganda

Delivering a lecture at the University of Ibadan in September 2017, the executive secretary of the Nigeria Extractive Industries Transparency Initiative, Waziri Adio, identified a long-standing predicament symptomatic of Africa's oil and gas-producing countries, ones in which the dependence on revenues from these

exports is invariably also very high: 'Despite being a major oil and gas producing country for 60 years [...] we have not fully optimised and maximised the opportunities in the oil and gas value chain' (quoted in *This Day* 8, October 2017). Notably, a country like Singapore—with a population only one-thirty-second of the size of Nigeria's and an oil production output merely 1% of the West African country's too—nevertheless boasts an oil-refining capacity that is more than 15 times greater than that of Nigeria—the world's twelfth-largest crude oil producer (*This Day* 8, October 2017).

Resource-rich countries seeking to link these assets to development need to become properly invested in and to publicly benefit along the entire value chain, which in the case of oil ranges from exploration and production (upstream) to transportation and marketing (midstream)—and, especially, refining, distribution and the diverse consumption activities that characterise the downstream end of the value chain too. To harness these benefits in ways that Nigeria and other African producer countries have previously failed to do, Adio focusses on the need to move beyond exporting crude oil to increasingly refining it for domestic consumption. Building a significant petro-chemicals industry as well as transforming the country's solid-minerals sector from one dominated by artisanal mining into a major contributor to export revenues, jobs and industrial development are also key. These undertakings would, furthermore, need to be facilitated by 'clear and predicable legal and regulatory frameworks' (Adio, quoted in *This Day*, 8 October 2017)—such as that to be provided by the long-awaited Petroleum Industry Bill that is currently in the process of being passed into law by the Nigerian parliament (Reuters 2017a).

If a country like Nigeria cannot make its oil industry contribute significantly to value-addition, it is bound to remain a country of 'price takers and marginal players' (Adio, quoted in *This Day*, 8 October 2017). The key question is how this can be accomplished across the energy sectors that dominate Africa's resource-dependent economies, given how recent developments in global energy markets provide new constraints and imperatives. This also begs the question of what opportunities lie beyond these existing options, especially in terms of emerging value chains in renewable sources of energy across Africa in the context of a global push for a transition away from fossil fuels (Newell and Bulkeley 2016). As one of Africa's oldest and largest crude oil exporters and with a complicated history of relations with IOCs, especially in the conflict-prone Niger Delta (Frynas 2001; Frynas and Paulo 2006), reforms to the energy sector have always posed a difficult challenge for the Nigerian government—as evidenced by, for instance, recent attempts to introduce significant fuel subsidy reforms (Osunmuyiwa and Kalfagianni 2017). However, the 2014 oil price collapse and prolonged slump have forced the Nigerian government to confront challenges all along energy value chains. 'These challenges stem from legacy and unresolved systemic problems [...] which have now been exposed and exacerbated by the global downturn of oil prices' (Akinrele 2016: 314)—hence, the proliferation of official and public debate about a range of potential reforms.

Nigeria is, consequently, attempting to implement a number of interrelated policies, with the aim of increasing local content and to deepen backward linkages along the oil and gas value chain. There has been some success in this regard since

the adoption of the Oil and Gas Industry Content Development Act in 2010, with recent studies estimating a 400% growth in local content capacity utilisation, the attraction of some USD 5 billion in investments into the local economy and the creation of 38,000 jobs (McCulloch et al. 2017). There are also attempts underway to expand the technical horizons of the industry. For instance, digitalisation of the country's energy sector would revolutionise management and control of a wide range of operations, and would also provide the sector's workforce with new skills and increased productivity. Onyeche Tifase, the chief executive officer of Siemens Nigeria, notes that the introduction of new technologies could provide a 20% reduction in capital expenditure across the oil and gas sector, including in operating costs by 5% upstream and 2.5% downstream (*Premium Times*, 21 August 2017). She argues that:

> Nigeria's best approach will be a combination of local skills and knowledge, and the expertise and experience of a proven international partner able to deliver digital technologies and automation, together with traditional instrumentation and controls, across the entire energy value chain. This further supports the backward integration of skills and technical competence in Nigeria's limited skilled workforce. (quoted in *Premium Times*, 21 August 2017)

In contrast to established producer countries, where those attempting to engage with and mitigate the effects of the changes to energy markets considered here must contend with existing energy industry dynamics and dysfunctions including the powerful path dependencies that they have given rise to (Scholvin 2014), emerging producers are meanwhile faced with what is both a challenge and an opportunity—namely the tabula rasa on which their energy industries must be constructed. Uganda is anticipating the commencement of oil production by 2020, following the discovery in its territory of 6.5 billion barrels of crude oil—1.4 billion of which are currently economically recoverable (Magona and Angom 2017). This might still make Uganda the first East African country to export crude oil, although such exports from Kenya are now imminent.

A World Bank memorandum on Uganda is, despite the very low oil price at the time of its publication, enthusiastic about future production there having 'a major influence on the country's economic and fiscal performance', while cautioning that experience elsewhere in Africa 'shows that large-scale production of oil [. . .] offers great opportunities, but also presents major challenges' (2015: x). Rwengabo draws on lessons from Ecuador's oil industry to suggest that Uganda 'can learn from earlier entrants [. . .] in order to exploit a good-starter advantage' (2017: xii). For the World Bank as well as other commentators on Uganda's nascent oil industry, the ability to ensure that production revenues contribute to economic diversification and the upgrading of value chains will be key to any future success. Consequently a legal framework is being put in place by the Government of Uganda for the country to benefit broadly from production, including local content and possibly a refinery—to allow for the upgrading of value chains from the mere extraction of crude oil (Magona and Angom 2017).

A 1445-kilometre pipeline, at a cost of USD 3.5 billion, from the Hoima District to coastal Tanga in Tanzania, just south of the Kenyan border, has meanwhile been

agreed between the Tanzanian and Ugandan governments. This pipeline is expected to see a flow of about 216,000 barrels of oil a day. Notably, however, a final deal for investment in a refinery has not yet been closed, as negotiations between the Ugandan government and Russia's RT Global Resources and, thereafter, South Korea's SK Engineering failed to result in agreement either time (Magona and Angom 2017). A consortium led by General Electric now looks most likely to build and operate a USD 4 billion refinery, which would eventually be able to process 60,000 barrels of oil a day (Bloomberg 2017b). This would allow Uganda to upgrade energy value chains from their inception by combining upstream (production) and downstream (refining) activities.

As with all newcomers in the oil and gas industry, production networks have to be built from scratch—including what is necessarily the long-range goal of producing local suppliers capable of contributing to a complex modern industry (Neuman et al. 2017). Accomplishing this will require the Ugandan government to strike a mutually beneficial deal with international oil companies that have been granted production licences; the key actors being London-based Tullow Oil, the China National Offshore Oil Corporation and France's Total (Magona and Angom 2017). Evidence from this bargaining process suggests that Uganda's wider ruling coalition—that is, government and key economic stakeholders—has, so far, managed to ensure that the national interest—meaning the oil industry contributing to wider developmental goals—is asserted in the evolving legal and economic framework for its oil industry (Hickey and Izama 2017).

At the same time, early success in these negotiations could yet yield to the subsequent deterioration of any development-oriented framework—as has been the experience with emergent oil industries elsewhere in Africa previously, for instance in Chad (Andreasson 2018b). Hickey and Izama argue that: 'The dynamics of Uganda's political settlement raise serious doubts as to whether the impressive levels of elite commitment and bureaucratic capacity displayed to date will withstand the intensifying pressures that will accompany the eventual commencement of oil flows' (2017: 163). Other research suggests even steeper challenges ahead for Uganda, in terms of managing governance issues following the discovery of oil (Doro and Kufakurinani 2017).

5 Conclusion

In the end, the overarching question is whether the generally marginal and highly exposed situation of Africa's energy producers is likely to change in the foreseeable future. Might it be the case that new entrants into the region's energy markets, together with exports that are gradually being reoriented towards the emerging markets of the Global South, will create unprecedented opportunities for upgrading value chains? With new—including African—companies entering these markets, this is a possibility if contracts with external actors can be improved so that they contribute to creating backward and forward linkages in the producer

countries—which, in turn, will have positive effects on development therein. As the discussion of Uganda has suggested, however, this is by no means a foregone conclusion. Previous experiences, such as the difficulties experienced by Chad's emerging oil industry in attempting to avoid the mistakes associated with mature ones elsewhere on the continent, do not suggest that new producers will face less obstacles or find success more easy to come by (Andreasson 2018b).

Or, will what changes merely be the cumulative amount of revenues that can be extracted from the continent's energy resources—but with such revenues ending up being used for much the same purposes and with the same detrimental effects as in the past? If this is the case, then the pessimistic prognostics of the resource-curse literature will seem vindicated and there are, indeed, preciously few roads from extractive industries like oil and gas towards sustained development. Just like the notion of 'Africa rising' waxed and waned (Taylor 2016), so might the one of a window of opportunity for resource-led development be considered rapidly and irretrievably closing. This may point to the conclusion that any real opportunities for upgrading value chains in energy industries lie in a different direction, namely the transition away from fossil fuels towards renewables. In other words, the greening of Africa rather than mere improvements along established fossil-fuel value chains offers genuine possibilities for sustained development (Death 2016). But that green path, too, will be difficult to fully embark upon given the importance of entrenched fossil-fuel industries—and the fact that they will not be rendered obsolete in the short or likely medium term either. In that sense, they simply cannot be ignored in the name of looking ahead to the coming era of renewable energy (Collier 2010).

Whatever the case eventually may be, energy demand across Africa is not only rapidly increasing but manifestly also changing. This in the context of the ongoing transformation of global energy markets, including also the transition towards renewables (Ouedraogo 2017). In that sense, the imperative of considering new directions—including moving away from fossil fuels and towards renewables—rather than merely aspiring to (incremental) improvements along well-trodden tracks must become a core aim in the efforts of Africa's producer countries—who need desperately to generate improved prospects for their hitherto elusive pathways to development.

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Part III
Political and Socio-economic Challenges

Will Tanzania's Natural Gas Endowment Generate Sustainable Development?

Ross Harvey

1 Introduction

Tanzania first discovered natural gas in commercially viable quantities in 2010, roughly 100 km off its coast. In March 2016 another major discovery of 2.7 trillion cubic feet was made in the Ruvu Basin, estimated at a value of some USD 8 billion (Burgess 2016). This brings Tanzania's total estimated natural gas reserves to roughly 60 tcf, which could generate up to USD 5 billion in annual revenues (Olingo 2017). Production of natural gas for domestic consumption began in 2004, but the deposits discovered up to that point were small and did not attract much foreign interest or investment. While the new discoveries and the associated foreign direct investment in infrastructure could trigger further surges in an already fast-growing economy, caution is warranted—not only because the envisaged exploration and processing of natural resources faces a number of economic obstacles. Windfall resource rents invariably generate incentives for elites to curtail political freedoms and abrogate their governance responsibilities (Bates 2008; Harvey 2014a, b; Robinson et al. 2006; Ross 2015).

One of the major determining factors of whether natural gas rents will help or hinder Tanzania's development is the strength of its economic and political institutions (Mehlum et al. 2006). In July 2015, three new oil and gas bills were passed by the legislature. A recent lower oil price has probably been a blessing in disguise for the country—exploration investment has slowed, ostensibly allowing more time to strengthen institutions and develop appropriate legislation; less reputable players

R. Harvey (✉)
South African Institute of International Affairs, Johannesburg, South Africa
e-mail: ross.harvey@saiia.org.za

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have had to withdraw from the natural gas fields meanwhile.[1] If it is the case that strong institutions are a prerequisite for positive development outcomes, then the rules governing natural gas extraction and processing should be credibly designed before large-scale production begins. Credibility means that they will be implementable in the context of political realities. To use the language employed by Levy (2014) and, among others, Acemoglu and Robinson (2013) as well as North et al. (2012), policy design should be incentive-compatible with the distribution of political power. Mere de jure rules are insufficient for ensuring appropriate governance of the sector, but they are still necessary. As my analysis further below suggests, Tanzania is relatively well placed to harness its natural gas bonanza to effect positive development outcomes—although recent political economy developments suggest that such progress could be uneven.

This chapter examines the development prospects potentially afforded to Tanzania by its significant natural gas endowment. The first section details the natural gas discoveries in terms of magnitude and potential value, and locates this within Tanzania's existing economic reality. The second section briefly reviews the salient literature on the relationship between resource abundance and underdevelopment. It also introduces a game theory model that helps to visualise the set of incentives facing ruling elites in resource-abundant, institutionally weak states. The third section assesses the strength of Tanzania's governance institutions and the impact that recent political economy developments may have on the sector. It suggests how oil rents might affect the existing political equilibrium. In the fourth section, sector-specific institutions that matter for governing the natural gas industry and its rents are discussed. The closing section suggests certain practical policy steps that can be taken to strengthen these institutions.

2 Magnitude and Potential Value of Tanzania's Natural Gas

Despite extensive estimated onshore and offshore deposits of 60 tcf, Tanzania's proven natural gas reserves are substantially smaller. Nonetheless, discoveries in the last 3 years have been prolific. The first was made in 1974 during exploratory drilling off Songo Songo Island in Lindi Region. Subsequent discoveries followed shortly thereafter at Mnazi Bay in Mtwara Region. Major exploration only began in the early 2000s (Lokina and Leiman 2014). In 2010, upon discovery of commercially viable quantities, production began. Tanzania produced 19 billion cubic feet of natural gas in 2014, roughly 30% less than in 2010. All natural gas is consumed locally. A 532-km pipeline was commissioned in 2015, and will run from the Mnazi Bay concession in the Rovuma Basin in south-east Tanzania to Dar es Salaam, the

[1] Personal interview with a marine ecologist and consultant, Dar es Salaam, 12 April 2016.

country's major port city. The pipeline has a capacity of 0.8 billion bcf a day, and was financed by a USD 1.2 billion loan from China (Ng'wanakilala 2016).

The country has yet to export its natural gas. The Energy Information Administration (2016) estimates that Tanzania has the potential to become a net exporter of liquefied natural gas (LNG). In April 2014, the international companies involved in offshore exploration agreed to build an LNG plant in partnership with the Tanzania Petroleum Development Corporation (TPDC), which is the country's national oil company (Bungane 2015). The TPDC finalised a deal in 2016 to acquire the title deed for the land on which the plant is to be built in the southern coastal city of Lindi. The project is in the pre-front end engineering design (FEED) stage, and should enter the full FEED one in 2018. The export terminal is valued at an estimated USD 30 billion (Energy Information Administration 2016). Yet Statoil, one of the international partners, warned in November 2016 that the project could be pushed back to 2026. A briefing by the Economist Intelligence Unit (2015) stated that significant production before the end of the decade is unlikely, highlighting competitiveness concerns in an oversupplied market and the difficulties of raising capital for complex LNG deals, poor infrastructure and regulatory inefficiencies.

Despite these difficulties, the pipeline and LNG processing plants could generate long-term export revenues of an estimated annual USD 5 billion by 2025; it would also have the latent benefits of reduced demand for energy imports, local tax revenue-generation and potential job creation (Hayman 2016). In a country with one of the lowest rates of access to electricity in the world, LNG could produce broad-based gains. Electricity access reduces indoor air pollution by providing safe light and heat sources, helps pupils to complete homework and allows for the refrigeration of fresh food. Tanzania only has 1500 megawatts of installed electricity generation capacity, of which more than one-third comes from hydroelectric sources. The recent drought has rendered these facilities unable to operate at full capacity. The other major challenge is that the state-run power utility, the Tanzania Electricity Supply Company (TANESCO), is a cash-strapped monopoly. While generation from independent power producers could satisfy Tanzania's local energy demand, TANESCO often fails to pay its bills on time. This, in turn, creates cash flow problems for private electricity providers such as SonGas, which supplies about 20% of Tanzania's electricity; it recently threatened to stop production unless it is paid (Hayman 2016).

Aside from regulatory considerations, the primary determining factors of whether an LNG plant will be built are the market fundamentals of price, the size of likely future demand and the marginal costs of extraction. Compared to other fossil fuels, natural gas is cleaner to extract and transport. It is less environmentally damaging to burn in fuel form. One reputable paper concludes that West Texas Intermediate (WTI) crude oil and Henry Hub prices (as proxies for oil and LNG prices, respectively) remain linked in their long-term movements. The authors argue that 'a [USD] 70 per barrel WTI average price (expressed in real 2000 prices) is likely to promote a long-run equilibrium natural gas price at the Henry Hub of around [USD] 9.40 per [million British thermal units]' (Hartley et al. 2006: 8–9). For Tanzania, this means that the plant is likely to prove financially viable if it does go ahead. Of course, this

assessment does not consider the risk of stranded assets in the context of global divestment campaigns to remove capital from fossil fuels—as analysed in Chap. 9 of this volume. Moreover, it does not consider the possibility that natural gas production may crowd out incentives to invest in renewable energy.

Natural gas may prove useful to Tanzania, but it should not be viewed as a panacea for the country's development. Tanzania requires structural economic transformation too. If this is to be achieved, it will require concerted political effort—so as to ensure that natural gas is used as an instrument of development rather than a source of rent to maintain political power by distributing patronage at the expense of diversifying the productive economy. There is also considerable risk in sinking capital into infrastructure projects such as LNG plants. Governments tend to favour large projects that are politically sellable and generate rents for the elite. This may crowd out opportunities for smaller ones that are more flexible and geographically devolved. For instance where there are budgetary trade-offs that have to be made, solar photovoltaic plants may be a wiser investment in terms of an overall development strategy. As costs decline rapidly, these plants would increase Tanzanians' access to electricity—which is another major obstacle to sustained economic growth at present. Of course, this does not preclude the option of using natural gas, where viable, as a supplementary measure in a more diversified domestic energy basket.

What is more, if Tanzania is to optimise its natural-resource endowment for long-run sustainable and inclusive development, the country's institutions will have to be insulated against political interference. As the model presented in the next section indicates, windfall resource rents tend to create incentives for elites to reduce taxation (to appease the citizenry, severing an important accountability link in the process) and to siphon funds away from the fiscus for self-enrichment. This rent acquisition can also strengthen the position of the ruling coalition by extending the size of the patron–client network and, thus, reducing the efficacy of political opposition.

3 Petroleum, Politics and Perverse Incentives in Weak Democracies

A vast literature now exists that assesses whether natural-resource endowment does indeed constitute a development curse (Andersen and Ross 2013; Auty 2001; Haber and Menaldo 2011; Hammond 2011; Jensen and Wantchekon 2004; Karl 1997, 2004; Mehlum et al. 2006; Ross 2001, 2006, 2012, 2015; Sachs and Warner 1995; Van der Ploeg 2011; Wright et al. 2013). The author of the famous book *Paradox of Plenty*, Terry Lynn Karl, noted in 1999 that 25 years after the oil price boom of the 1970s, most oil-exporting countries were in crisis. This was especially the case for capital-deficient ones 'plagued by bottlenecks and breakdowns in production, capital flight, drastic declines in efficiency, double-digit inflation, overvalued currencies and

budget deficits' (1999: 32), which undermined export competitiveness in the manufacturing sector. The high hopes of development that had infused the formation of the Organisation for Petroleum Exporting Countries in the 1960s were dashed. Political stability suffered as a result. By 2013, Diamond and Mosbacher noted that not a single African country had been able to keep oil money from being captured by small elites: 'Every one of the 12 current oil exporters currently fall into the bottom half of the UN's Human Development Index (HDI). According to the World Bank, more than a tenth of all children born in oil-rich African countries die before the age of five, double the global average' (2013: 94).

Given the importance of political institutions for determining a nation's development prospects, the most compelling explanations for these adverse outcomes are those that focus on how oil wealth affects political dynamics. Ross concludes that:

> There is considerable evidence to support three broad claims about the conditional effects of natural resource wealth: that higher levels of petroleum income lead to more durable authoritarian rulers and regimes; that more petroleum increases the likelihood of certain types of government corruption; and that moderately high levels of petroleum wealth, and possibly other types of resource wealth, tend to trigger or sustain conflict when they are found in regions dominated by marginalised ethnic groups, particularly in low- and middle-income countries. (2015: 252)

To aid the assessment of Tanzania's prospects, consider the following generic game developed by Bates (2008): there are two citizen groups and one specialist in violence (usually the government or some ruling coalition). The government does not possess a monopoly over violence in the Weberian sense and the citizen groups have access to arms, should they choose to revolt.[2] The equilibria of the game suggest conditions under which order will prevail, which is the desired effect. Each citizen group possesses a given amount of resources that can, within the parameter of time management, be allocated between leisure, preparing for military action or work. Time resources allocated to work are productive, the opposite being true for military preparation. Citizens derive utility from income and leisure. The ruling coalition can increase its wealth through predation or tax collection.[3] These dynamics represent a military balance between the government and its citizens. The government will only choose to raid the citizens if its expected revenue from doing so is larger than the cost (both financially and to its legitimacy). Conditions under which equilibrium is achieved lay the foundation for political stability and the maintenance of the elite bargain. The government, ideally, provides protection and refrains from predation. Citizens refrain from military endeavours and choose a combination of leisure and work instead. The government must tax the population enough to avoid the incentive to extract rents elsewhere, but also not excessively. If taxes are too high, work becomes dis-incentivised—which may incite rebellion.

[2]Tanzania is a relatively peaceful country, and so the risk of instability is perhaps overplayed in the stylised model. Nonetheless, oil rents have had pernicious effects on stability in other countries. Hence, the model serves as a means of understanding the risks of future instability in Tanzania.

[3]Tanzania's tax base is very narrow, making the government's options in this respect quite limited.

The dynamics of the game change when an exogenous windfall enters the equation, as resource wealth plays a significant role in shaping the behaviour of elites. Bates notes that 'in the face of dwindling public resources or insecure political futures, given the availability of wealth from appropriable resources, they could greet with equanimity a future of political disorder' (2008: 28). The government now has a diminished incentive to tax citizens, but the citizen groups may have an increased one to take up arms against the government or to raid other citizens if they appear to be favoured by the regime. It is not an unusual strategy for governments to extend patronage to one citizen group to buffer against potential revolt by other ones. Windfall natural gas rents in Tanzania may cause a deviation from the strategies that, until now, have ensured that equilibrium conditions are met.

Two examples suffice to demonstrate the value of the model. Angola and Nigeria are the leading oil producers in sub-Saharan Africa. In both countries, oil was discovered in the late 1950s and this commodity has been associated with strong manifestations of the resource curse. Both are afflicted by corruption, a lack of economic diversity (the so-called Dutch disease), authoritarian rule (though punctuated occasionally by attempts at civilian and democratic rule in Nigeria), internal strife (a 27-year long civil war in Angola and a 3-year long one in Nigeria) as well as poor performance on the HDI. In both cases, oil-rent windfalls generated an incentive for the ruling elite to pursue pay-offs off the equilibrium path. In Angola, Jose Eduardo dos Santos maintained an iron grip over oil rents for personal kleptocratic consumption from 1979 to 2017. While he and his ruling coalition amassed wealth for themselves, the population suffered; Angola still has one of the highest child mortality rates in the world (Soares de Oliveira 2015). In Nigeria, no single ruler or ruling coalition could gain that level of control. However, access to oil rents were the spoils of political office for which numerous actors contended. This has exacerbated corruption and ethnic tensions (Bourne 2015).

If Tanzania's ruling party fails to govern the impending natural gas rents in a way that enhances the country's welfare, or at least gives the appearance of doing that, then the risk to stability is only going to be heightened. The ruling party and its patronage network gain short-term pay-offs high above the equilibrium (tax) line, but could place the longer-term stability of the country at risk for the reasons mentioned above. The next section briefly explores the potential threats facing Tanzania in terms of the model outlined above.

4 Can Tanzania Withstand Predation Temptation?

President John Magufuli came to power on an anti-corruption ticket in 2015. He has given every appearance of credibly delivering on that promised commitment. However, the concern is that giving the appearance of intolerance towards petty corruption is distinct from rooting out grand corruption. The corollary to this is that corruption has been deeply embedded in Tanzanian politics for a long time now. The danger is that it may have become so normalised that attempts to uproot it may

destabilise the ruling coalition. Gray (2015) shows that while incremental progress has been made in improving public financial management since the late 1990s, this has not translated into reducing the intractability of grand corruption. Grand corruption, in contrast to petty corruption, is a term used to define financial malfeasance among the top echelon of political elites—rent acquisition that falls well outside the parameters of the rule of law, and affects a country's institutional fabric at the highest levels. Gray further contends that, in Tanzania, formal or de jure institutions do not neatly align with the distribution of political power between contending social groups. In other words, the de facto rules of the game may be different to those of formal institutions—such as constitutions or laws governing natural-resource extraction.

If natural resources are to contribute to development, rather than undermine it, then it is essential that they be well governed. This does not mean, however, that a country should merely have good laws and policies on paper. It rather denotes that the institutions responsible for implementing those laws and policies must be both capable of governing and credibly committed to honouring the relevant contracts (Greif and Kingston 2011; North et al. 2009). The laws will mean little if the logic of the elite bargain is not underpinned by a strong core belief in the rule of law, first among the elite and then among the polity. Too many development interventions simply call for better governance mechanisms to be designed, without first understanding what impact such laws and policies might have on the political equilibrium (Acemoglu and Robinson 2013; Bates 2008; North et al. 2012). Formal rules can simply create a smokescreen behind which rent extraction occurs. Policy recommendations are, therefore, unlikely to gain traction unless the nature of the current political settlement in Tanzania is first understood. Similarly, the pattern of international donors withholding aid and then granting it again once sufficient penance has been demonstrated is unlikely to deal with the underlying problem here. As it stands, there is a strong risk of predatory off-path equilibrium behaviour. As shown below, President Magufuli's authoritarian proclivities are likely to be strengthened through access to natural gas rents.

According to the Bates model, there are three primary conditions under which political order—and, therefore, the foundations for inclusive growth—can be achieved. First is the level of tax revenue. If rates are too low, predation may be tempting despite the foreseeable costs. There is a risk in Tanzania that the level of tax revenue accruing to the ruling coalition may be too low to mitigate the temptation of natural gas rent predation. A sufficient flow of tax revenues is one of the key variables to mitigate against corruption that might otherwise occur through the siphoning of rents for distribution across existing patronage networks. As a recent Chatham House Report indicates, 'in addition to the need to increase taxation overall is the need to diversify revenue collection from the current focus on large, often foreign, enterprises based in Dar es Salaam. These enterprises provide 88% of tax revenue, despite generating only 17% of GDP' (Anyimadu 2016: 19). The Magufuli government intends to increase domestic tax revenue collection. They are targeting inefficiencies in current collection efforts, and trying to root out corruption by customs officials. If tax revenues are to grow and the sources thereof to be

diversified, the trust relationship between the government and the private sector will have to improve rapidly.

The second condition for order is that the magnitude of rewards from predation should not be too large in relation to other sources of revenue (particularly taxation), as this may suggest to the ruling coalition that future instability is worth incurring against the immediate utility of large natural gas rents. The estimated ratio of natural gas to tax revenue for Tanzania is 1.3 to 1.[4] This is much lower than the ratio in places like Angola, Gabon and Liberia, where it is estimated to be upwards of 4 to 1 (Diamond and Mosbacher 2013). A new lower long-run equilibrium oil price of only USD 50 a barrel augurs well, although the volatility of prices can be as detrimental to long-run political stability as high rents are. Resource-rich countries can suddenly become cash-starved when high prices crash. Moreover, in the context of one-party dominance (as it is the case in Tanzania), oil and gas wealth tends to entrench the power of the incumbent (Robinson et al. 2006). In the absence of meaningful institutions of transparency and accountability, resource revenues can be diverted to political insiders—allowing them to further consolidate their positions of power. Tanzania is, therefore, at real risk of natural gas rents providing an avenue for elite predation. However the rents-to-taxation ratio suggests that the problem is not as daunting as in other places, especially in the context of lower prices.

Third, the ruling elite must be relatively patient and not discount the future too heavily. This is a mildly paradoxical condition in that parties like Tanzania's Chama Cha Mapinduzi (Party of the Revolution, CCM) can afford to make policy decisions with a longer time horizon than their contemporaries in more competitive democracies such as Ghana, where power alternates regularly. However, the resultant lack of demand for institutions of accountability (because citizens are unlikely to vote the CCM out of power) can also facilitate destabilising rent acquisition. The CCM can afford, in electoral terms, to take a long-term political view. Internal power dynamics and the deeply embedded nature of grand corruption do, however, create a risk that the ruling elite may nevertheless not opt for the most appropriate governance tools. The biggest recent corruption scandals in Tanzania strongly suggest that the government protects those domestic business elites with close links to the CCM. Even factions of the CCM that have exposed cases of corruption and called for accountability have refrained from breaking away from the party altogether (Gray 2015).

According to the Bates model, the strength of civil society also matters a great deal. The extent to which the citizenry will hold the government accountable for how it manages resource rents is crucial. A discussion of appropriate governance mechanisms follows in the next section, but whether these are implementable and indeed even credible for attaining accountability and fostering inclusive growth depends on the willingness and ability of civil society to operate as a proficient watchdog itself. Applying the model to the Tanzanian case, the literature suggests that civil society is

[4]This ratio was calculated using tax revenues derived from comparisons of aggregate national tax revenues and projections of oil or natural gas revenues, with the latter being based on estimated reserves, projected exports and estimated future oil and gas prices.

relatively weak, largely for historical reasons. The creation of a socialist system throughout the 1960s and 1970s consolidated power within the formal institutions of the ruling party, by suppressing other potentially powerful groups. As a result, power has never been organised along class, ethnic or regional lines. The benefit is that Tanzania has been remarkably peaceful compared to its neighbours, in particular Kenya and Uganda. The cost, however, is that even after the 1995 move to multiparty elections, the scope for political mobilisation is still limited (Gray 2015). Tanzania's civil society therefore seems unlikely to challenge the power of the state. Many citizens are dependent, through patronage networks, on the largesse of state officials for their welfare. Elsewhere, I conclude that: 'While unlikely to resort to military activity, [citizens] are also unlikely to engage in productive activity if sufficient income can be derived through patronage, especially in a context of relatively limited economic opportunity for an expanding workforce' (2014a: 19).

According to the Bates model, citizens are unlikely to engage in revolt unless the government is perceived to favour one group over another in the distribution of rents. Supporting this prediction to some extent, there was localised but severe conflict in Lindi and Mtwara during the presidential campaign of 2013. Unmet expectations of wealth from the natural gas discoveries fanned into demonstrable opposition to extractive projects when the government announced that natural gas would be piped directly to Dar es Salaam instead. Residents protested violently against the construction of this pipeline. More than 12 people died, and the police were alleged to have participated in the looting of citizens' property (Ndimbwa 2014). This suggests that the risk of revolt in an otherwise peaceful society may operate as a significant constraint on the actions of the state in terms of how it chooses to distribute the benefits of resource wealth. Overall, however, civil society could be stronger—and indeed will need to be bolstered in advance of natural gas revenues becoming a major factor in the country's political economy.

5 Natural Gas Governance Institutions

Beyond the generic governance concerns discussed above, the specific negotiating capacity within the Tanzanian government has been questioned too. Institutions of accountability are important governance mechanisms—a necessary condition for mitigating against a potential slide into instability, as characterises other petro-states—but they are insufficient for ensuring that optimal deals are struck that furthermore use natural gas as a lever for economic diversification and inclusive growth. To ensure this, contract negotiating capacity should be developed—along with state capacity more generally. Only then will laws and policies become practicable and beneficial for development.

A 2014 article in the *Economist* highlighted potential negotiating-capacity problems. In May of that year, part of a contract between ExxonMobil, Statoil and the TPDC was leaked online. The production sharing agreements (PSAs) that are negotiated between the TPDC and oil majors are confidential, although the government

does have model guidelines for constructing PSAs—which the International Monetary Fund uses to make profit and revenue forecasts. The online leak of the contract with ExxonMobil and Statoil revealed that it differed significantly from the model: 'Tanzania would receive 30–50% of the "profit gas" (after costs are covered and royalties paid) rather than the 50–75% specified in the model agreements', the *Economist* summarised. Opposition critics calculated that this difference in terms could lead to a USD 12 billion revenue shortfall (of what could have been gained). The TPDC disputed the figure, and argued that the country would obtain 61% of the profits once corporate taxes are included plus 5% royalties. Statoil similarly projected that 65–85% of the profit would accrue to Tanzania. In defending the contract, the TPDC attributed the discrepancy between the model and the actual contract to the high costs of deep-sea exploration and the absence of infrastructure, pricing mechanisms and the lack of an existing market for the country's natural gas (as the *Economist* reported).

Whether or not the discrepancy is warranted, the IMF's call for public disclosure of the terms of the PSAs seems reasonable. While the government has apparently committed to publishing all new contracts, this will not apply retroactively and agreements are already in place for most of the known deposits. To list on the Dar es Salaam Stock Exchange, as the government has required all firms to do since 2017, contract terms must be made public. Moreover, as a recent working paper makes clear, the passing of the Tanzania Extractive Industries Bill in 2015 'marks another step change in transparency' (Pedersen and Bofin 2015: 24). The authors conclude that the government's bargaining position has improved over the last decade, and concede that full transparency may not be feasible given competing investments in neighbouring countries such as Kenya and Uganda. However the process of regulation formation, at least prior to 2015, has not exuded stability and may have undermined investor confidence. The recent mineral-export ban, imposed through executive fiat, is one example of what investors fear. For accountability's sake, the authors of the just-mentioned working paper call for more robust involvement from the legislature to monitor deals and check the terms of contracts that cannot be disclosed to the public.

The de jure institutions governing the natural gas sector in Tanzania are as follows: The Extractive Industries Act; the Oil and Gas Revenue Management Fund Act; the Petroleum Act; and the Tanzania Extractive Industries Transparency and Accountability (TEIT) Act. These interact with (and are, in some respects, products of) international institutions such as the Extractive Industries Transparency Initiative (EITI) and the Natural Resources Charter, both designed to mitigate the resource curse (Melyoki 2017). Tanzania was suspended from the EITI only a month after passing the TEIT Act in August 2015. It had failed to submit its 2012/2013 report in time (by June 2015), and was denied its application for an extension. The EITI is a voluntary set of principles that countries comply with to maintain their listing. Its resource governance value-addition is to promote the transparency of extractive-industry revenue flows from companies to governments. It does not, however, require expenditure transparency from recipient governments. By December 2015 the

suspension had been lifted, as Tanzania submitted its report before the end of that month (the required stipulation to avoid being delisted to non-compliant status).

One of the simultaneous strengths and weaknesses of the EITI is that it is a voluntary mechanism. This invites disclosure, rather than compelling it. Countries can then choose to disclose as a function of endogenous motivation rather than external imposition. One of the ways in which to institutionalise EITI principles is to integrate them into domestic legislation—which Tanzania, to its credit, has done. The TEITI Act, for instance, demands that all new mineral and natural gas concessions, contracts and licences are made available for public scrutiny. A roadmap to ensure disclosure of beneficial ownership has also been crafted. Beneficial-ownership disclosure requirements are a crucial variable in the battle against illicit financial flows into nameless shell companies, normally in tax havens or offshore jurisdictions, and these are written in. The latest Tanzania EITI report, which is from 2015, identifies the adoption of the TEITI Act as a strength, along with the other pieces of legislation mentioned above, as indications of transparency principles being mainstreamed into mineral and natural gas administration.

The Petroleum Act regulates up-, mid- and downstream activities and establishes a Petroleum Upstream Regulatory Authority 'to provide for the National Oil Company, to secure the accountability of petroleum entities and to provide for other related matters' (United Republic of Tanzania 2015: 14). The act separates out the functions of commerce, policy and regulation. This is a welcome departure from the previous regime, which shared the responsibilities between the Ministry of Energy and Minerals and the TPDC and allowed excessive ministerial discretion (Melyoki 2017). The TEITI Act, in turn, is a departure from the Petroleum Exploration and Production Act of 1980, which allowed limited information disclosure. Inspired by the EITI, the new act repeals permissions for non-disclosure. The Oil and Gas Revenue Management Act provides the framework for fiscal rules pertaining to the management of oil and gas revenues. It also provides for the establishment of an oil and gas fund, a sovereign wealth one in the mould of Norway's example.

Local-content provisions are one of the primary triggers that the legislation emphasises for domestic development. The Petroleum Act stipulates that the TPDC shall have exclusive rights over the natural gas midstream and downstream value chain in order to 'promote local content including participation of Tanzanians' (United Republic of Tanzania 2015: 26). The overall development idea of local-content regulations is to develop local businesses into becoming internationally competitive in terms of meeting supply requirement standards for international oil and gas companies. Technology transfer to Tanzanians from international experts is crucial for developing local talent, and this is envisaged as occurring through the development of local training institutions. Experience from the mining sector suggests that local suppliers face significant barriers to entry into the supply chains for multinationals. To date, the Tanzanian government has not provided the business support required to help firms develop to the appropriate level. One study records that 'so far, there have been no efforts made by the government to support such business ventures, and mining companies' efforts to assist local suppliers to produce goods are seen by many as little more than lip service and publicity stunts' (Lange

and Kinyondo 2016: 1100). Melyoki suggests, meanwhile, that in light of this and of the burdens placed on the TPDC for a host of other functions, 'it is advisable to assign the local content development responsibility to a different agency as well as allocate resources for execution of that role' (2017: 189).

6 Conclusion

Tanzania has sizeable natural gas resources. The proportion of that which is recoverable or economically viable to extract is yet to be fully established. The initial forecasts for revenue are likely overstated, given a declining oil price. Nonetheless the world has not yet shown signs of ending its addiction to fossil fuels, despite strong climate change indicatives that make such a move imperative. There is, therefore, an opportunity for Tanzania to earn significant natural gas rents. This chapter has examined the potential for the country to harness its natural gas endowment as a lever for inclusive growth. As noted, a consensus has emerged in the resource-curse literature that institutions are the most important variable for determining whether natural resources will contribute to or contrariwise undermine development. Following Bates (2008), this is because the way in which resource rents are acquired and distributed affects current and future political equilibria. If these remain stable, resource rents can be employed to build a diversified economy. If resource rents become a site of predation for the ruling coalition of political and business elites meanwhile, distortions to the equilibria may result in future instability and economic stagnation.

The game theory model applied in this chapter revealed that there are significant challenges in broadening Tanzania's tax base and increasing its accompanying revenue collection. As long as natural gas rents have the potential to dwarf tax revenue, or undermine the incentive to even collect taxes, the already tenuous citizen–state accountability link may be weakened further. While oil and gas prices remain low and production on the planned LNG plant has stalled, every effort should be made to strengthen civil society with oversight and accountability skills. Patronage distribution can undermine such endeavours. Natural gas rents pose a significant risk in this respect, in that they help elites to expand client networks and undermine civil society efforts at holding the government to account. Tanzania's new legislation to govern the gas sector looks promising, despite its rocky path to final adoption. It exemplifies the ideals of participative governance, appropriate separations of functions to avoid conflicts of interest and of limited ministerial discretion. Whether or not the new legislation will actually allow for the creation of inclusive socio-economic benefit remains to be seen, however. Of concern is that stipulations for contracts to be made publicly available are not retroactively applicable, and many of the concessions have already been allocated and contracts finalised. Retrospective application would likely undermine investor confidence and threaten a reversal of current terms which Tanzania cannot afford, especially as it is competing with Kenya and Uganda for investment in the sector.

Whether Tanzania's natural gas endowment proves to be a blessing or a curse will depend on the nature of the elite bargain eventually concluded. If the accountability-inclined faction of the CCM can gain sufficient influence in the cabinet and in parliament to ensure that de jure institutions become embedded, Tanzania will indeed benefit from its natural gas resources. The implementation of new laws may serve the country well. However if these institutions are treated as irrelevant by those with de facto power and predation gains the upper hand, the stability of the country's social contract will be threatened—which is, of course, suboptimal for generating sustained inclusive growth. Civil society will have to improve its overall efficacy, including the construction of a stronger opposition movement to CCM's one-party rule.

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Preparing the Ground for Unrest: Private and Public Regulation of Labour in the Fresh-Fruit Global Value Chain

Margareet Visser

1 Introduction

On 1 November 2012, a rural uprising of farmworkers erupted in the agricultural town of De Doorns on a scale rarely seen before in South Africa. Approximately 8000 people participated in the protests, which subsequently spread to 16 other agricultural towns in the Western Cape. By the end of the protests, three people had died and six had been injured. Damages were estimated at ZAR 48 million, as about 60 hectares of table grapes and some pack houses were burnt down. While the scale of the 2012 protest surprised many observers, it was not an isolated event of social unrest. Three years earlier, in November 2009, the local community in De Doorns chased 2500 Zimbabweans from their shacks during a flare-up of xenophobic violence. This chapter argues that neither the xenophobic violence of 2009 nor the 2012 protest happened in a vacuum, but that rather the frayed social relations that spawned the protest had been present for some time. It highlights how a combination of private and public governance regulation by lead firms exerting power in the fresh-fruit global value chain (GVC) and public regulation by the South African state (that is, legislation and policies) contributed to social tensions in the indigent community of De Doorns.

The next section discusses the theoretical framework employed to understand how private and public regulation in the fresh-fruit GVC contributed to the outbreak of social unrest in De Doorns, and why GVCs and global production networks (GPNs) are used in combination to analyse the effect of private and public regulation on De Doorns' workers community. The GVC framework—especially Gereffi's (1994) conception of buyer-driven versus producer-driven chains—reveals how relations are organised around tangible commodities, and highlights the power

M. Visser (✉)
Institute of Development and Labour Law, University of Cape Town, Cape Town, South Africa
e-mail: margareet.visser@uct.ac.za

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dimensions between firms. The GPN approach, meanwhile, outlines the bigger picture by focussing on the embeddedness of firms and the conditions under which labour is incorporated into GVCs/GPNs, also highlighting the importance of labour, civil society and the state itself as key regulators of power dynamics. This is followed by an analysis of how changes in public and private regulation, especially since the advent of democratic governance in 1994, have played out on farmworkers in general. The chapter then zooms in on the town of De Doorns and explains its close relationship with the vagaries of high-risk, table grape production and how producers responded to regulatory changes and the tipping points of 2008. This provides the foundation for an analysis of how labour restructuring impacted on the workers community of De Doorns and thus the later incidents of social unrest. The chapter concludes by drawing together the critical empirical and theoretical findings.

2 Theoretical Framework

The international expansion of geographically dispersed but functionally integrated supply chains lies at the heart of the contemporary transformation being witnessed in global employment, production and trade (Dicken et al. 2001; Gereffi 1994; Gereffi et al. 2005; Henderson et al. 2002). The rise of supermarkets involved in multiple retailing—both food and non-food—has been an important facet of this transformation (Dolan and Humphrey 2004; Gereffi 1994; Gereffi et al. 2001; Kaplinsky and Morris 2001; Reardon et al. 2007). Increasingly powerful lead firms, rather than states, direct or drive the scope and trajectory of development of suppliers and workers integrated into GVCs/GPNs. Gereffi (1994) argues that a key feature of lead-firm driving is the ability to decide at which nodes in the chain most value will accrue, but also to outsource risk to less powerful players. Lead firms enable economic upgrading of their partners by transferring knowledge that allows the concerned companies to improve their position within the chain, and hence move from low-value to relatively high-value activities (Gereffi 2005; Humphrey and Schmitz 2002; Sturgeon 2006). However, suppliers can also position themselves in relation to buyers in such a way that they have a better opportunity of upgrading.

The original GVC framework has been criticised for being too linear, focussing too much on inter-firm relations and failing to consider the horizontal ones in which value chains are embedded, such as class and gender (Gibbon 2001; Henderson et al. 2002; Leslie and Reimer 1999). It has also been faulted for treating labour at best as a factor of production, thus failing to consider how it may be affected by value-chain incorporation or how its agency may indeed even shape such chains (Barrientos et al. 2003, 2011; Cumbers et al. 2008; Coe and Jordhus-Lier 2011; Pegler and Knorringa 2007). Moreover, criticism has been levelled at the ignoring of the role of the state in shaping the regulatory environment in which value chains are embedded (Neilson et al. 2014; Smith and Mahutga 2009; Topik 2009). Finally, it has been noted that there has been an overly optimistic view about less powerful actors' scope for economic upgrading. It has been pointed out that economic upgrading is far from

a given, and might in fact lead to economic downgrading for some (Barrientos and Smith 2007; Kaplinsky and Morris 2001; Raworth and Kidder 2009; Taplin 1994).

The GPN framework stresses the impact of the horizontal relationships in which value chains are embedded. It also highlights the state as a key actor that shapes the regulatory context in which value chains operate. GPN scholars argue that the state can exert a material influence to ensure positive benefits for the integration of its citizens into value chains. On the other hand, state inaction or misdirected policies may have a detrimental effect on them (Coe et al. 2008; Neilson et al. 2014; Smith and Mahutga 2009; Topik 2009). The GPN approach also focusses more overtly on labour and its collective organisations, not only as a factor of production but also on the ability of labour's agency to shape GPNs (Hess and Yeung 2006). To assess the mode(s) of workers' incorporation into the value chain, the concepts of social down- and upgrading have been developed (Barrientos et al. 2011). Despite the fact that the GPN framework has attempted to address some of the key criticisms levelled against the GVC approach, Neilson et al. (2014) comment that explicit theorisation of the state's role remains somewhat lacking even within GPN literature. Taylor et al. argue that a 'labour process deficit remains' (2015: 13) herein. Using the lenses of both of these analytic frameworks, this chapter unpacks how the integration of producers and workers into the fresh-fruit GVC/GPN has played out on the local community of De Doorns. Specific attention is paid to the role of the state in directing the beneficial or adversarial incorporation of local producers and workers.

3 Regulation of the Fresh-Fruit GVC/GPN

The regulatory environment (public governance) in which table grape production is embedded has changed dramatically since the advent of democracy in 1994. To appreciate the extent of change, a brief historical overview on the support mechanisms that white farmers enjoyed prior to democratic rule is presented:

- The Land Bank provided subsidised financial services and credit to white farmers.
- The Agricultural Credit Board provided credit to farmers who did not qualify for borrowing from the Land Bank (Vink and Van Rooyen 2009).
- The Marketing Act of 1968 established state marketing boards for most agricultural commodities, controlling the supply of agricultural products, setting prices and monitoring quality standards and sale; under the so-called single channel marketing system, boards could use their monopoly power to keep prices high, allowing producers to collectively wield significant market influence.
- The Cooperative Society Act of 1925 facilitated the creation of a network of primary-producer cooperatives, usually appointed as agents to the respective marketing boards—giving them effective regional monopoly power and enabling them to set floor prices (Ewert and Du Toit 2005; Mather and Greenberg 2003; Piesse et al. 2005).

- Cooperatives were also important financial intermediaries, as the Land Bank used them to provide medium- and short-term credit to commercial farmers at subsidised interest rates (Bayley 2000; Vink and Van Rooyen 2009).
- A host of legislation restricted the movement of black people, thereby forcing them into cheap labour on farms. In addition, labour legislation discriminated especially against farmworkers; the Masters and Servants Act of 1856 and its subsequent iterations effectively bound farmworkers to their employers.

While state support to agriculture began to be phased out in the 1980s due to international pressure (specifically from the World Trade Organization), the post-1994 governments significantly stepped up deregulation because they no longer viewed state support to white farmers as politically acceptable (Wegerif et al. 2005). By 2010, South African state support to agriculture—measured by the producer support estimate (PSE)—stood at 3%. In contrast, the average PSE for member countries of the Organisation for Economic Co-operation and Development is 20%. From the perspective of farmworkers, a particularly important subsidy that has been curtailed is the housing one. It allowed farmworkers to build on-farm housing. While the current government of the African National Congress has launched a new on-farm housing subsidy initiative, the 'Farm Residents Housing Assistance Programme', its conditions are so onerous that, as of 2017, not a single farmer had applied for such a subsidy (Atkinson 2007; Visser and Ferrer 2015). The state has also deregulated the agricultural sector by repealing the Marketing Act and reducing tariff protection. Following the repeal of that act in 1997, producers' collective power fragmented as a flurry of export agents entered the market, all competing with each other, with the result that farm gate prices have been driven down. In the period immediately following deregulation, it was claimed that retailers from the United Kingdom increased their gross margins in South Africa from 15% to as much as 35% (Symington 2008).

In other words, the state has, since 1994, increasingly withdrawn its support to producers. At the same time, it has intervened to give farmworkers more rights. With the promulgation of the Labour Relations Act (LRA) of 1995 and the Basic Conditions of Employment Act of 1997, labour law for the first time fully extended to farmworkers. In 2003, a sectoral determination was promulgated to specifically regulate minimum conditions of work for farm labour and to set a minimum wage. Farmworkers are now also covered by various social protection laws, aimed at regulating unemployment, health and safety in the workplace as well as compensation as a result of injury on the job too. In the same year that the state extended labour legislation to farmworkers, it promulgated the Extension of Security and Tenure Act (ESTA) to protect farm dwellers against unlawful evictions and provide them with more security of tenure. ESTA has, however, been widely criticised by the producer community for infringing on their property rights, as farmworkers attain permanent tenure rights on farms under certain conditions. Producers have complained that it has become very expensive to evict dismissed workers who have not accrued tenure rights but still refuse to vacate their houses. The combination of ESTA and onerous

farm-housing subsidy conditions has resulted in far less such accommodation being built since the late 1990s.

Meanwhile, private regulation has also changed due to the consolidation of the retail sector since the 1980s. By the first decade of the new millennium, it was estimated that supermarkets retailed between 75 and 80% of food in the Global North and 50% in some emerging economies (Reardon et al. 2007). The combination of deregulation, which has fragmented the collective bargaining power of fruit producers in the marketplace, and the consolidation of the retail sector, which has strengthened the bargaining position of buyers meanwhile, have led to a significant shift in the balance of power from producers to lead firms (Barrientos and Visser 2012). Producers have complained about the unfavourable terms of trade set by buyers. These include having no written contracts, receiving no guarantees of purchase beyond a verbal one, having to sell fruit on a consignment basis, lead times between order and delivery becoming shorter and shorter, as well as orders becoming generally more insecure. Most importantly, retailers set prices at such a level that most of the rent of the final retail price of fresh fruit accrues to them (Barrientos and Visser 2012; Greenberg 2003; Visser and Ferrer 2015). In 2011, an analysis of the value-chain distribution of final retail price for table grapes from the Hex River Valley to the UK showed that 42% thereof was captured by supermarkets, 22% went to distribution while only 18% was received by producers (26% if they pack their own fruit) (Barrientos and Visser 2012).

Retailers also govern GVCs/GPNs through a range of quality, process and social standards, prescribing how items should be produced and the conditions under which workers must be employed (Reardon and Farina 2001). While quality and process standards have been enforced down the GVC/GPN since the start of the new millennium, social standards have only been imposed much more recently. Most of those employed in the fruit industry have, however, slavishly followed local regulation, doing little to lift conditions of employment above the statutory minimum (Barrientos and Smith 2007; Visser and Godfrey 2017).

The pincer effect of twin public and private regulatory changes has increased pressure on the profit margins of export-oriented, labour-intensive producers. One of their main coping strategies has been labour restructuring (Barrientos et al. 2003; Du Toit and Ally 2003; Ewert and Du Toit 2005). Such restructuring most commonly entails casualisation (replacing permanent jobs with fixed-term ones) and externalisation (engaging workers via a labour broker). Casualisation means it is less expensive to employ seasonal than permanent workers, who receive a range of non-statutory benefits and are often (expensively) housed on farms—given that housing subsidies are no longer readily available to producers. By employing off-farm workers, producers sidestep the strictures of ESTA. The housing conditions of off-farm workers are much inferior to those of permanent on-farm ones (De Satgé and Blecher 2015; Kritzinger et al. 2004; Visser and Ferrer 2015).

Externalisation provides producers with access to workers on an ad hoc basis, without having to employ them directly or to manage them. It outsources labour recruitment to a broker, which becomes trickier in an environment where farmers no longer know the track record of each seasonal worker. Both casualisation and

externalisation represent social downgrading for workers, as these processes lead to less job security, fewer benefits and affect their right to freedom of association and collective bargaining. Casualised and externalised workers are less likely to join a union, for fear of not being contracted by producers. Given the low levels of unionisation in the agricultural sector and that many of the rights bestowed by the LRA depend on workers being unionised, such rights become irrelevant in the absence of unionisation.

4 Table Grape Production in the Hex River Valley

De Doorns is nestled in the Hex River Valley, known as the portal to the Boland, the main fruit-producing area of the Western Cape. The climate of the Hex River Valley lends itself to table grape production. The valley forms one of five main national production areas for table grapes. As the price for export table grapes is almost double that of locally sold grapes, the industry is export-oriented. In 2011/2012, exports comprised 87% of total South African table grapes sales. The bulk of these exports go to continental Europe (56%) and the UK (21%), while the remainder go to the Far and Middle East (Barrientos and Visser 2012). Table grape production is highly labour-intensive, and provides employment for the majority of De Doorns's population for 6–8 months of the year. Labour needs are particularly high during vineyard preparation, harvesting and packing. Seasonal workers are, however, increasingly also employed for pruning, lengthening seasonal contracts to 10 or 11 months of the year.

Table grape production requires some degree of skill, especially as quality and process standards have risen. Pruning as well as vine manipulation is technical, and can impact on the quality and size of the harvest. This leads to competition for better labour among table grape producers, and has consequently driven up wages (Theron 2010). Even before the strike in November 2012, a farmer representative of the Hex River Table Grape Association (HTA) claimed that most of his temporary workers received between ZAR 85 and 90 a day (at the time, the minimum wage was ZAR 69%).[1]

Table grapes are extremely perishable. Rain on ripened crops can lead to serious quality issues, resulting in lower prices. In the 4 years prior to the 2012 protest, De Doorns had twice experienced storms. In November 2008, just before the start of the harvesting season, flooding caused damage estimated at ZAR 200 million to grape farms. In January 2012 (this time during the harvesting season), flash floods and hail caused damages on about 20 farms. Some farmers lost up to 30% of their crop. Producers are also exposed to exchange-rate fluctuations. The rally of the South African rand, which began in 2006 and peaked in 2008, had caused havoc with producers' income. As shown by Fig. 1, after a temporary contraction in 2009

[1]Interview with Michael Laubscher, chair of the HTA, De Doorns, 15 July 2013.

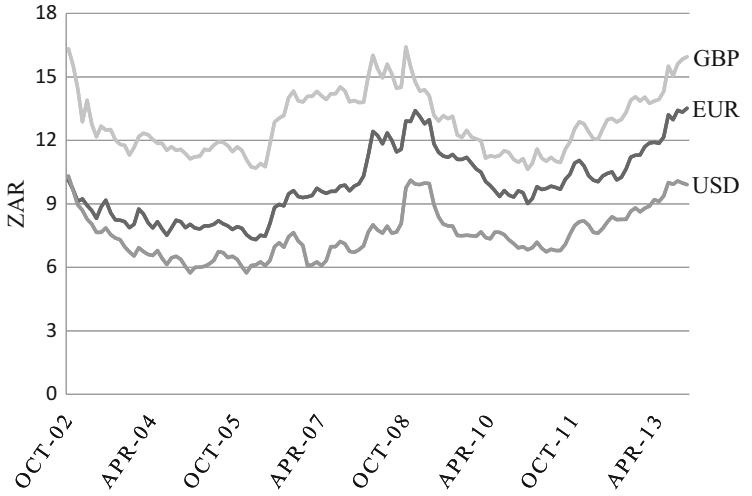

Fig. 1 Exchange-rate trends of the South African rand. Source: Supplied by Hortgro, based on data from: www.exchangerate.com/past_rates_entry.html

and 2010, the rand again started climbing towards 2012—the year in which the aforementioned major protests broke out.

Given that the table grape community of De Doorns is tightly integrated into GVCs/GPNs, the 2008 European recession had a huge impact on producers' incomes. In the 12 months immediately following 2008, table grape prices fell by about ZAR 10 a carton. The combination of adverse weather, a strong rand and the European recession became the proverbial tipping point that prompted producers already pressurised by changes in public and private regulation to either sell up or to do business differently. Between 2008 and 2012 the number of table grape producers in the Hex River Valley dropped by 42%,[2] while those remaining in business focussed on producing higher volumes—thereby becoming more market-attuned. This involved switching to seedless grapes, packing the fruit in punnets and cutting labour costs. In 2012, seedless grapes received a price premium of about 30% above seeded ones. Newer table grape regions, such as the Orange River Table Grape Production Region, have always had a high percentage of seedless varieties and a much higher one of seasonal workers too, whereas the Hex River Valley has lagged behind in both these respects. While seedless varieties accounted for 71% of South African table grape exports in 2011/2012, only 46% of grapes produced in the Hex River Valley were seedless in 2010/2011.[3]

The reason for this is that farmers had used the destruction of their vineyards by floods in 2008 as an opportunity to establish new seedless vineyards. Seedless varieties require less labour, as vineyards can be thinned out chemically—reducing

[2]Related statistics are available online at: www.satgi.co.za/industry-info/statistics/statistics-booklet

[3]Related statistics are available online at: www.satgi.co.za/industry-info/statistics/statistics-booklet

Table 1 Ratio of permanent to seasonal workers in South African table grape-growing regions

	2008/2009		2009/2010		2010/2011		2011/2012	
	Perm.	Season.	Perm.	Season.	Perm.	Season.	Perm.	Season.
Berg	16%	84%	16%	84%	16%	84%	16%	84%
Hex	61%	39%	33%	67%	35%	65%	34%	66%
Northern Province	33%	67%	33%	67%	22%	78%	22%	78%
Olifants	18%	82%	17%	83%	19%	81%	18%	82%
Orange	15%	85%	15%	85%	12%	88%	11%	89%
Total	27%	73%	22%	78%	20%	80%	19%	81%

Source: SATGI statistical yearbooks, available online at: www.satgi.co.za/industry-info/statistics/statistics-booklet

the need for manual bunch-manipulation. A major farmer in De Doorns estimated that labour costs associated with the vineyard preparation of seedless varieties are up to one-third less than that of seeded ones, because fewer workers are needed.[4] The downside of seedless varieties is higher chemical bills and lower yields than seeded ones. While the production costs of seedless varieties are not that much less than those of seeded ones, the former's big attraction is higher prices and not having to manage vast numbers of seasonal workers. The switch to seedless can be viewed as a form of product upgrading, while representing social downgrading for workers meanwhile—as many seasonal contracts have been shortened.

Compared to other table grape regions, casualisation in the Hex River Valley has been moderate. Up until 2009, about 60% of the valley's table grape workers were still permanent. However, the statistics provided by the South African Table Grape Industry (SATGI) reveal that in the 2009/2010 season, the ratio between permanent and seasonal workers reversed (Table 1). According to SATGI, this was caused by 67 producers selling up and because of the remainder of producers being under acute financial pressure. This prompted them to reduce their labour costs and employ seasonal workers, whose cost to companies is lower.[5] While the increased focus on seedless varieties partially explains this switch, it cannot be the sole factor given that seedless varieties increased by only 5% between 2008 and 2011. It seems more likely that the combined effect of a strengthening rand, the European recession and the floods of 2008 created a proverbial tipping point following sustained pressure on producers due to accompanying changes in public and private regulation.

[4]Interview with a farmer, De Doorns, 21 June 2013.

[5]Email correspondence with Joseph Lombardt, information manager of SATGI, 16 January 2014.

5 Effect of Labour Restructuring on De Doorns

Over the last 20 years, the once picturesque town of De Doorns has changed radically. Today, it is surrounded by a sprawl of informal settlements: Hasiekamp, Ekuphumleni, Sandhills and Stofland. Despite Todes et al. (2010) finding that small towns in South Africa experienced net out-migration between 1996 and 2001, according to census data the population of Ward 2—which accommodates the majority of De Doorns's off-farm, indigent community—grew by 14% between 2001 and 2011. It is unclear what exactly drove this expansion, but the combined effect of in-migration and the eviction of workers off farms no doubt contributed to it.[6] Wegerif et al. (2005) have argued that key triggers for worker evictions are farm consolidation, adverse weather conditions and regulatory changes. All three of these factors were present between 2008 and 2012. Evictions from farms during this period are highly likely to have occurred.

Yet, it has also been argued that one of the major eviction waves happened much earlier, from 1996 to 1997, as farmers pre-emptively forced workers out before ESTA was even promulgated (Wegerif et al. 2005). For instance a local farmer, who chose to remain anonymous, said he bought farms in the early 1990s and demolished all the worker houses because accommodation had become 'such a headache. [...] My key staff live on the farm but the rest all live in town'.[7] The drawcard for migrants is of course jobs. Travelling north to south through the arid Karoo, De Doorns is the first service stop on the N1 highway, offering fairly easily accessible employment. Due to increased casualisation, the number of seasonal jobs has risen dramatically, offering entry ones to newcomers. In season, a train of trucks enters Stofland to pick up seasonal workers daily. Apart from relatively long seasonal contracts, wages in the area tend to be higher than the minimum agricultural one (Stanwix 2013; Theron 2010; Visser and Ferrer 2015). Migrants are reportedly also attracted to the area because of better medical services, enabled by the upgrading of nearby Worcester's provincial hospital and the building of a unit that offers specialised HIV/AIDS care.[8]

Gauging from census data, there appear to be four major migration streams into De Doorns. They consist of individuals coming from Cape Town, the Eastern Cape, Lesotho and Zimbabwe. Once they have worked in the valley for several seasons, some end up settling in De Doorns permanently. While the vast majority of Ward

[6]Getting accurate data on the extent of evictions and displacements is difficult, if not impossible. This is due to the fact that evictions often happen under the radar. Agencies responsible for documenting these occurrences do not consistently record this data. Often, it is claimed by farmers that workers voluntary move off the farm. In these cases, farmers tend to offer workers money in exchange for them moving off the farm. The amount of money paid is not nearly enough to compensate for the loss of permanent housing. It is, however, attractive to those earning a minimum wage and unaware of their rights.

[7]Interview with a farmer, De Doorns, 15 July 2013.

[8]Interview with Boetie Kriel and Neil Hamman, two farmers and board members of the HTA, De Doorns, 21 June 2013.

Table 2 Nationality of Hex River Valley seasonal workers

In season: September to April (total workers: 9941)			
Country	South Africa	Zimbabwe	Lesotho
Number	7883	1468	590
Percentage	79%	15%	6%
Out of season: May to August (total workers: 2461)			
Number	2058	215	188
Percentage	83%	10%	7%

Source: Data provided by the HTA

2 consists of South Africans, the number of Basotho has risen noticeably. The number of Zimbabweans appears to be much lower. In Stofland, Basotho workers have tended to congregate together in a tightly knit community in a section aptly named Maseru. They have a reputation for being militant, given their previous work experience in the mining sector—where strikes and unionisation are common. During field research conducted for this chapter, some suggested that it was these Basotho workers who led the 2012 strike.[9]

According to statistics provided by the HTA (see Table 2), De Doorns farmers employ far more locals than foreigners. Yet, what is also clear is that farmers have employed more Zimbabweans than Basotho. Farmers' preference for Zimbabwean workers is not arbitrary, but based rather on the need for more skilled labour as retailers demand higher quality and process standards. Theron notes that 'compared to the populace of the valley [Zimbabweans] are highly educated' (2010: 16). A farmer explained that because Zimbabweans speak better English than people from the Eastern Cape and Lesotho, they understand instructions more easily and faster.[10] Given that there are more Basotho living in the area than Zimbabweans, producers' preference for the latter in all likelihood created social tension too.

6 Eruption of Social Conflict

In February 2009, seven Zimbabweans died when their shack in Stofland was burnt to the ground. Police opened a murder docket, as *News24* (24 February 2009) reported. Nine months later, xenophobia flared up again when the community chased about 2500 Zimbabweans from their shacks. They were forced to stay in a refugee camp on the town's rugby field for months (*IOL Online*, 18 November 2009). Significantly, the attack on Zimbabweans occurred in November, the month when the major intake of seasonal workers happens on farms. Misago (2009) and Theron (2010) reported strong competition between South African and Zimbabwean labour brokers at that time. South African labour brokers were allegedly disgruntled

[9]Interviews with: a union organiser, Stellenbosch, 14 March 2013; a strike committee member, De Doorns, 21 June 2013; and a spokesperson of PASSOP, Wynberg, 28 June 2013.

[10]Interview with Michael Laubscher, chair of the HTA, De Doorns, 15 July 2013.

because Zimbabwean labour brokers had more success securing contracts with farmers. Misago (2009) alleged that labour brokers instigated ethnic conflict in the community. Migration has not only heightened perceptions about job insecurity, but also increased pressure on the town's infrastructure and available housing stock. According to Botha (2012), the non-governmental organisations Black Sash and People against Suffering, Oppression and Poverty (PASSOP) identified poor service delivery, socio-economic conditions and a lack of housing in De Doorns's townships as major contributors to the outbreak of xenophobic violence in 2009.[11] Service-delivery protests erupted in 2004, 2007, 2008 and in 2011 meanwhile (Wilderman 2014).

Following the outbreak of violence in 2009, various bodies attempted to organise and support De Doorns's indigent community. Three unions—the Bawsi Agricultural Workers Union of South Africa (BAWUSA), the Food and Allied Workers Unions (FAWU) and Sikhula Sonke—and three NGOs moved into the area. Two NGOs, PASSOP and the Scalabrini Centre, supported foreign migrants. The NGO Women on Farms (WoF) organised a fixed core of about 100 female farmworkers into a committee structure. The leader of the WoF committee in De Doorns eventually became one of the leaders of the 2012 protests. Street committees have also existed in De Doorns's townships to address security and service-delivery issues since the early 1990s. Michael Laubscher, the chair of the HTA, referred to the presence of an ongoing organisational force in the area even prior to the 2012 protests. Commenting on the frequent service-delivery strikes, he remarked that it was 'as if there [was] a mafia that [stopped] people from going to work'.[12] Hence, despite a low level of unionisation in the Hex River Valley, there were several organisational forces present in De Doorns's off-farm community; this suggests that the 2012 strike did not happen in an organisational vacuum.

The social tensions arising based on the loss of permanent jobs, competition between local and Zimbabwean labour brokers and an increasing housing shortage formed the structural foundation for the 2012 protests. The proverbial sparks that led to the build-up of the protests were two strikes. The first broke out in September on farm A. Unlike the majority of Hex River Valley producers who exported the bulk of their grapes, farmer A only did this for about 50% of his crop. The rest were sold locally. Due to the high quality demands of export table grapes, the industry norm is to employ four people per hectare. However, given that farmer A was only partially export-oriented, he employed two workers per hectare—thereby significantly reducing labour costs. As a result, he was able to pay his workers much more than the average wage in the area: ZAR 130 for permanent workers and ZAR 90–127 for seasonal ones.[13] Farmer A became terminally ill and entered a 5-year lease agreement with his exporter, who took over management of the farm in July 2011. The

[11]Interview with a spokesperson of PASSOP, Wynberg, 28 June 2013.

[12]Interview with Michael Laubscher, chair of the HTA, De Doorns, 15 July 2013.

[13]Interviews with: a strike committee member and town councillors, De Doorns, 19 June and 15 July 2013; and an ANC community leader, De Doorns, 21 June 2013.

lease agreement with the exporter, negotiated on the basis of future income, was not only described as expensive but also as prescriptive. Significantly, it stated that permanent employees had to be paid at the same rate as before and that wages paid to his workers should not be disclosed to outsiders. The exporter of course focussed on exporting most of the grapes grown. To push up the percentage of export-grade grapes, the exporter employed much more labour to 'get the vineyards into shape'. This included engaging a labour broker at a cost of ZAR 700,000. The exporter made a significant loss by the end of their first season, in April 2012.[14]

In July 2012, given the first opportunity to renegotiate contracts with seasonal workers, the exporter offered them only ZAR 64 a day, as the *Cape Argus* (20 September 2012) reported. Irate seasonal workers—about half of whom were Basotho and Zimbabwean women—contacted local ANC councillors and representatives of PASSOP, who put them in contact with trade unions. Eventually, farm A's workers went on strike twice. As a result of the first, it became common knowledge in Stofland that farmer A had paid his workers much more than the average wage in the Hex River Valley and so others started wondering why they were not receiving similar remuneration.[15] A strike that erupted on farm B involved Basotho workers. They claimed to be paid less than the minimum wage, and contacted PASSOP for assistance. Both strikes involved foreigners: on farm A they were paid much more than the average wage; on farm B they were paid less than the minimum wage. The strikes had the potential to again stoke xenophobic tensions in the local community. PASSOP's concern about these tensions was reflected in a press statement that it issued during the 2012 protests, stating that Zimbabwean migrant workers should not be seen as undermining the strikes or as scab labour. It also called on 'farm owners and labour brokers to stop seeking workers of particular nationalities when sourcing workers'. PASSOP held several meetings and events to unite Basotho, South Africans and Zimbabweans. It claimed that 'tensions between the Zimbabweans, [Ba]sotho and South Africans were at an all-time low when this mass strike began'.[16]

A month before the November protests, Owen Maromo, a Zimbabwean organiser of PASSOP, said that farmworkers in the Boland region were planning for 'the whole valley to go on strike. We want to approach all farms so that the whole issue is sorted out for everyone' (*New Age*, 16 October 2012). An ANC leader from De Doorns claimed it was PASSOP that started the strike.[17] While it will forever remain unclear which organisation was the main driving force behind the strike, PASSOP evidently played an important role in uniting the community both prior to and during the protests.

[14]Interview with an industry representative, Kenilworth, 5 July 2013.

[15]Interviews with: town councillors, De Doorns, 19 June 2013 and 15 July 2013; and a strike committee member, De Doorns, 21 June 2013.

[16]This statement is available online at: www.passop.co.za/news/featured/still-concerned-3-years-after-mass-de-doorns-displacement

[17]Interview with an ANC community leader, De Doorns, 21 June 2013.

A perennial union complaint is that farmers do not allow them access to farms to recruit and organise workers. A major advantage of an off-farm, seasonal-worker community is that the organisation of workers becomes easier. The geographical layout of Stofland lends itself particularly well to community mobilisation. The township is situated next to the N1, with only one access road into and out of the township. A roundabout serves as the pick-up and drop-off point for farmworkers living in Stofland, as well as a natural organisational hub for workers. As a town councillor explained: 'The workers wait at the roundabout to be picked up by the [farm] trucks from five in the morning. This was where the conversation [about the pending strike] started heating up. That day the workers decided that nobody would get on the trucks'.[18] According to the newspaper *Die Son* (2 November 2012), some protestors intimidated those who wanted to work by sjambokking them when they tried to climb onto the trucks. Protestors reportedly blocked roads and threw stones at trucks and the police, prompting the latter to fire tear gas. Protestors later blocked the N1, cutting off the main arterial highway between the north and the south of the country—a step that immediate drew national media attention.

Being able to mobilise a protest is one thing; being able to bargain successfully quite another. Protestors' ability to bargain was hamstrung by a number of factors. Initially it was difficult to identify a spokesperson for the protestors. Police eventually facilitated the formation of a strike committee to speak on behalf of the protestors. It was not immediately clear what their main demands were: whether it was indeed another service-delivery strike or rather a labour-related matter. A long list of discussion points was eventually handed over to the HTA, inter alia calling for a living wage. A wage of ZAR 150 per day would eventually become the main demand of the protestors. Because protestors were not unionised, the episode was not recognised as a protected strike in terms of the LRA; as such, they ran the risk of being summarily fired. Producers called to negotiate with protestors therefore insisted that they were not dealing with a registered union, and that the protestors consequently had no mandate in terms of the LRA to bargain on behalf of all the farmworkers in the valley—let alone in South Africa at large.

As the protest escalated to the rest of the Boland and gained support from a coalition of NGOs and trade unions that demanded that the sectoral minimum wage be raised, the South African minister of labour eventually stepped in. She was able to revise the minimum sectoral wage. Eventually, the new one was set 52% higher than the previous wage—but still 30% less than the one demanded by the protestors. The question is why did the state, being openly sympathetic to the farmworkers' cause, not give in to their demand for ZAR 150 a day? The answer can be found in a particular research report, one commissioned by the Employment Conditions Commission to advise the minister of labour on the setting of the new minimum wage. It set out the dilemma faced by the agricultural industry: while it concluded that ZAR 150 per day is still a far cry from a living wage, it also found that most South African farmers would soon go bankrupt if they were forced to pay that amount of money

[18]Interview with a town councillor, De Doorns, 21 June 2013.

(Meyer et al. 2012). At the heart of this dilemma lies the issue of private governance of the fresh-fruit GVC/GPN, and what power the state has to trump such governance. Lead firms (over which the state has no control when they exist beyond its territorial borders), as pointed out before, determine in this particular GVC/GPN the distribution of profits. If the minister of labour had set the minimum wage at ZAR 150 a day, it would have been extremely difficult for individual producers to demand higher prices from their buyers to enable them to absorb the new costs. Unable to take on higher wage bills themselves, massive job losses might thus have followed.

7 Conclusion

This chapter set out to demonstrate the importance of the state's role in shaping the regulatory environment in which GVC/GPN actors operate. It has been stressed how state regulation, the main form of horizontal governance of GVCs/GPNs, can have a critical outcome on the vertical governance of a specific GVC/GPN. Here, we have seen how the state's policy of deregulation has contributed to a shift in the power balance of the fresh-fruit GVC/GPN. By focussing on the incorporation of workers and their community into this GVC/GPN, the chapter has demonstrated the importance of including labour as a unit of analysis when assessing upgrading. Taking up ideas from the GPN approach, this chapter has also illustrated that GVCs/GPNs are embedded in local contexts—which are influenced by the policies of the state.

The case study of table grape production in De Doorns has revealed how the state's disjointed policy approach towards the agricultural sector has ultimately disadvantaged workers. As the fortunes of producers and workers are linked together, the latter could not be isolated from the new competitive trading environment that the state would unleash upon producers. Following the withdrawal of state support and protection, producers' shock at having to face the full force of competition reverberated down to workers. While the new democratic state has put in place a raft of legislation to protect farmworkers, this bulwark eventually proved largely ineffective to protect the majority of table grape ones in De Doorns from social downgrading—ultimately due to their adverse incorporation into the fresh-fruit GVC/GPN. This was, however, exacerbated also by state regulation downstream, which increased commercial pressures on producers. While the tipping point precipitated by adverse weather, a strong rand and the European recession that hit producers in 2008 led to extensive labour restructuring, their profit margins had already been squeezed by the pincer effect of changed private and public regulation from the late 1990s. This tipping point led to drastic casualisation, externalisation and probably also evictions from farms. Moreover, the state's failure to change labour legislation to protect workers from casualisation and externalisation means that the realisation of most farmworkers' enabling rights—such as the right to organise and to bargain collectively—remains impossible. Deregulation has critically affected producers' ability to collectively resist the power of lead firms. The inability of producers to demand higher prices and better terms of trade with buyers

has, in turn, diminished workers' prospects of successfully demanding a living wage. The state has ultimately diminished the bargaining position of both De Doorns table grape producers and workers through its failure to respond to the counter-force of private regulation. Remaining unsolved, this situation is only likely to lead to further frustration and social unrest in the years ahead.

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Agriculture, Value Chains and the Rural Non-Farm Economy in Malawi, South Africa and Zimbabwe

Andries du Toit

1 Introduction

This chapter presents an overview of findings of a DFID-ESRC Growth Programme (DEGRP)-funded project that investigates the connections between agricultural development and livelihoods in the rural non-farm economy (RNFE) in three Southern African countries: Malawi, South Africa and Zimbabwe.[1] The empirical findings of the project are recounted elsewhere (Chirwa and Matita 2015; Neves and Hakizimana 2015; Sukume et al. 2015). This chapter provides an analytical synthesis, exploring contrasts and similarities between three case studies in order to draw conclusions and also to develop hypotheses for follow-up research about the spatial characteristics of agro-food networks—and their implications for employment.

Since the middle of the first decade of the new century, agriculture has enjoyed increasing prominence in debates about development and poverty reduction in sub-Saharan Africa and elsewhere (Christiaensen and Demery 2007). Policy has aimed at increasing the efficiency and productivity of agriculture to ensure food security and to support long-term growth and economic transformation (Dorosh and Mellor 2013; FAO 1998; World Bank 2007). There are, however, grounds for caution. Agricultural development may have mixed impacts and may lead to unintended consequences. While it can promote overall food security and benefit some livelihoods, it may also destroy others—as when competitive farmers absorb landholdings of less efficient neighbours or commercial farms replace labour with machinery, for example. Agricultural development via increasing levels of

[1]For more information, see: http://degrp.squarespace.com and http://www.plaas.org.za/smead.

A. du Toit (✉)
University of the Western Cape, Cape Town, South Africa
e-mail: adutoit@plaas.org.za

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productivity and market integration may lead to reduction in employment intensity and long-term processes of de-agrarianisation (Bryceson and Jamal 1997; Li 2009, 2014). Policymakers regard these phenomena as an inevitable part of 'development': de-agrarianisation is held simply to be part of processes of industrialisation and urbanisation. This faith is, for example, evident in the World Bank's policy advice:

> In agrarian economies, the main avenues to improving living standards involve increasing productivity in farming, creating a dynamic economic environment in cities, and promoting labor reallocation from rural to urban areas, thereby sparking a positive spiral of productivity growth and improvement in living standards. Together, these approaches should lead to the expansion of off-farm employment opportunities, which are in turn an important driver of poverty reduction. (2012: 191)

Overviews of agrarian transitions in many parts of the developing world suggest that this optimism is misplaced (Oya 2009). People who have been pushed off the land often fail to find alternative employment in the non-farm sector. While market integration and agricultural intensification bring gains to some, they are often accompanied by rising inequality, vulnerability and the development of marginalised populations without access to welfare or jobs (Li 2014). How, then, can policymakers ensure that employment is intensive and growth inclusive? The urban industrial and service sectors are unlikely to accommodate everyone displaced out of agriculture. It is, thus, important to decrease the push factors within rural areas and to simultaneously maximise the ability of the RNFE to retain and create jobs.

These considerations raise important questions for agricultural policy: What are the prospects for those pushed off the land of finding local employment without migrating? What are the factors that support the ability of the RNFE to create employment? What is the role of agriculture itself in a diverse rural economy? And what are the consequences of agricultural development and agro-food system change? Can increasing productivity and profitability of agriculture contribute to local multipliers that support off-farm livelihoods and transformative jobs? Does improving market access for farmers also benefit non-farmers? Or, conversely, can market integration sideline emerging rural entrepreneurs? What are the implications for non-farm employment of different pathways to agricultural development? And how can such development be encouraged in directions that foster local non-farm employment?

This chapter begins with an overview of some of the theoretical literature on the nature of backward and forward linkages and their implications for the RNFE, as well as a description of the methodology and research approach used for the aforementioned DEGRP study. This is followed by a description of agricultural development and agrarian dualism in Malawi, South Africa and Zimbabwe. Afterwards, the key empirical features of non-farm connections are presented, before proposing an interpretive framework based on the identification of high-level, emergent systemic characteristics of the agro-food networks in question. This leads to a discussion of eight meso-level factors that appear to be most critical in shaping the prospects for employment in the RNFE.

2 Understanding Growth Linkages: Theoretical Debates and Research Approach

The classical model of farm/non-farm connections in rural development is provided by regional growth linkages theory, which states that the key driver of development in the RNFE is growth in externally tradable commodities (Haggblade et al. 2010). Connecting farmers to markets and stimulating growth in externally traded cash crops creates secondary benefits by supporting local demand via farmers' consumption and investment expenditure, as well as activities associated with forward linkages such as agro-processing too. As Hart (1998) has pointed out, much depends on the spatial configurations of backward and forward linkages and the political economy of investment. The benefits of agricultural growth cannot be expected to cascade automatically through local multipliers. That will only happen if the value chain's configuration and organisation allow it, and if it is supported by consumption choices and the political economy of investment.

This is a fruitful direction to head in for understanding the growth implications of agricultural development in sub-Saharan Africa. Here, the reconfiguration of agro-food value chains continues apace. Processes of agricultural change and investment are directly restructuring agro-food systems (Hall et al. 2015). A growing policy consensus emphasises the importance of 'green revolution' technology, large-scale investment, access to metropolitan and overseas markets and integration into supermarket and agro-processor value chains. This is linked to perceptions of the desirability of large-scale, capital-intensive, industrial-style models of production, which are held to be dynamic, efficient and rational (Collier 2008; Sender 2015). The increasing popularity of large-scale agriculture among policymakers is, of course, controversial. For the purposes of this chapter, it is enough to observe that—regardless of the benefits for farmers—what value-chain restructuring means for other components of the rural economy is the key thing to be ascertained here.

The study whose findings are summarised here explores the different ways in which agricultural production is connected to the RNFE via three case studies. In each, the consequences of different pathways to agricultural development and their implications for local multipliers are explored. By tracing the connections between farm and non-farm livelihoods, the study answers questions such as: How are the backward and forward linkages of agriculture organised? How are they spatially configured? How does this influence local employment? What does the organisation and spatial pattern of farm/non-farm connections reveal about the prospects for inclusive growth?

Answering these questions raises formidable methodological challenges: How does one map the spatial configuration of farm/non-farm linkages? How can one draw conclusions about the relationship between these and the nature of employment? Existing research approaches are poorly suited to this task. Social accounting matrices, designed to reveal the backward and forward linkages of agriculture on a national scale, are not well suited to understanding subregional dynamics. The spatial patterns and socio-economic dynamics that matter here are also not easily

picked up in quantitative surveys. The study summarised here therefore opens up the issue by way of a detailed qualitative exploration of flows and connections in selected rural districts of Malawi, South Africa and Zimbabwe. The aim is to build up a detailed picture of socio-economic networks and flows, with a view to identifying the spatial patterns that emerge. Within each case study, a locally based team explored these phenomena in a particular district (or two): Mchinji in central Malawi, Mazowe and Masvingo in Zimbabwe, and Weenen in KwaZulu-Natal in South Africa. Fieldwork was carried out between 2012 and 2014, with detailed analysis taking place in 2015. These investigations cannot, of course, be generalised to the countries as a whole; at the same time, however, an in-depth look at local particularities can help reveal causal connections and highlight the complexities of articulations between agricultural activity and non-farm employment.

In each case, researchers selected a number of significant local farming enterprises (tier 1 case studies) for in-depth study, paying attention to the nature of market connections and upstream inputs as well as investment and consumption expenditure. In addition, the most important down- and upstream trading partners of each enterprise were identified. Researchers then visited these tier 2 businesses and repeated the process. The next round explored the tier 3 cases in turn. Here, down- and upstream linkages were identified but there was no fourth round—in part because with each iteration, the number of cases increased exponentially and also because, in most cases, tier 4 linkages are located far outside the study districts. A quantitative survey was then implemented of all nodes so discovered, collecting information about economic activity, employment and basic income as well as expenditure for all the enterprises. As noted, a detailed account of the nature of farm/non-farm linkages in each of the case study sites is provided elsewhere (Chirwa and Matita 2015; Neves and Hakizimana 2015; Sukume et al. 2015). This chapter discusses the insights that can be derived from cross-cutting analysis, identifying common themes and threads as well as highlighting what can be learnt from comparative analysis.

3 Three Agrarian Landscapes

3.1 Varieties of Dualism

While the rural landscapes of the three countries are distinct, they share a broadly similar Southern African history of colonial settlement, capitalist growth, modernising development and global integration. All three are shaped by the legacy of settler agriculture. They are, therefore, also characterised by some degree of dualism: colonial settlement has created a capital-intensive, commercially oriented sector, highly dependent on wage labour, with strong export links and integrated with global agribusiness. This sector coexists with a smallholder sector derived from an indigenous population, dependent on family labour and oriented towards subsistence agriculture and petty commodity production. The configuration of this dualism

is, however, different in each country. These varying configurations have implications for the backward and forward connections of agriculture and for the spatial configuration of value chains.

In Malawi, family farming predominates. In 2005 some 88% of the population was still rural, while at present 60% of gross domestic product and more than 80% of value added in agriculture come from less than two million small farmers—most of whom own less than two hectares of land, typically farmed under customary tenure (Chirwa and Matita 2012). A significant proportion of agriculture is for own consumption, especially in the case of maize, which still accounts for 70% of the land under cultivation (Chirwa and Dorward 2013). Livelihoods are meagre: almost 60% of Malawi's population is poor, with 25% characterised as 'ultra-poor' (Chirwa and Dorward 2013). Alongside this population of smallholder farmers, there is an estate sector that monopolises the production of export crops. Initially consisting of fewer than 250 estates, it now comprises some 26,000 farms producing export crops such as coffee, groundnuts, soybeans, sugarcane, tea and tobacco (Kachule 2011). Estates account for about 1.2 million hectares of agricultural land—less than one-quarter of that under cultivation—but they simultaneously make up 90% of export agriculture (Chirwa and Matita 2015).

In South Africa, colonial settlement, settler agriculture, apartheid and more than a century of industrialisation have created a landscape almost the inverse of Malawi's. About 84% of agricultural land is farmed by a large-scale, commercially oriented and capital-intensive sector, one historically dominated by white settlers. This sector has undergone rapid concentration and consolidation: the number of farming units declined from a peak of some 120,000 in the mid-1950s to about 60,000 at the end of apartheid in 1994, and currently is estimated to be between 35,000 and 40,000 meanwhile. Within this sector, more than half of gross income from agriculture in 2002 came from only 6% of all farmers. In 2007, one-third of farming income came from the top 0.6%, meaning 237 units (Liebenberg 2013). This goes hand in hand with high levels of concentration down- and upstream. Markets in agrochemicals, agroservices, fertilisers and grain storage are dominated by a small number of consolidated and vertically integrated corporations (Bernstein 2013). Likewise, output markets are controlled by a handful of processors and food manufacturers, while the four biggest supermarket chains control more than 60% of food retail. Smallholder agriculture covers only a small portion of farmland and less than 10% of the population is involved in farming (Aliber et al. 2009; Liebenberg 2013). Even within the smallholder sector, households are heavily dependent on the commercial food and retail system for their food security.

Zimbabwe's rural landscape differs from both Malawi's and South Africa's. This is largely a result of the fast track land reform (FTLR) process, which transferred most of white-owned, large-scale commercial farms to smaller African operators. As a result, the dualistic character of post-independence agriculture has been replaced by less bimodal distribution. Agricultural-support institutions remain crisis-ridden and weak. Post-FTLR land tenure is still insecure, but there is evidence that the change has resulted in an invigorated smallholder sector—with production of maize and tobacco recovering quickly (Scoones 2014; Scoones et al. 2010). At the same

time, important aspects of large-scale agriculture have remained. Some scholars thus characterise the Zimbabwean agrarian landscape as hybrid, with corporate, settler and large-scale agriculture existing alongside petty commodity production (Moyo 2011).

3.2 *Mchinji: Constrained Dynamism*[2]

The district of Mchinji is located in central Malawi. Its administrative centre, Mchinji Boma, is situated on the main road, some 110 km from Lilongwe and 10 km from the Zambian border. It is also located on the railway line to Zambia. Only two local roads are paved: one that passes through Mchinji Boma from Lilongwe to Chipata on the other side of the Zambian border and another connecting it to the nearby trading centre of Kamwendo. Most of the unpaved roads are impassable during the rainy season. The local economy is dominated by agriculture, which is heavily dependent on rainfall. Local livelihoods are, therefore, seasonal and precarious. High fertility rates and in-migration from other districts as well as from nearby Zambia have led to significant population growth in the last two decades, increasing the pressure on agricultural livelihoods. The area around the town is characterised by a mix of smallholder farmers and estate growers. More than 90% of the local population relies on agriculture. Almost two-thirds of the local adult population spend most of their time on agricultural activities. Ten percent are involved in casual labour and only 6% are involved in wage or salaried employment.

This, however, should not be mistaken as a picture of bucolic stasis. Agriculture in Mchinji is dynamic, while also being severely constrained. In spite of biophysical and resource limitations, farmers are ready to experiment and innovate. Many have gone beyond food and traditional cash crops (groundnuts and tobacco) to non-traditional horticultural products such as cabbages, Irish potatoes and tomatoes. This diversification provides farmers with new sources of income, but lack of access to finance and lucrative urban markets; the constrained availability of land puts a limit on the livelihood opportunities that can be generated. The hampered dynamism of agriculture affects both on-farm and non-farm livelihoods. On the one hand, agriculture provides a basis for survival for large numbers of people. On the other, these livelihoods are only meagre and limited. Most households combine agriculture with a range of other activities in order to ensure survival and reduce vulnerability. Very few farmers provide stable waged employment for non-family members. The agricultural labour market is limited to its *ganyu* form—that is, casual and part-time employment by migrant workers or by poorer farmers seeking to supplement their paltry incomes.

[2]All information in this section is drawn from the corresponding case study report: Chirwa and Matita (2015).

This is also true of down- and upstream activities such as transport, local services and fresh-produce trading. These are typically modest or small in scale, informal in nature, often part of a diverse portfolio of other livelihood activities and almost always seasonal or part-time. They are also highly local: the supply chains and linkages that connect farm and non-farm livelihoods are strikingly short, and not separated by any great distance. Economic and social networks linked to farming are dense—distances are, according to the information gathered, never further than that of the nearest market town—and highly socially embedded, shaped by intra-and inter-household relationships and local institutions.

3.3 Weenen: A Centre in Decline[3]

Weenen is a small town with a population of less than 5000 people, situated about 40 km from Estcourt in the KwaZulu-Natal midlands. It is the second-oldest formal town in KwaZulu-Natal, and the landscape around it has been deeply shaped by the history of white settlement. An irrigation scheme created in the nineteenth century provided the basis for its development as an important centre for vegetable production. After the Second World War, the rise of irrigated agriculture closer to metropolitan centres like Durban and Pietermaritzburg led to Weenen losing its significance as a rural supply centre. Today, the Umtshezi Municipality (2008) Spatial Development Framework describes it as 'declining rural town'. The character of local agriculture clearly reflects this marginality—as well as the broader forces that have shaped South African agriculture generally. Agriculture is dominated by capital-intensive, medium-sized commercial farms. Over the last two decades, the number of farming units has halved: at present, 23 farms are operating in the area. They survive in an environment dominated by powerful supermarkets and intense competition. They continually seek to cut labour costs, reduce permanent employment and to replace workers with machines wherever possible. As a result, agriculture provides full-time employment for less than 10% of the population. Minimum wages—payable only for parts of the year—fall well short of the levels required to ensure food security.

Marginality does not mean that agriculture is moribund. On the contrary farmers pursue complex and dynamic strategies as they seek to balance the pressures of rising input costs, low prices and increasing downstream control of value chains. This complicates the simple and totalising characterisation of high market integration in formal agriculture in South Africa. Markets are diverse in their nature, organisation and location, and farmers arbitrage between them—operating simultaneously on local, regional and national scales. Economies of scale are not linear:

[3] All information in this section is drawn from the corresponding case study report: Neves and Hakizimana (2015).

scaling up or down is governed by significant lower and upper thresholds, involve complex trade-offs, require sophisticated strategies and involve shifting allegiances too. Crucial in this context is the ability of farmers to exploit and make use of local social capital, and to use inter and intra-household relationships to straddle sectoral and spatial divides—and even to upgrade, by diversifying so as to adopt new functions within value chains, moving into food and by engaging in non-farm retail.

Employment related to the backward and forward linkages of agriculture appears to be similarly constrained. In contrast to the localised nature of down- and upstream activities in Malawi, the supply chains and market linkages of Weenen farmers are spatially extensive: the businesses linked to them are far away, often well outside the local district. These markets are much more concentrated, characterised by monopsonies, arrangements for geographic exclusivity and by vertical integration. The RNFE in Weenen, far from being supported by agriculture, is mostly dependent on state expenditure—chiefly in the form of public sector salaries but also via cash transfers, in particular child grants and old age pensions. It is these fiscal resources—not productive activity—that sustains livelihoods in the district. Whereas local non-farm employment in Malawi is locally embedded and linked to agriculture, non-farm rural employment in the South African case is delinked from agriculture and disembedded.

3.4 Mazowe and Mazvingo: A Landscape Transformed[4]

The Zimbabwean study focusses on two districts: Mazowe, the southernmost district of the province of Mashonaland Central, and Masvingo, one of the northernmost districts of Masvingo Province. Mazowe is a well-established agricultural region with good roads situated some 50 km from Harare. It comprises a communal area and new resettlement schemes. It has fertile soils and reliable rainfall in the higher altitudes during summer and a well-developed water infrastructure. Historically, it boasted a large-scale commercial farming sector, including citrus and dairy. Post-FTLR, it has the highest proportion of commercial resettlement schemes in the country. Both communal areas and newly resettled farms are involved in a wide variety of commercial activities, ranging from field crop production (cotton, maize and burley tobacco) to horticulture (citrus) to livestock and dairy farming. Mazowe also has a diverse RNFE that includes both local service industries and other activities like small-scale gold mining and the production of bottled water. Masvingo is drier than Mazowe. While it is further from Harare (almost 300 km away), it has relatively good transport infrastructure: the A4 road between Beitbridge and Harare

[4]All information in this section is drawn from the corresponding case study report: Sukume et al. (2015).

runs through the town of Masvingo; so does the A9 between Gweru and Mutare. It is also linked to Gweru and Harare by rail. Although it has several dams and reservoirs, it is unevenly served by irrigation. Before the FTLR, the main agricultural activity was large-scale cattle ranching. Post-FTLR, these farms have been subdivided and the district has transitioned from large-scale ranching to smaller multifunctional herds. The RNFE is significantly less complex and diverse than in Mazowe, with tourism playing a significant role herein.

The Zimbabwean country study provides interesting insights into a landscape still experiencing high degrees of flux in the aftermath of FTLR. As in Malawi, farmers in Zimbabwe are noticeably pluri-active; unlike in the other two country cases, however, agriculture—at least in Masvingo—is characterised by the presence of a significant population of recent entrants, many of whom have histories in Zimbabwean cities and in civil sector employment. These connections provide financial and income resources that allow continued diversification though investment. Likewise, market relations are diverse: whereas informal and local produce markets play a role, livestock and tobacco farming are linked to distant and international markets. The transition brought about by the FTLR has led to a sweeping transformation in the backward and forward linkages of agriculture. In Masvingo, increasing levels of self-provision among small livestock farmers have boosted sales of dipping chemicals, vaccines and application equipment to smallholder farmers. Meanwhile a new class of participants has emerged in downstream beef value chains too, acting as agents and as aggregators between small farmers, small abattoirs and traders dealing in larger quantities of this commodity.

Agriculture is, thus, linked both to a thriving non-farm small-, micro- and medium-enterprise sector and to distant, powerful, corporate players. The reorganisation of agriculture has created opportunities for small and medium non-farm enterprises, while corporate role players have, in some sectors, adapted their organisation to deal with different economies of scale. This creates down- and upstream markets that are significantly more complex and diverse than those found in the Malawian and South African cases.

4 Making Sense of Farm–Non-Farm Connections

The three case studies seem to indicate that there are indeed interesting connections between the spatial configuration and social organisation of agricultural value chains, on the one hand, and the nature of the RNFE, on the other. The question is, however, whether it is possible to develop a synthetic, cross-cutting analysis. What pattern emerges from a comparison of these case studies? Is it possible to identify what characteristics of the agro-food networks either support or undermine rural non-farm job creation?

4.1 Emergent Network Characteristics

One way to answer these questions is to characterise the high-level nature of the networks that are created by the interactions between relevant actors. The aim here is to identify what in complexity theory is called the 'emergent properties' of agro-food networks—in other words, properties that do not belong to the nodes or elements of the networks but rather characterise the overall system itself (Aziz-Alaoui and Bertelle 2009). Of course, systems have many different emergent properties. In this case, the task is to identify those that vary meaningfully between the cases and are, arguably, related to non-farm employment. Working from these considerations, four such high-level characteristics can be proposed:

1. Density: This refers to the number of local nodes (agricultural and non-farming enterprises) that exist in the network within a given area, and the physical distance between them. All other things being equal, density can plausibly be taken as an indicator of employment-intensive growth. This is one of the crucial differences between Mchinji and Weenen: while Malawian farm and non-farm enterprises are often modest in size and profitability, links are not spatially extensive. Pursuing down- and upstream linkages through the various tiers of our fieldwork iterations would identify numerous lines connecting and criss-crossing in the same district, often less than 10 km apart. This is in contrast to the South African case, where links are spatially extended, often crossing district and even national boundaries. Thus, while many of the third- or fourth-tier connections in the Malawian (and also in the Zimbabwean) study are spatially contiguous, third-tier connections of South African farms, particularly upstream, could be as far away as Johannesburg or Dubai. Density, in this sense, is a measure of the local character of backward and forward linkages. Density may also indirectly foster employment intensity through synergistic effects, by reducing transport costs and obstacles to access as well as supporting the development of local, secondary markets.
2. Local embeddedness: This refers to the extent to which nodes in the socio-economic network are subject to local influences and formal or informal regulatory pressure. In a network with a high degree of local embeddedness, socio-economic nodes are integrated into other social institutions: associations, markets, kinship networks and political structures. A network in which many enterprises have an enclave nature (with little local accountability and high dependence on distant centres of control) tends, conversely, to be more disembedded. Local embeddedness arguably makes for greater local employment effects. Tobacco farmers in rural Masvingo, with strong personal connections to the local area and high dependence on local systems of power and patronage, are more likely to make consumption and investment decisions that benefit local economic players than, for example, estate farms in Malawi. The latter's procurement policies are contrariwise determined in Blantyre or Lilongwe; another example is commercial white farmers who spend their money in Durban or Pietermaritzburg, and send their children to distant boarding schools.

3. External connectedness: This means the extent to which links connect local nodes to distant markets and resources. The horticulture farmers of Weenen and the tobacco farmers in Mazowe are strongly connected to input and output markets that are hundreds and even thousands of kilometres away, whereas the small farmers in Mchinji are constrained by their lack of any such connections. External ties of this kind can be powerful conduits for connecting local economies to sources of income and profitable markets. With regard to external connectedness, two points are salient. First, external connectedness has ambivalent effects and can act both to support and to undermine local employment opportunities. Thus, forward linkages potentially promote local employment and livelihoods when they allow access to markets in agricultural tradables—but these linkages can also increase vulnerability, in the sense that price shocks will be more directly transmitted to the local economy. External connectedness upstream from farms or within the local sector can, of course, also increase leakage from the local economy.

   Second, value chains are not the only form of external connectedness. In Malawi and Zimbabwe, household structure and migration provide another important vector of connection, leading to the existence of stretched households that straddled the urban–rural divide. Income from remittances and the investment decisions of urban households with rural connections is another important source of economic flows. In Weenen, the dominant form of external connectedness—at least as far as poor people are concerned—is provided by fiscal arrangements in the form of public service wages and social grant income. These constitute an enormous source of flows into the local economy. Indeed, it is these transfers—not trade—that support the RNFE in South Africa in general. Furthermore, external connectedness within downstream markets—for example when supermarkets are present—can result in money being sucked out of the local economy.
4. Distribution of Power: A Final Important Characteristic of an Agro-Food Network Seems to Relate to the distribution of power and resources within it. One way to think about it is to focus on the extent to which there are significant disparities in scale between nodes, but it also relates to the nature of power relations and governance between them—for example monopolies, monopsonies or strongly vertically integrated value chains that capture some nodes in relation to others.

The ability to pursue these lines of analysis depends on the ability to define these characteristics clearly, and perhaps even link them to clear quantitative indicators. This is challenging: some qualities like density or external connections are amenable to quantitative analysis, while others like local embeddedness or power distribution are not. More importantly, these notions need to be deployed with attention to context. The significance of density, for instance, is shaped by biophysical factors and by transport infrastructure: value-chain links are longer in, for example, arid Masvingo than in fertile Mazowe; a few kilometres of unpaved road during the rainy

season may be much more expensive and time-consuming to traverse than a paved highway ten times longer in KwaZulu-Natal.

But within these limitations, the lines of inquiry just presented seem to provide a useful basis for comparative analysis. It is, of course, important to test the underlying hypotheses: Are features like higher density, social embeddedness, external connections and a more equal distribution of power in fact related to more livelihoods-intensive and inclusive development paths? But beyond this, it is also important to develop hypotheses about the detailed nature of the causal dynamics: What are the factors that promote density, downstream connections to external markets and positive forms of social embeddedness? What are the connections with the nature of employment? And, what are the relationships between them?

4.2 An Interpretive Framework

On the whole, the evidence provided by the three country studies adds valuable detail to the theoretical insights arising out of the aforementioned debate between Hart and the proponents of regional growth linkages. They seem to support Hart's contention that there is a need to be cautious about relying simply on growth in external tradables to support the development of an inclusive rural economy. Clearly, external tradables are important: in Malawi, the lack of connection to distant and lucrative markets limits the extent to which movement into the new commodities can increase farmers' income but external connectedness on its own is not enough. Access to distant markets through vertically integrated value chains can support local development—but only if these value chains touch down in local agro-food networks that are dense, locally embedded and not characterised by enormous disparities in market power and regulatory clout.

Where this is the case, increasing levels of trade and income flows lead to significant benefits through intermediate inputs, consumption outlay and investment expenditure; and, to an even greater extent through the forward linkages of agriculture—that is, local retail, processing and transport. This is suggested by a comparison of the cases of Masvingo, where income from the lucrative sale of tobacco to Chinese buyers enters a district characterised by high degrees of local embeddedness, and Weenen, where highly efficient farmers gain significant profits from their connections to markets in Durban and Johannesburg but invest little into the local economy via employment or by way of consumption and investment expenditure. This hypothesis is, however, still extremely general. It is probably true that external connections on their own are not enough to support an inclusive RNFE, and also that these positive effects are mediated by local embeddedness, density and the absence of big power differentials or hierarchies. For this insight to be useful and translatable into workable policy recommendations, it is necessary to identify the underlying meso-level factors that can support the right mix of these emergent system characteristics. On the basis of the three case studies considered, the following eight meso-level factors seem to be particularly relevant:

1. Character of the macro-economic context: One of the most important differences, for example, between Mchinji and Weenen is that the former is part of a national economy that itself is largely rural, with significant limitations on aggregate demand, whereas the latter is deeply integrated into a dynamic, globally embedded urban economy. The character of the broader economic environment has enormous implications for the potential and limitations of the RNFE. Yet, as pointed out above, external connections are not only routed via access to markets in externally traded goods. Rather, important dimensions of integration have also been achieved through distributive arrangements: remittances in Malawi, hybrid enterprises and households straddling urban and rural spaces in Zimbabwe, and fiscal redistribution via public sector salaries and social grants in South Africa. These linkages—and not only cash crops on their own—seem to account for much of the dynamism and diversity of the RNFE. Fiscal redistribution may be as important for the development of the RNFE as productive activity is.
2. Communication and transport infrastructure: This often plays out in counter-intuitive ways. In the case-study districts, good communication and transport infrastructure play a major role in facilitating access to markets but they also have different impacts. Sometimes they reduce local embeddedness, sometimes they create opportunities for powerful external actors to crowd out and marginalise local entrepreneurs—and sometimes they act to suck consumption and investment expenditure out of the local district.
3. Concentration and scale of agricultural production: Small-scale farmers are more likely to rely on nearby sources for agricultural inputs, especially in the case of specialised services and intermediate ones such as seedling production, tillage, intermediate technology and the like. Small-scale farming is more labour-intensive. The consumption and investment expenditure of small farmers is more likely to benefit the local economy. Downstream, smallholder agriculture creates opportunities for aggregators and small-scale transport providers. Smaller horticulture and livestock farmers are reliant on local markets and retailers, who provide significant opportunities for local entrepreneurs. An important exception is tobacco in Zimbabwe, where small-scale production maintains its links to distant and vertically integrated export markets because the systemic shift towards small-scale producers has forced a reorganisation of transport, trade, financial and input markets. In contrast, large-scale agriculture is more likely to be directly connected to suppliers that are themselves large in scale, diversified, vertically integrated, lean in employment terms and distantly located. Large-scale horticulture is less employment-absorptive and tends to be much more connected to vertically integrated, buyer-driven supermarket value chains. Large-scale horticulture, while significantly more externally connected, is, thus, also noticeably less locally embedded.
4. Organisation of output markets: On the one hand, vertically integrated, buyer-driven value chains can put local producers in touch with lucrative markets. On the other, high degrees of vertical integration tend to have a significantly varying impact—creating distinctions between insiders and outsiders. Interestingly, the three case studies suggest that significant opportunities exist even in the absence

of highly vertically integrated market connections. Indeed, one of the more interesting findings of the study is the importance of informal local retail, processing and distribution economies in sustaining farmer and non-farm employment and supporting local multipliers. Here, an important contextual factor is supplied by the absence (to a greater or lesser extent) of large supermarkets: first, the absence of powerful retail competitors protects opportunities for hawkers, informal shops, local vendors, local wholesalers and fresh produce markets. Second, the profits from these enterprises tend to stay in the local economy instead of being sucked out by big retailers.

5. Nature and organisation of input markets: The implications for local agro-food networks of the nature of input markets vary greatly according to input types. For basic agricultural inputs such as agro-chemicals, fertilisers and machinery, input markets are highly concentrated and dominated by companies situated far away from the local district. For these inputs, vertical integration and concentration is associated with high degrees of upstream external connection and low levels of local embeddedness. Providers of basic inputs appear to be highly adaptable across scales, and engage with ease with both large- and small-scale farmers. Intermediate inputs and specialised services, ranging from seedling production in horticulture to veterinary services and mechanical repair to forestry that supplies timber for tobacco curing, are more likely to be locally situated meanwhile. They are more sensitive to differences in the scale of agricultural production.
6. Policy frameworks and institutional support: Some of these are infrastructural (access to irrigation and to good local transport networks). Others relate to policies for agricultural support, for instance fertiliser subsidies in Malawi. A key issue in all three case studies is the patchy and uneven nature of extension support for agriculture, partly as a result of liberalisation and structural-adjustment policies. Farmers have become much more dependent on sales representatives and other private sector intermediaries, a shift that is likely to decrease local embeddedness and increase upstream external connectedness—and, hence, the leakage of money out of the local economy. The privatisation of agricultural support and information brokerage seems to promote the capture of institutional and policy support by small groups of farmers and industries, contributing to the unequal distribution of power and access within local economies.
7. Commodity and product variation: Horticulture, for instance, is associated with higher levels of employment and a greater local density of down- and upstream connections than most field crops. Small-scale tobacco production also seems to generate significant local employment opportunities, partly because of the importance of skilled labour at key points in its production, processing and transport. Livestock is significantly less labour-intensive per hectare, but marked by complex and rich backward and forward linkages between producers, transporters, feedlot operators, abattoirs, butchers and retailers. Field crops and cash crops such as soybeans, groundnuts and tea are significantly less labour-intensive. They are not locally embedded in their processing, and link small farmers as price takers to distant markets.

8. Local political economy and social networks: Social integration into family and village networks, for instance, promotes the greater tendency of resettled farmers in Zimbabwe towards local consumption and investment expenditure—in sharp contrast to the more metropolitan commitments of white (and wealthier African) commercial farmers in Weenen, who tend to invest in urban networks. Social networks, institutions, political commitments and membership of local institutions like churches play a key role in how farmers are plugged into economies, and shape the way in which they handle competition with one another as well as their transactions with both down- and upstream players.

5 Conclusion

The DEGRP-funded project, whose findings have been summarised in this chapter, investigates only three cases in a regional agricultural landscape that is characterised by great diversity and dynamism. At most, the interpretation advanced here should be seen as developing a framework for further investigation and discussion. At the same time, the hypotheses that can be advanced seem distinctive and consequential. They provide a useful framework for exploration and testing in follow-up studies. A first central finding is that external connectedness on its own is not enough to guarantee that agricultural development benefits the RNFE. Access to distant markets through vertically integrated value chains can support local development, but only if these value chains touch down in local agro-food networks that are dense, locally embedded and not characterised by highly unequal power relations. Where this is the case, trade and income flows can lead to significant benefits to the local economy through the purchase of intermediate inputs, local consumption outlay, investment expenditure and, in particular, through the forward linkages of agriculture: local retail, processing and transport. This should have significant implications for development models that seek to stimulate inclusive growth through agricultural investment.

Second, scale is an important factor. In South Africa, large-scale, mainly white commercial farmers are able to gain significant incomes from highly efficient farms that access distant markets. However their input links often bypass local markets, they provide only limited local employment and much of their consumption expenditure occurs elsewhere. In Malawi, the same tends to be true of large estate farms. This contrasts strongly with Zimbabwe where, for instance, small tobacco farmers' windfalls from trade with China circulate in the local economy, creating opportunities for other rural entrepreneurs. In all these case studies, a common pattern emerges: where large-scale agriculture is owned by distant players or by a local farming elite with few local political or social commitments, economic networks are created that are unlikely to stimulate local opportunities. This seems to offer support for arguments for redistributing land towards small farmers. Similarly, certain kinds of regional integration can exacerbate local marginalisation and unemployment. The positive spin-offs of agricultural development in Malawi and Zimbabwe seem to be

strongly related to the absence of powerful, vertically integrated and internationally owned supermarkets. When these enter, they can marginalise small farmers, while also competing with local traders, sucking money out of the local economy and undermining economic multipliers. The existence of small, locally owned retail enterprises and markets seems to be a key element of the local agrarian structure—and is crucial for circulating money and economic opportunities.

Third, beneficial connections with the broader economy are about more than growth in external tradables. Exporting agricultural produce is not the main or even the only way in which rural economies can tap into the national and urban economies. Rather, rural districts are multiply connected to urban centres—not only through market linkages but also by way of fiscal distribution (social grants and public service salaries), the expansion of the non-agricultural urban economy into rural areas and the existence of migrant networks and household economies that straddle the urban–rural divide. Additionally, many of the entrepreneurs who are linked to agriculture also depend on other, non-agricultural service industries. So, while agriculture can contribute to local employment, its ability to do this is enhanced by the existence of a diverse RNFE that can ensure that more money circulates in the local markets on which small-scale farmers and entrepreneurs down- and upstream from them depend.

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Part IV
Cities and City Regions in Value Chains

Rebalancing Research on World Cities: Mauritius as a Gateway to Sub-Saharan Africa

Sören Scholvin

1 Introduction

World cities are nodes within the networks that constitute the backbone of globalisation. Yet, in her seminal critique of the world city approach, Robinson (2002, 2006) argues that corresponding research suffers from a bias towards the Global North. A notable exception is Sigler's (2013) article on Doha, Dubai and Panama City, which shows that these three 'relational cities' integrate their respective hinterlands into global processes because of various different economic, political and social features. Also sidestepping the focus on London, New York and their illustrious peers, Short et al. (2000) refer to places as diverse as Barcelona, Beijing, Prague and Sioux Falls—suggesting that each city somehow serves as a transmission belt for globalisation. In recent years more scholars have come to study world cities that are located in the Global South, but corresponding publications fail to go beyond a research concept first developed against the backdrop of cases from the Global North, as shown below.

In order to better understand the role that world cities in the Global South play in global economic processes, I suggest that we conceptualise them as 'gateways'. Gateway cities integrate their respective hinterlands into global value chains (GVCs), being transport hubs, sites of industrial processing, locations of corporate headquarters and of firms that provide producer services, and/or places where knowledge generation takes place (Scholvin et al. 2017). In this chapter I apply the gateway concept to the island state of Mauritius, which has assumed a considerable role in oil and gas value chains and possesses even greater prospects for future development. Mauritius serves as the location for holding companies whose subsidiaries do business in various countries across sub-Saharan Africa. It possesses a

S. Scholvin (✉)
Institute of Economic and Cultural Geography, University of Hanover, Hanover, Germany
e-mail: scholvin@wigeo.uni-hannover.de

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certain potential as a bunkering hub, which would boost the maritime service industry on the island. Some Mauritian consulting and engineering companies are, moreover, quite successful in servicing the down- and upstream sector all over the subcontinent.[1]

This chapter is structured as follows: first, I summarise the critique of mainstream research on world cities and show how the concept of gateway cities helps to overcome some of the related weaknesses. Second, I argue for why Mauritius is a suitable case study, and explain my methodology. The third section then sheds light on the role of Mauritius in oil and gas value chains.

2 Gateway Cities as an Alternative to World Cities

In a ground-braking article, Friedmann wrote that world cities serve as 'basing points' (1986: 69) of global capital. According to Sassen, they are 'highly concentrated command points' (2001a: 3) from where global economic processes are controlled. Scholars who stand in the tradition of Friedmann—such as Alderson and Beckfield (2004, 2012) and Wall and Van der Knaap (2012)—focus on the headquarter-subsidiary relationships of transnational companies. Some researchers, in particular those from the Globalisation and World Cities Research Network (GaWC), concentrate on advanced producer services instead (Beaverstock et al. 1999; Taylor et al. 2002a, b). Such services are essential for transnational enterprises, due to the increasing complexity of globalised production and commercialisation (Sassen 2001a, b). The reason for this is that the numerous different places integrated into GVCs are so diverse—culturally, politically and in terms also of languages and legislation—that even the largest transnational companies cannot organise their value chains efficiently without location-specific information provided by other firms on accountancy, advertising, banking/finance and the law.

Robinson (2002, 2006) criticises the world city approach for imposing severe limitations on urban policies and Urban Studies. Her argument is that this perspective provides us with a partial, and therefore misleading, understanding of cities: it overly accentuates economics—or rather a very particular segment of the urban economy. The world city approach also wrongly implies that development means striving to be what London and New York are, and those centres that focus on becoming a world city ignore challenges and opportunities that affect the majority of their inhabitants—who neither work for firms that provide advanced producer services nor live in the small urban districts shaped by these companies. What is more, the vast majority of cities seem not to count in debates on world cities as they

[1]The oil and gas industry is usually divided into three sectors: down-, mid- and upstream. The upstream sector includes searching for oil and gas fields, drilling wells and also operating these wells. The midstream sector involves the transportation, storage and wholesale marketing of crude and purified/refined products. The downstream sector comprises refining crude oil and purifying raw natural gas, as well as the marketing and distribution of consumer products.

neither host headquarters of important lead firms nor large offices of providers of advanced producer services. Hence, their experiences are not taken into consideration when it comes to theory building.

There is much in Robinson's critique that I find to be inaccurate. However, this chapter is not meant to contribute to a discussion about whether her reading of the world city literature is on target or not. I agree with Robinson on the bias towards the Global North however. It is true that only a handful of publications reveal the particularities of world cities in the Global South. Grant and Nijman (2002) analyse how Accra and Mumbai are marked by the co-existence of local, national and global central business districts, whose evolution is closely tied to the ongoing integration of Ghana and India into the global economy from the pre-colonial era until today. As noted, Sigler (2013) shows how Doha, Dubai and Panama City integrate their respective hinterlands into global processes. He recognises features of these cities that go beyond the provision of advanced producer services. For instance, these three cities are all transport hubs and serve as cultural bridges.

By arguing that each city is somehow a transmission belt of globalisation, Short et al. (2000), meanwhile, make the likes of London and New York comparable to the cities that have fallen off the map of researchers working on world cities (at least in Robinson's reading thereof). Transmitting globalisation, cities such as Beijing and Sioux Falls count—also for theory building. More recently, others have analysed world cities in the Global South with a focus on advanced producer services and, to a lesser extent, corporate headquarters (Haferburg and Oßenbrügge 2017; Meyer et al. 2009; Parnreiter 2010, 2017; Parnreiter et al. 2013; Rossi et al. 2007). Although these publications are certainly helpful for understanding developments in the Global South, they apply a concept that derives originally from studies of world cities in the Global North to cases such as Hong Kong, Johannesburg and Mexico City. The particularities of the integration of the Global South into the global economy are simply ignored. Robinson's call for an 'urban theory [that] reflects the experiences of a much wider range of cities' (2002: 532) has not been answered.

This chapter is meant to rebalance research on world cities accordingly. It does so by applying the concept of gateway cities to Mauritius. The idea that some world cities, in particular those in the Global South, serve as gateways—meaning as places that integrate larger regions into the global economy via value chains—is central to several of the aforementioned publications. In general, city-hinterland connections as well as the regional level remain rarely addressed issues in the literature on world cities though; albeit it is increasingly recognised that global flows are just one aspect of the interconnectivity of cities (Surborg 2011; Smith 2014). A broad understanding of gateway cities, as developed by Scholvin et al. (2017), comprises five key dimensions or core features:

- Various researchers have shown that certain world cities are transport hubs (Grubesic and Matisziw 2012; Hesse 2010; Jacobs et al. 2010). Sigler's relational cities play a key role in networks of flows because they are, first of all, hubs for logistics, warehousing and wholesaling.

- World cities in the Global South are home to large-scale industries, as demonstrated by Johannesburg being the industrial heartland not only of South Africa but also of the whole of sub-Saharan Africa too (Akinboade and Lalthapersad-Pillay 2009; Tribe 2002).
- Research on intra-company decision-making suggests that transnational companies rely on a small number of regional headquarters that link global ones and their subsidiaries. The activities of the latter are limited to being on the national scale (Enright 2005; Poon 2000). Regional headquarters are located in gateway cities.
- Gateway cities also provide services. These include, but are not restricted to, advanced producer services. In publications on Cape Town, I have shown that this also comprises, for example, engineering services provided by South African companies to upstream oil and gas projects all over sub-Saharan Africa (Scholvin 2017a, b).
- As Rio de Janeiro and Singapore demonstrate, gateway cities generate knowledge in the sense that global knowledge is adapted to local specificities there. These two cities also serve as stepping stones for innovative local firms seeking to internationalise their business dealings (Breul and Revilla Diez 2017; Scholvin et al. 2017).

These gateway features are not necessarily additive, meaning that a particular gateway city can be marked by any combination of them. The difference between the gateway perspective, on the one side, and the world city approach, on the other, is that the latter concentrates on links between providers of advanced producer services—which are links between world cities—in order to learn about the governance of global economic processes. The gateway perspective captures both global and regional interlinking. It is less concerned with governance, but rather adds new considerations—thereby going beyond advanced producer services. Analysing world cities in the Global South from the gateway perspective therefore leaves room for learning about the specific roles that these cities play in global economic processes, instead of merely studying to what extent they resemble London, New York and other alpha world cities.

3 Case Selection and Methodology

Mauritius is certainly not the first place that comes to mind when one thinks about oil and gas. The island has no proven hydrocarbon reserves. All oil products are imported from India, because there is no refinery in Mauritius itself. My initial interest in Mauritius resulted from desk studies on foreign investment in the oil and gas sector, which revealed that the country had hitherto been involved in some corresponding projects. For example, in 2014 the Indian firm Mangalore Refinery and Petrochemicals signed a memorandum of understanding with Mauritius's State Trading Corporation (STC) on a yet-to-be-built petroleum terminal that will serve

for re-exports. Desk studies of policy documents—the second step that I took—then showed that the oil and gas sector is part of Mauritius's strategic economic planning, which includes, as one pillar, the 'ocean economy' (Board of Investment 2015; Government Information Service 2016; Republic of Mauritius 2016).

With regard to world cities, Mauritius also appears to be an odd case. First of all, it is a country. Economic activities are concentrated in a rather extensive agglomeration that includes the cities of Beau Bassin-Rose Hill, Curepipe, Port Louis, Quatre Bornes and Vacoas-Phoenix. Neither Mauritius as a whole nor Port Louis or any other city on the island besides can be found in the GaWC's assessments. Yet, if one takes Robinson's critique seriously, it will be necessary to study cases that are not recognised as important world cities because they are suitable ones for learning more about the roles of cities in global economic processes—other than just providing advanced producer services and hosting corporate headquarters. Mauritius as a case study on gateways is furthermore sensible because the country specifically pursues an Africa strategy. The Three-Year Strategic Plan, which specifies measurable goals for the implementation of the development strategy Vision 2030 (Government of Mauritius 2017), points out that Mauritius can 'position itself as the gateway to Africa for Asian, European and Middle Eastern businesses' (2016: 15). The Board of Investment states that Mauritius is to become 'an important economic gateway for investors for their investments into and out of Africa' (2015: n.p.).

The empirical section of this chapter is based on information obtained from both public and private stakeholders during personal interviews, indexes that describe the business environment of Mauritius as well as publically available documents. In addition to these, I apply cognitive mapping too. This methodology was first advanced in the social sciences in the 1970s: the contributors to the edited volume *Structure of Decision* (Axelrod 1976) as well as Hart (1977) used cognitive mapping to examine the beliefs of foreign policy elites. Cognitive maps show the subjective knowledge of individuals—or, if several individual maps are merged, of groups. They reveal how someone logically structures a specific issue, how he/she identifies obstacles and opportunities, as well as how that person develops agendas that then guide his/her subsequent action. Hence, cognitive maps allow researchers to gain insights into the formerly only tacit mental models of decision makers and experts.

In ordinary cognitive maps, arrows that link different concepts are either positive or negative ones. This leads to the false impression that all causal factors are equally relevant. So-called fuzzy cognitive maps, first described by Kosko (1986), conversely represent causal reasoning with hazy degrees of causality. To move from cognitive maps to fuzzy cognitive maps, one has to specify the strength of a causal relationship. Instead of concept A reinforcing concept B to an unknown extent, concept A now reinforces B a little or greatly. This way, the relevance of the individual causal relations becomes comparable. Cognitive maps can be generated by content analysis of written documents, personal interviews or by self-guided mapping (Goodier et al. 2010; Prigent et al. 2008; Van Fliet et al. 2010). I conducted 16 narrative interviews in Mauritius in September 2017. The interviewees were identified via LinkedIn. Snowballing was applied subsequently, but generated few contacts. All interviewees spoke as individuals, not as representatives of a particular firm or public authority, although their

corresponding affiliations are indicted in this chapter. The interviews were based on a guideline of 12 questions, slightly adapted with regard to the business and individual experience of each interviewee. I recorded the interviews, with four exceptions (notes were taken instead), and analysed them by structuring the information with the help of categories and sub-categories defined prior to the actual research trip itself.

4 Mauritius as a Gateway

As noted, Mauritius seeks to position itself as a gateway. The first advantage that the island offers in this regard is a population fluent in both English and French. These languages are essential for doing business in sub-Saharan Africa, as the vast majority of the countries there are either anglophone or francophone. This location advantage was mentioned in several of my meetings. An interviewee from an engineering and construction firm said that 'we speak three or four languages; most of us: English, French and, some of us, Hindi or whatever'.[2] This is critical for the interviewee's company, because it heavily relies on labour from India.

The aforementioned Three-Year Strategic Plan states that the government will seek 'to expand the economic space for Mauritian firms through enhanced economic integration and cooperation' (2016: 2). In particular the envisaged growth of the manufacturing sector is believed to rely on 'deeper integration with the regional economies' (2016: 2). Mauritius is a member of the Common Market for Eastern and Southern Africa (COMESA), the Indian Ocean Rim Association (IORA) and the Southern African Development Community (SADC). In 2000, COMESA's free trade area was formed. It now covers almost the entire COMESA area. IORA is not a free trade area, but its member states have made a commitment to facilitate greater intra-community investment and trade. SADC established a free trade area in 2008. All of its members participate, except for Angola, the Democratic Republic of Congo and the Seychelles. On a bilateral level, Mauritius has signed double-taxation-avoidance agreements with 14 sub-Saharan African countries and investment protection and promotion ones with eight countries from that region too.[3]

As shown by Table 1, Mauritius moreover offers a business environment that is unique in sub-Saharan Africa. The island state is the best performer from the region in the World Bank's Ease of Doing Business rankings. The Index of Economic Freedom and the Global Competitiveness Report both confirm that Mauritius is attractive because it is a liberalised market economy with efficient and reliable institutions, in the broadest sense. Mauritius is furthermore the best African performer in the

[2]Interview with an engineering and construction company, Port Louis, 21 September 2017.

[3]A full list, including detailed information on these double-taxation-avoidance agreements, is available online at: www.mra.mu/index.php/taxes-duties/double-taxation-agreements. For a complete list of the investment protection and promotion agreements meanwhile, see: www.investmauritius.com/downloads/ippa.aspx.

Table 1 Mauritius's performance in economic assessments

	Ease of doing business	Global competitiveness	Economic freedom
Mauritius	49	45	21
Rwanda	56	58	51
Botswana	71	63	34
South Africa	74	61	81
Kenya	92	91	135
Seychelles	93	107	85
Namibia	108	90	78
Ivory Coast	142	n.a.	75

Sources: Heritage Foundation (2017), World Bank (2017) and World Economic Forum (2017)
Note: The table includes the best sub-Saharan African performers from each of the three rankings

Global Peace Index (Institute for Economics and Peace 2017) and also tops the Ibrahim Index of African Governance (Mo Ibrahim Foundation 2017).

The previous paragraphs have described general location advantages. Mauritius also possesses, though, good infrastructure dedicated to oil and gas, which implies that there are certain prospects for serving as a transport hub. In 2008, an oil jetty was inaugurated in Port Louis. It reaches a throughput capacity of about 4 million tonnes a year. Storage facilities for 15,000 tonnes of liquefied petroleum gas (LPG) were opened near the jetty in 2014.[4] This LPG infrastructure is the largest in sub-Saharan Africa. Its owner, Petredec, along with the Mauritius Ports Authority (MPA 2011) expect it to turn the country into an LPG hub in the Indian Ocean and for the east coast of Africa too. In order to bunker fuel oil, the Mer Rouge Oil Storage Terminal (MOST) was completed in 2017. It reaches a capacity of 25,000 tonnes. The project derives from a joint venture between the STC and four international petroleum companies, namely Engen, Indian Oil, Total and Vivo Energy. An interviewee from the MPA pointed out that the rationale behind promoting Mauritius as a bunkering hub—obviously in addition to servicing the domestic market—is that 30,000–35,000 ships travel from Asia around the Cape of Good Hope to Europe and the Americas each year. Mauritius is located very close to this major sea route. It will attract a considerable number of vessels if it offers fuel at a competitive price and guarantees short waiting times.[5]

Further to this, the interviewee explained that if Mauritius becomes a bunkering hub then foreign and local firms will provide basic services such as waste disposal and also carry out ship repairs in Port Louis. Investments in maritime engineering will be facilitated by the local free port. Because of its good air connectivity (more on this later), Mauritius will also serve for crew change overs with positive effects for hotels, restaurants and the transport sector among others beneficiaries. The

[4]LPG is a flammable mixture of hydrocarbon gases used as fuel in cooking equipment, heating appliances and for vehicles. It is increasingly being applied as an aerosol propellant and a refrigerant in an effort to reduce damage to the ozone layer too.

[5]Interview with the MPA, Port Louis, 11 September 2017.

interviewee mentioned several factors that reinforce the bunkering strategy, besides Mauritius's advantageous location: four downstream firms are already active in the country; so are various shipping agencies too. He considered Mauritius's favourable business environment and the fact that bad weather hardly ever hinders operations at the port to be equally important herein as well. He also mentioned the various incentives provided by the MPA, but admitted that they are marginal compared to the reduced fuel expenses for container vessels.

With regard to challenges, meanwhile, the interviewee pointed out that Mauritius does not currently have a refinery. All petroleum products are imported from India, which makes them rather expensive. An interviewee from a major downstream firm explained that Singapore and the South African ports of Durban and Port Elizabeth, all three located on the aforementioned sea lane, are more competitive regarding pricing. Mauritius is able to compete with South African harbours because of advantages in terms of punctuality. Compared to Singapore, however, 'we are out' remarked this interviewee.[6] The one from the MPA further argued that there would not, most likely, be a refinery installed in Mauritius in the foreseeable future because of the small domestic market and, more importantly, environmental risks that weigh heavily for a country that significantly depends on tourism. Interviewees from the STC voiced the same concerns.[7] This small domestic market also constitutes a problem for maritime services and ship repairs: presently there is only one company in Mauritius that can handle waste material from larger ships. The two dry-docking shipyards in Port Louis—Chantier Naval de l'Océan Indien and Taylor Smith & Co—repair ships for the fishing industry. They would have to upgrade their capacities considerably to be able to service the oil and gas sector. Less problematic obstacles are, from the viewpoint of the interviewee from the MPA, a lack of available space in the port area and insufficient storage capacities. The prospects of Maritius as a bunkering and maritime services hub are summarised by Fig. 1.

A different understanding of the bunkering strategy was advanced by the interviewees from the STC: they argued that yet-to-be-enlarged storage tanks could be used for re-exporting petroleum products to the south-western Indian Ocean and to the east coast of sub-Saharan Africa. Downstream companies investing in Mauritius for this purpose would benefit from partnerships with local firms that are 'very experienced in doing business in the region', it was noted. Still, being a bunkering hub is a vision and not a reality. In 2013, only 1855 vessels took bunker in Port Louis. The majority of these ships did so because they had to go to Mauritius anyway. A mere 689 vessels called exclusively for bunker alone (MPA n.d.). Port Louis only meets 6% of the bunkering demand of a region that encompasses the south-western Indian Ocean and the east coast of sub-Saharan Africa too. The government and MPA would ideally like it to capture a market share of 20% meanwhile (Government Information Service 2016).

The low number of vessel calls, the small domestic market and the lack of a domestic refinery are not the only obstacles to Mauritius's integration into global oil and gas value

[6]Interview with a major downstream company, Port Louis, 28 September 2017.

[7]Interview with the STC, Ebène, 13 September 2017.

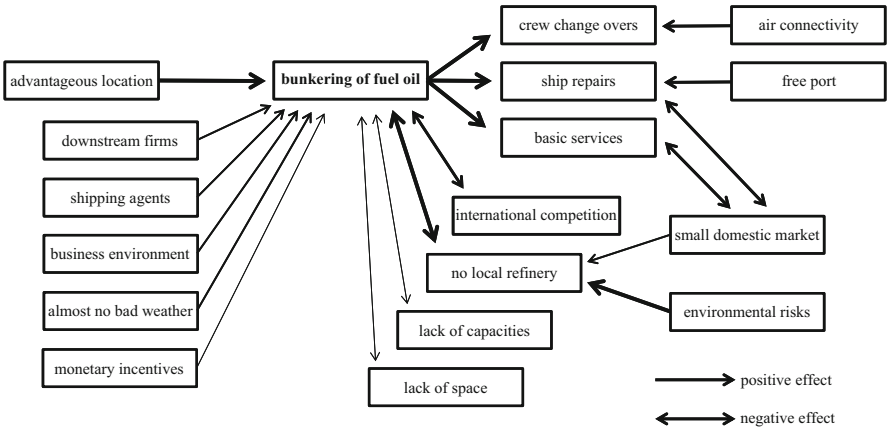

Fig. 1 Mauritius as a bunkering and maritime services hub. Source: Interview with the MPA, Port Louis, 11 September 2017. Note: The thickness of the arrows indicates the relevance of the respective causal factors

chains. When talking about challenges for their businesses, interviewees from engineering and construction companies stressed that Chinese and Indian firms are very competitive in terms of pricing.[8] Against this backdrop, one might wonder whether Mauritius's oil and gas strategy needs some adjustment going forward. The overall objective of Vision 2030 (Government of Mauritius 2017) is to transform Mauritius into a high-income country. With rising income levels, it becomes difficult to compete when it comes to labour-intensive, export-oriented manufacturing. This tendency marks the island's economy already today, and will do so even more in the near future and beyond. Hence, Vision 2030 (Government of Mauritius 2017) implies a transformation of the Mauritian economy towards segments of value chains that are intensive in capital and know-how. The Three-Year Strategic Plan states that the aforementioned ocean economy will enable Mauritius to 'move up the value chain by developing higher value-added products' (2016: 2). In other words, as one of the interviewees suggested, 'I don't think there will be any workshops in Mauritius [in the near future]. The challenge is to keep going but to outsource all pre-fabrication.' Soon only design and quality control will be carried out from Mauritius, the interviewee reasoned.[9]

Another interviewee, meanwhile, referred to cheap labour (regarding engineers, and in comparison to Europe), experience in oil and gas, and to innovative technologies in order to explain the competitive advantages of his company—as summarised in Fig. 2. With regard to a gateway role, it is interesting that this interviewee stressed that a French firm recently bought his company so as to gain better access to regional markets. What his company provides is expertise in doing business in sub-Saharan Africa.

[8]Interviews with an engineering and construction company, Moka and Port Louis, 14 and 21 September 2017, and with an engineering company, Vacoas-Phoenix, 26 September 2017.

[9]Interview with an engineering and construction company, Port Louis, 21 September 2017.

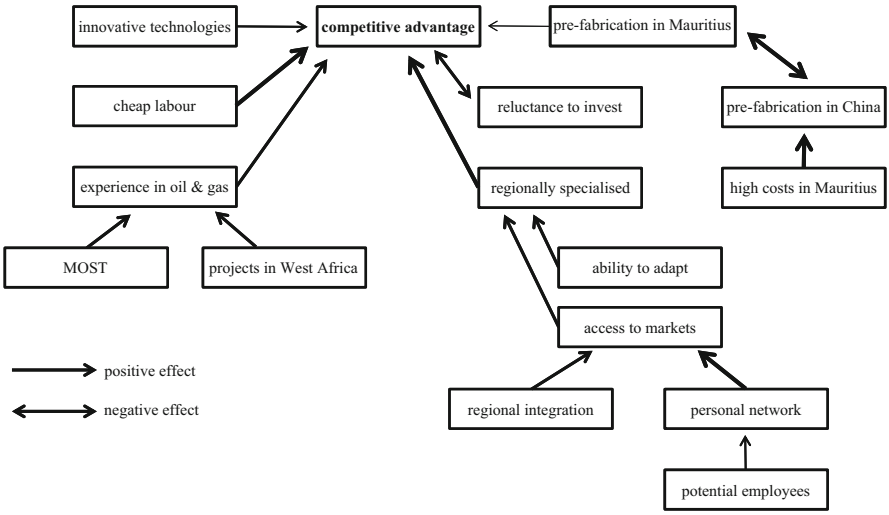

Fig. 2 Mauritius as a non-physical services hub. Source: Interview with an engineering company, Vacoas-Phoenix, 26 September 2017

Giving an example, he said that it was rather uncommon in many sub-Saharan African countries to arrange meetings well ahead of time: 'In Europe you make appointments two weeks in advance [. . .] if you try that [in sub-Saharan Africa], you will never get started. So I just travel and call people when I've landed.' He also suggested that his employees were better prepared to work in sub-Saharan Africa: 'Europeans are out of their comfort zone [there]. That is not a problem for Mauritians. You know, we have no problem to eat street food for example.'[10] In addition to that, the interviewee also pointed out that access to regional markets is easier from Mauritius than it is from Europe. This is, first of all, due to regional integration, which reduces visa problems—but also results from the interviewee's personal network. As a minor issue, he added that there were firms in Mauritius that could be hired for pre-fabrication based on the engineering provided by his company. Yet, as noted, China and to a lesser extent India are more competitive; as such, he suggested that only blueprints be provided from Mauritius. Pre-fabricated items should rather be sent directly from China to the relevant construction sites.

The interviewees from the engineering and construction company, meanwhile, called into question the competitiveness of China—at least 'if you look for quality'. As soon as decreasing competitiveness forces their firm to outsource pre-fabrication, they will search for opportunities in India, Kenya, Mozambique and Tanzania. Presently, the design for projects abroad is carried out in the company's facilities in Port Louis; so is pre-fabrication too. The materials for this are sourced globally. Most of the inputs needed for construction work are, according to these interviewees,

[10]Interview with an engineering company, Vacoas-Phoenix, 26 September 2017.

not available in Mauritius itself. The island's strength rather lies in being home to skilled engineers. While the project management team is, hence, always Mauritian, the company seeks to hire manual labour locally but often struggles to find sufficiently skilled people. The corresponding gaps are closed by labour brought in from India, proving the intermediary role of Mauritius in GVCs—as the interviewees themselves emphasised.

Another interviewee, who works as an independent consultant, explained that he advises investors who are not familiar with the oil and gas sector, for example on how to build and run a refinery in Kenya. This involves travelling to the respective places, assessing local conditions (such as the availability of labour and the presence or not of adequate infrastructure already) and making suggestions on how to overcome related challenges. The interviewee also mentioned that he may in future set up entities in sub-Saharan African countries, either on his own or in partnership with local businesspersons, so as to provide local labour to facilities owned by his clients.[11]

Related to this shift towards flows of information, Mauritius serves as a financial hub already today. In addition to the aforementioned highly favourable business environment, Mauritius has no foreign exchange controls and overseas companies enjoy the free repatriation of profits. The effective corporate tax rate is 3% and, as noted, there are double-taxation-avoidance agreements in place with various countries worldwide. As an interviewee from a holding company pointed out, even in cases where there is no such agreement Mauritian entities can still reclaim withholding taxes paid abroad.[12] The same interviewee explained that the group that she works for has subsidiaries in Angola, Ghana and Mozambique. All major decisions require approval by the board of the company, registered in Mauritius, which is staffed by the Mauritian and South African owners. When the holding structure was set up in 2007, it did not have any employees. Today, it employs the interviewee and one secretary. Their duty is to transfer money from the subsidiaries to Mauritius so that it is freely available to the owners of the group and can be held in a stable currency, as Mauritius allows firms to have bank accounts in United States dollars.

In addition to these activities, the interviewee said that her company was thinking about hiring a marketing executive for the office in Mauritius. An interviewee from an international consultancy explained, furthermore, that such an expansion of activities was a common next step for firms that have their holding structure in Mauritius. These firms start, at a certain point, to concentrate their contract management and procurement on the island, centralising these activities for all countries where they operate. Doing so enables the respective firms to benefit from the financial advantages of Mauritius and to avoid the risks associated with running a

[11]Interview with an independent consultant, Ebène, 19 September 2017.

[12]Interview with an upstream service provider, Grand Baie, 18 September 2017. A withholding tax is a requirement that the payer for an item of income deducts tax from the payment and pays that sum to the state instead. Many states use withholding taxes as a means of combatting tax evasion. They require that payers of dividends, interest and royalties to non-resident payees withhold from such payments an amount set at a specific rate.

business in a number of unstable currencies.[13] Another interviewee from a different consultancy agreed, saying that many companies start with mere holding structures in Mauritius and eventually relocate more and more control functions to the island—especially board meetings.[14]

A major advantage that Mauritius possesses as a hub for holding companies and corporate headquarters is its air connectivity. There are two or even three flights a day to Dubai, Paris and Johannesburg. Australia, Singapore and several cities in China and India can be reached directly at least once a week. Whereas Dubai and Johannesburg offer excellent connections to destinations all over sub-Saharan Africa, direct regional flights from Mauritius are few and far between however; if they do exist, they then are limited to only one or two a week (Map 1). For this reason, many companies that have their holding structures in Mauritius base their staff in Dubai instead.[15]

Concerning knowledge generation, the University of Mauritius occasionally organises seminars on oil and gas exploration that are mostly attended by people from public authorities and from Mauritian companies seeking to provide services to this sector. The seminars themselves do not, however, generate knowledge. They rather make it locally available by bringing in lecturers from overseas, as a professor from the university explained. So far, the number of participants from the near abroad has remained low.[16] The fact that that the Faculty of Ocean Studies, launched in the context of Mauritius's aforementioned new focus on the ocean economy, was recently closed and its staff reintegrated into the Faculty of Engineering also indicates that the country will not, most likely, become a major knowledge gateway for the oil and gas sector any time soon.

5 Conclusion

Research on world cities suffers from a bias towards the Global North. This neglect is not so much about the cities that are covered/not covered by the state of the art. It relates, rather, to theory building: our understanding of world cities is limited to the experiences of a small number of cases from the Global North. By applying the concept of gateway cities to Mauritius and to the oil and gas sector, this chapter has strived to begin rebalancing research on world cities. Being broader than the established understanding of world cities, the gateway concept covers logistics and transport, industrial processing, corporate control, service provision and knowledge generation. It allows us to take experiences of cities from the Global South into account too.

[13]Interview with an international consultancy, Ebène, 19 September 2017.

[14]Interview with an international consultancy, Ebène, 12 September 2017.

[15]Interview with an international consultancy, Ebène, 12 September 2017.

[16]Interview with a professor at the University of Mauritius, Martindale, 14 September 2017.

Map 1 Direct flight connections from Mauritius. Source: ATOL (2017)

Counter-intuitively, Mauritius plays a considerable role in global oil and gas value chains. Its bunkering strategy, existing LPG storage facilities and the plans to re-export other petroleum products exemplify how the island has undertaken efforts to position itself as a logistics gateway—or, rather, as a distribution hub for the south-western Indian Ocean and for the east coast of sub-Saharan Africa too. The bunkering strategy is expected to induce maritime service provision. Industrial processing, meanwhile, is hardly a realistic ambition. Considering Mauritius's economic development, it is becoming increasingly difficult for local firms to compete with low-cost providers from the Far East. Focussing on labour-intensive segments of oil and gas value chains appears to be the wrong economic strategy. My research suggests that Mauritius's role as a gateway may rather be best based on flows of information. These flows comprise but also go beyond engineering expertise and personal networks of Mauritian middlepersons. Mauritius is attractive for the holding structures of firms that do business in sub-Saharan Africa. Having a holding company in Mauritius appears to be the first step towards relocating business services and headquarters to the island. To a fairly limited degree, the island state also serves as a gateway for knowledge generation: seminars on oil and gas offered at the University of Mauritius are intended to attract people from the regional countries. These seminars presently remain only at the level of making existing knowledge locally available however.

What this chapter has shown is that Mauritius holds the potential to make a critical contribution to global economic processes, serving as a gateway to and hub in sub-Saharan Africa. It partly does so already today. As a next step, it would be worthwhile to analyse how far the particularities of Mauritius help us to better understand gateway cities elsewhere too. It would also be helpful for our understanding of cities within GVCs to advance a typology of gateways; for example, by comparing Mauritius to places that serve as intermediaries for material flows or that interlink a hinterland that is limited to only a single country.

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Gateway Cities, Under-Connected Cities and Largely Disconnected Cities in Global Value Chains in Sub-Saharan Africa

Herman S. Geyer

1 Introduction

Globally, certain cities serve as gateways in global value chains (GVCs) through which commodities and services are traded between countries as inputs in value-added production (Scholvin 2017; Scholvin et al. 2017). In sub-Saharan Africa, lead firms from the Global North specifically target primary cities—as these serve as dominant entry points into hinterland markets for both buyer-led and producer-led chains. With communication and transportation being more costly in sub-Saharan Africa relative to the rest of the world, it is also more efficient for export-oriented local firms and state functions to concentrate in these cities—as they are where infrastructure networks are densest, increasing the potential for value-chain formations in these locations (Geyer et al. 2015). These cities are not limited to serving as intermediary terminal points in the global exchange of goods and services. They also have a global-integration function through the transmission of concepts, ideas and trends. This function enables firms in peripherally located cities to maintain their prominence despite the large distances between cities and the uneven distribution of them (Storper and Venables 2004). Global connectivity enables firms in these cities to integrate with the rest of the world, making local economies more competitive in the global market. The degree of global and regional connectivity distinguishes gateways from cities that merely serve as intermediary terminal points in global trade.

Yet, although the mean level of participation of sub-Saharan African countries in GVCs is high, the level of connectivity of most primary cities is relatively lower than one would expect given the size of urban and hinterland populations (Onyebueke 2011). The reason for this is that industries in these cities are focussed on the

H. S. Geyer (✉)
Department of Geography, Stellenbosch University, Stellenbosch, South Africa
e-mail: hsgeyerjr@sun.ac.za

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production of non-tradable goods and the export of low-quality, lower-tiered production inputs, limiting the capacity of these cities to provide the ancillary services necessary to upgrade the value of goods. In contrast to the expected scale–connectivity assumption of gateway cities (more on this later), most cities in sub-Saharan Africa do not have the integration functions necessary to improve the level of services and to raise the value of goods traded internationally. Although they are important intermediary terminals in GVCs, these types of city do not significantly participate in value-added production. These poorly connected cities within global networks have consequently been referred to as 'loose connections' and 'black holes' (Short 2004).

In this chapter, key factors that define cities as gateways as well as the functions of these within GVCs are examined in the context of the participation of sub-Saharan African cities in global trade and value-added upgrading. The low level of connectedness of primary cities in sub-Saharan Africa is shown, with particular focus on the structure of regional economies and factors that undermine their capability to attract foreign investment—and thus also work against growth in local value chain-addition. Particular attention is given to distinguishing gateway cities from under-connected (loose connection) and largely disconnected (black hole) ones, that by adapting a corresponding typology of cities based on the descriptions established by Short (2004). The related analysis measures the propensity of primary cities in sub-Saharan Africa to act as gateways by comparing their connectivity to population size, weighted by the economic value of their respective hinterlands. Finally, probable explanations for the spatial distribution of gateway cities as well as under-connected and largely disconnected ones are given. The dominant factors that result in the clustering of cities in the aforementioned topologies are identified via a factorial analysis.

2 Gateway Cities in GVCs

Gateway cities are intermediary nodes in GVCs that provide opportunities for global lead firms to access markets and resources in the hinterlands of distant locations. They serve as gateways because they provide a central location through which local products and services are distributed abroad, and through which concomitantly the local hinterland accesses foreign goods and services for local production and consumption (Scholvin 2017; Scholvin et al. 2017). However, most importantly, they serve as gateways through which the spillovers from the upgrading of products and production processes result in the increased competitiveness of local firms within GVCs (Rossi et al. 2007). Gateway cities hence provide an important development function for national economies, integrating these into the world economy and creating globally more competitive local industries. Increasingly the net value of the region is incorporated in the quality of global production functions concentrated in such gateway cities, regardless of the size of resources in the hinterland. Also seen more and more, communication and transportation technology

has reduced the distance and location areas between gateway cities and their external markets. This results in the development of important gateways such as Mauritius and Singapore in peripheral areas with small, poorly resourced local markets, distant from the larger ones that they interlink globally (Chap. 13 in this volume; Breul and Diez 2017).

In contrast to the world cities hypothesis, which is about the concentration of command and control functions and advanced producer services (Beaverstock et al. 1999; Taylor et al. 2002), the gateways concept provides a more comprehensive understanding that is more suitable for evaluating the connectivity of cities within GVCs. Gateway cities serve as a concentration point for five essential functions that are the basis of all interlinking within GVCs: logistics, manufacturing, command and control, consumer services and knowledge generation. They also provide a stable economic and political environment from which markets and resources can be more readily accessed in unstable regions (Scholvin 2017; Scholvin et al. 2017). Because of the large sunk costs in establishing production functions, gateway cities increasingly attract foreign investment in the zero-sum game of capturing market share in global exports (Short et al. 2000). Moreover, the concentration of essential global production functions creates positive spillovers for the relocation of other firms, in which the increasing returns associated with co-location result in continued growth and economic development. This concept is variable over time, as the mobility of firms and changes in the global economy result in shifts in the position of gateway cities in the global economy.

These two characteristics—stable business environments and the increasing returns of concentrated local functions—make certain cities attractive for the limited decentralisation of functions critical to GVCs. However, this does not explain why the de-concentration to gateway cities from world cities outside of sub-Saharan Africa is necessary. As noted by Scholvin (2017) and Scholvin et al. (2017), the world cities hypothesis does not explain why, in a hyperconnected global economy, all functions critical for GVCs would not be solely concentrated in world cities with the highest returns of scale. Yet there are still proximity effects, which makes de-concentration necessary. These effects are a product of the differences in governance and institutional frameworks between regions involved in GVCs. Regional differences in the governance of value chains, make midpoint gateway cities essential in bridging the gap between the codified technical standards in the primarily modular value chains in the Global North and the face-to-face interaction that is necessary in the primarily relational value chains in the Global South (Pietrobelli and Rabellotti 2011). Different regions also have different institutional settings, framed by their varying political and socio-cultural contexts (Bryson et al. 2013). In producer-led chains, lead firms establish regional headquarters and regional sales offices in gateway cities to bridge the institutional gap between their respective headquarters in world cities, on the one side, and national subsidiaries, on the other (Breul and Diez 2017; Scholvin 2017; Scholvin et al. 2017). In buyer-led chains, specialist first-tier buyers and suppliers—with intimate knowledge of both the upstream modular chain processes in the Global North and downstream relational chain networks in the Global South—similarly bridge the large institutional gaps

between regions, minimising risks for both producers and distributors alike (Chap. 2 in this volume).

What is more cities in sub-Saharan Africa are characterised by extremely high levels of social heterogeneity, far beyond what is experienced in the Global North. This heterogeneity enhances the competitiveness of the concerned cities both globally and regionally (Eyoh 1999). They are internally fragmented into a large number of different ethnicities of variegated cultures, languages and religions, clustering within enclaves in various areas of the city. Unlike the ethnic clustering and integration patterns in the Global North, most sub-Saharan African cities generally do not have a dominant local culture or language. They do not experience isomorphic assimilation, but rather coexistence within pluralistic societies. Previous research has found that higher levels of equally distributed ethnic diversity—meaning the absence of large, dominant such groups—correlates positively with political stability (Geyer et al. 2015). A diaspora externality is also recognised as an integral feature of the post-Fordist economy, as extreme ethnic diversity enables lead firms to establish themselves within trade networks reaching far into the hinterlands in the Global South (Rapoport 2004; Simone 2001). This is particularly the case in sub-Saharan African cities with their high concentrations of East Asian, European and South Asian communities, which—due to more extensive trade networks—evidence higher growth rates than cities with lesser degrees of ethnic diversity do (Bräutigam 2003).

Sub-Saharan Africa has a small number of world cities compared to other world regions (Globalisation and World Cities Research Network 2016), despite certain cities in sub-Saharan Africa growing to become some of the largest conurbations with also the fastest population growth rates anywhere on the planet. The world cities hypothesis is limited to measuring connectivity in terms of a narrow range of advanced producer services and command and control functions. A lack of such an epithet does not necessarily denote low connectedness, but merely marginality in terms of control and of the rents remunerated from global production (Short 2004). Despite lead firms concentrated in world cities in the Global North dominating GVCs through command and control functions, partner gateway cities in different regions of the Global South are also essential in providing lower-level chain functions—that by organising backward and forward linkages with their respective hinterlands (Martinus et al. 2015).

Sub-Saharan African cities are rapidly urbanising due to a higher level of investment in infrastructure, increasing rents from industry, better education and health, as well as continued growth in employment—all in comparison to their respective hinterlands (Potts 2012). Yet, the attractiveness of these cities as gateways is rather low because—relative to the significant rise in population—they have lower economic growth rates than urban areas in other parts of the world and higher poverty ones. They also tend to lack the advanced communication and logistics infrastructure necessary for efficient integration into GVCs, and are globally uncompetitive because they experience high operation costs and production inefficiencies (Laros and Jones 2014). For example, sub-Saharan African cities have the lowest density of transportation infrastructure per area worldwide (Lall et al. 2017). As noted, Short (2004) refers to these cities within the global urban network as either

loose connections or black holes. The former refers to cities whose global connectedness is less than expected relative to their size: they are under-connected. The latter, meanwhile, refers to cities that are largely disconnected due to high levels of poverty, limited markets, internal instability and self-exclusion.

Although the ethnic diversity of these cities enhances their competitiveness both globally and regionally, it can also create higher levels of instability due to increasing intra-city conflicts. Both types of city are marginalised within the global economy, having a negative residual in terms of their connectivity in GVCs relative to the size of city and hinterland population. The difference is one of degree. Administrative inefficiencies and high capital, communication, energy and transportation costs further complicate investment in these cities (Laros and Jones 2014). This risky economic environment also de-incentivises local production. Ironically, international policies—such as structural-adjustment programmes—have contributed to eroding local skill bases, without significantly increasing the competitiveness of national export economies in sub-Saharan African cities meanwhile (Babatunde 2009).

Part of the challenge in establishing gateway cities in sub-Saharan Africa is the structure of the export economies, focussed on low-quality, lower-tiered production inputs—primarily the output from mining operations (Lall et al. 2017). Although this does not limit the participation of sub-Saharan African countries in GVCs, it does undermine the attractiveness of these countries as destinations for significant investment by lead firms. Only the initial stages of value chains are found in sub-Saharan Africa. Everything else tends to concentrate in the Global North and, to a growing extent, in the Far East. As a consequence, although the degree of participation in GVCs as a percentage of total exports is high in sub-Saharan African countries, the per capita value of these goods is very low indeed—which is due to the lack of upgraded processes, products and related functions (Chap. 2 in this volume). This limits exports to those products for which sub-Saharan Africa has an absolute advantage (mostly scarce raw materials), with the remainder of local production focussed on non-tradable goods and services (Lall et al. 2017).

Furthermore, the low level of industrialisation in most countries in sub-Saharan Africa increases the costs of complementary services and imported foreign value-added production inputs, which are necessary conditions of the successful formation of gateway cities in the Global South. These limitations reduce the capacity of many cities in sub-Saharan Africa to effectively function as gateways, because the majority of the upgrading of export products in producer-led value chains occurs outside of the subcontinent. Instead, cities in sub-Saharan Africa—especially primary ones (which are, by definition, disproportionately larger in terms of economic output and population than any other cities in the national urban hierarchy)—tend to serve as nodes in buyer-led chains. Local first-tier buyers, being based in primary cities, acquire and distribute goods as agents of lead firms for further upgrading in other countries elsewhere (Chap. 2 in this volume). This maximises the accessibility of production inputs for lead firms, while simultaneously minimising the accompanying risks and investment costs. However, this also reduces the ability of primary cities to function as gateways.

A final feature of sub-Saharan African cities that has to be mentioned for methodological reasons is significant emigrant remittances and official development-aid inflows. This is particularly evident in resource-poor countries and ones experiencing political instability (Geyer et al. 2015). These countries generally have a dysfunctional local economy and a large expatriate population. Somalia, for instance, only produces approximately 20% of its gross national income within its own borders. The remainder is made up of international assistance and of remittances from the Somali refugee population resident in the Global North (International Fund for Agricultural Development 2007). Such remittances and development aid have a strong urbanisation effect, as the highly regulated and monopolised structure of money transfers and the concentration of education and consumption goods predispose the recipients thereof to move to cities—usually primary cities (Gupta et al. 2009). Donor funding and remittances do not have an important effect on the performance of cities in GVCs but they do increase the population size of these urban centres so as to be greater than the actual economic base upon which they operate, thereby contributing to the low-scale connectivity seen in under-connected and largely disconnected cities.

3 Connectivity of Primary Cities and Determinants Thereof

This study analyses the relative propensity of primary cities in sub-Saharan Africa to act as gateways in GVCs. The gateway status of cities is calculated as:

$$C_j = \left(\frac{Ex_j}{p_j} \Big/ \left(\frac{Ex_i}{p_i} \right) \right) \times GVP_j \times 100$$

$$GVP_j = r_j / r_{jmax}$$

$$r_j = \sum_{y=1}^{n} r_{yj}$$

The connectivity of cities is measured using a formula modified from Short (2004), where C_j represents the connectivity of cities. This is calculated by the city's per capita exports Ex_j relative to the population size of the city p_j in country *i*. The calculation is weighted by the national per capita exports Ex_i relative to the population of the country p_i to overcome scale distortions of poorly performing cities in larger countries. This calculation is multiplied by the GVC participation *GVP* of city *j*. GVP_j is calculated as suggested by Taylor (2001), and consists of the total producer services per city—as the sum of relational interactions r between firms y and cities r_{yj}, and expressed as a fraction of the connectivity of the maximally connected city r_{jmax}.

Nation states are selected as the territorial unit of analysis because of the fragmented trade agreements between countries in sub-Saharan Africa, resulting in

low levels of intra-African trade (Anyanwu 2014). Thus it is assumed that each primary city is the potential gateway to its respective host state, defined as the hinterland. Cities with significantly higher positive trade coefficients than those of the other cases are considered as being gateways, reaching higher levels of both intra-African trade and of international trade beyond the continent. Only primary cities are selected because, at least according to Short (2004), gateway cities dominate other urban centres in their spheres of influence, rarely sharing a hinterland with another gateway city. The population of cities is determined according to the size of contiguous conurbations, not the population of administrative boundaries. National data was compiled from the 2016 World Bank Development Indicators (World Bank 2016). City data was compiled from the 2017 Canback Global Income Distribution Database (Canback Dangel 2016). The GVC participation of cities was calculated by using formulas from the 2017 Global Network Service Connectivities Database. Small countries—Burundi, Djibouti, Equatorial Guinea, the Gambia and Guinea-Bissau—were excluded from the analysis, due to the unavailability of data for certain key variables.

Figure 1 below indicates the level of connectivity of primary cities in sub-Saharan Africa. The upper circle represents true gateway cities, with their high level of connectivity relative to population size. The uppermost urban agglomeration is Gauteng, South Africa, with a population exceeding ten million people. It can be regarded as the leading gateway city in the region, and is also considered a beta world city by the Globalisation and World Cities Research Network (2016). The other gateway city is Port Louis, Mauritius, with a population of approximately 150,000. However, despite its small size (it is the smallest city in the list), it has a disproportionately large representation in GVCs. The second circle represents under-connected cities, meaning cities whose connectedness is less than expected relative to their size. Although these cities have medium to large populations ranging

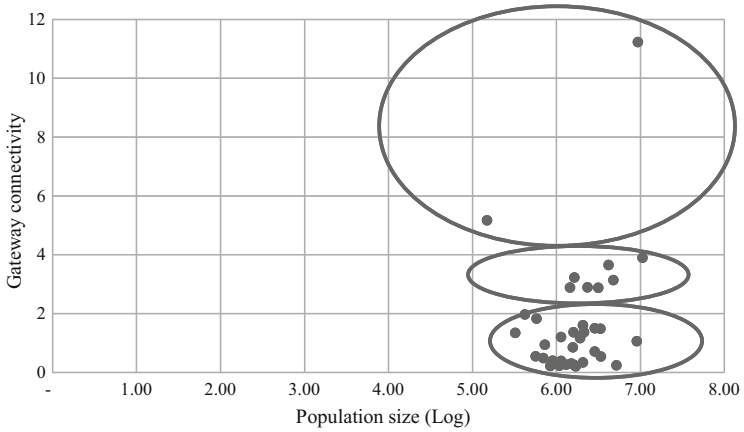


Fig. 1 Gateway connectivity of primary cities in Sub-Saharan Africa. Source: Author's own compilation, based on data from the Globalisation and World Cities Research Network (2016)

between 1.5 million and 10 million people, their connectivity is relatively low—suggesting that, despite large export economies, their role in GVCs is mostly limited to the export of raw materials rather than the upgrading of products, processes and functions. As Table 1 shows, meanwhile, all under-connected cities are located in relatively stable countries in which unprocessed agricultural and mining products are the dominant exports.

The lower circle in Fig. 1 comprises largely disconnected cities, with very low rates of producer service trade. These cities are in the majority in sub-Saharan Africa. With the exception of Gaborone and Libreville, these largely disconnected cities have limited markets for both non-tradable goods and foreign production inputs. Many of these cities—for example Bangui, Khartum, Kinshasa, Mogadishu and Monrovia—are located in countries that have relatively recently experienced significant political instability. Others such as Brazzaville and, again, Mogadishu are located in countries that self-segregate from global economic processes for political or religious reasons. Largely disconnected cities are also located in countries with outstandingly high levels of urban poverty as well as ethnically highly diverse populations.

In order to analyse the broader classification of sub-Saharan African cities as gateways, under-connected and largely disconnected ones, this study captures their performance on a range of criteria. First, the relative performance of cities is assessed based on those from the aforementioned papers by Scholvin (2017) and Scholvin et al. (2017). Second, factors that best explain the variance between cities in sub-Saharan Africa are taken into account, based on Geyer et al. (2015). Third, additional aspects proposed by Short (2004), ones that explain the existence of under-connected and largely disconnected cities, are further included. The list of variables selected is shown by the following Table 2.

The factor analysis presented in Table 3 below reveals the relationships between the participation of sub-Saharan African primary cities in GVCs and the topological characteristics of these cities. This analysis yields three factors corresponding to the three identified categories of cities—explaining 62% of the total variance therein. Factor 1 expresses a strong negative correlation between the participation of cities in mining exports and other GVC activities, particularly manufacturing and service exports. Although mining exports are relatively negatively invariant to connectivity in GVCs, they are positively correlated to corruption—indicating that political instability and business risk increase with the level of participation in such exports. This factor best categorises under-connected cities. The low variance in the connectivity index indicates that this factor is not exclusive to under-connected cities, however.

Factor 2 expresses a strong correlation between the logistics performance of cities and their global connectivity. The coefficients of both variables are negative for most of the cities studied in this chapter, indicating that they have a low ranking on these two factors. Cities that are highly ranked are gateways (Gauteng and Port Louis). Logistics performance and global connectivity are also negatively correlated with dependency on development aid and remittances as well as urban poverty, but positively with ethnic fractionalisation. This indicates that in gateway cities and in

Table 1 Categorisation of primary cities in Sub-Saharan Africa

City	Country	Connectivity	Population (in millions)	Category
Gauteng	South Africa	11.23	9.31	Gateway city
Port Louis	Mauritius	5.17	0.15	Gateway city
Lagos	Nigeria	3.9	10.58	Under-connected city
Abidjan	Ivory Coast	3.65	4.18	Under-connected city
Harare	Zimbabwe	3.23	1.63	Under-connected city
Luanda	Angola	3.14	4.77	Under-connected city
Accra	Ghana	2.89	2.34	Under-connected city
Lusaka	Zambia	2.89	1.45	Under-connected city
Nairobi	Kenya	2.88	3.14	Under-connected city
Gaborone	Botswana	1.97	0.42	Largely disconnected city
Libreville	Gabon	1.83	0.58	Largely disconnected city
Maputo	Mozambique	1.61	2.07	Largely disconnected city
Dakar	Senegal	1.50	2.86	Largely disconnected city
Dar es Salaam	Tanzania	1.48	3.35	Largely disconnected city
Kampala	Uganda	1.37	1.60	Largely disconnected city
Douala	Cameroon	1.37	2.13	Largely disconnected city
Windhoek	Namibia	1.34	0.32	Largely disconnected city
Monrovia	Liberia	1.20	1.13	Largely disconnected city
Ouagadougou	Burkina Faso	1.16	1.91	Largely disconnected city
Kinshasa	Democratic Republic of Congo	1.06	9.05	Largely disconnected city
Blantyre	Malawi	0.94	0.73	Largely disconnected city
Lomé	Togo	0.85	1.57	Largely disconnected city
Mogadishu	Somalia	0.71	2.86	Largely disconnected city
Asmara	Eritrea	0.55	0.56	Largely disconnected city
Addis Ababa	Ethiopia	0.54	3.39	Largely disconnected city
Bangui	Central African Republic	0.49	0.70	Largely disconnected city
Freetown	Sierra Leone	0.40	0.90	Largely disconnected city
Kigali	Rwanda	0.39	1.13	Largely disconnected city
Conakry	Guinea	0.34	2.07	Largely disconnected city
Brazzaville	Republic of Congo	0.30	1.51	Largely disconnected city
Niamey	Niger	0.26	1.30	Largely disconnected city
Antananarivo	Madagascar	0.26	1.61	Largely disconnected city
Khartum	Sudan	0.25	5.19	Largely disconnected city
Ndjamena	Chad	0.22	1.08	Largely disconnected city
Cotonou	Benin	0.22	0.84	Largely disconnected city
Bamako	Mali	0.21	1.70	Largely disconnected city

Source: Author's own compilation, based on data from the Globalisation and World Cities Research Network (2016)

Table 2 Variables for analysing the performance of primary cities

Factor/Feature	Proxy	Source
Logistics and transportation	Logistics performance index	Scholvin (2017) and Scholvin et al. (2017)
Industrial processing	Manufacturing share of gross domestic product	Scholvin (2017) and Scholvin et al. (2017)
Corporate control	Connectivity index	Scholvin (2017) and Scholvin et al. (2017)
Service provision and knowledge industries	Service exports	Scholvin (2017) and Scholvin et al. (2017)
Dependence on primary sector activities	Mining exports	Geyer et al. (2015)
Ethnic and religious diversity	Fearon's ethnic fractionalisation index	Geyer et al. (2015)
Dependence on international transfers	Net official development assistance and remittances/GNI	Geyer et al. (2015)
Informal employment	Percentage of workers in informal employment	Geyer et al. (2015)
Urban poverty	Urban population living below national poverty line	Short (2004)
Political stability, business risk	Informal payments to officials	Short (2004)

Source: Author's own compilation

Table 3 Factor analysis of primary cities in Sub-Saharan Africa

Variable	Factor 1	Factor 2	Factor 3
Logistics performance index	−0.128842	−0.836591	−0.050177
Manufacturing share of GDP	−0.637349	−0.222785	−0.227649
Connectivity index	−0.088132	−0.848259	−0.168629
Service exports	−0.690017	0.045870	−0.134778
Mining exports	0.865133	0.092346	0.057099
Fearon's ethnic fractionalisation index	0.181767	−0.429877	0.700268
Net official development assistance and remittances/GNI	0.002073	0.394143	0.506505
Percentage of workers in informal employment	0.073183	0.210432	0.647719
Urban population living below national poverty line	0.065033	0.384234	0.705733
Informal payments to officials	0.450220	0.332056	0.618597
Explanatory variance	1.900486	2.122015	2.151388
Proportional total	0.190049	0.212201	0.215139

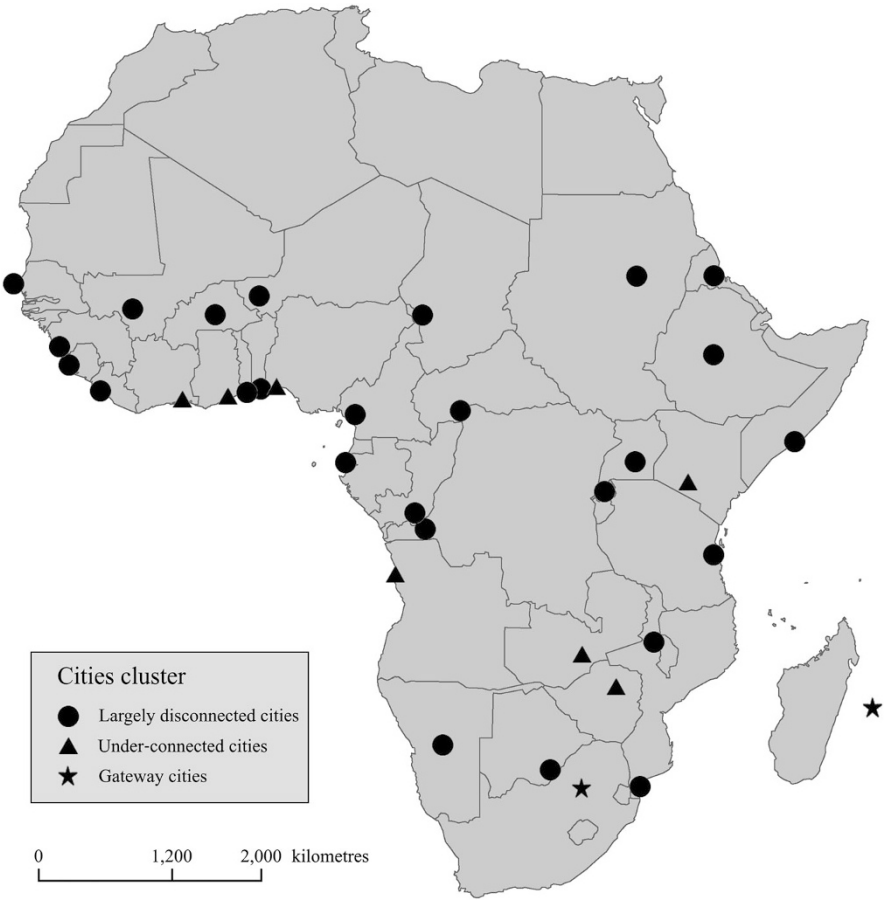
Source: Author's own calculations

under-connected ones that come relatively close to having gateway status, social diversity and pluralism increase the connectedness between different regions. Poverty, dependence on external remittances and insufficient logistical capacities do not affect these cities as much as they do less-connected ones.

Factor 3 best represents the features that hamper the participation of primary cities in sub-Saharan Africa in GVCs. This factor is highly significant in terms of the variables that represent largely disconnected cities as failed network ones per Geyer

et al. (2015) and Short (2004). The most significant component is ethnic fractionalisation. While this on its own is a neutral variable, when interpreted in the context of the other significant variables in Factor 3—being urban poverty, informal economies, corruption and a dependence on external remittances—this indicates that ethnic conflict may undermine the connectedness of cities. Factor 3 is most representative of largely disconnected cities. It is negatively correlated with variables from GVC participation.

When analysing the spatial distribution of gateway, under-connected and largely disconnected cities, as shown in Map 1, it is evident that the gateway function is a product of network centrality—regardless of the geographical location, the size of the population or the extent of the hinterland economy. The connectivity of gateway cities is based on the relative concentration of global production functions



Map 1 Gateway cities, under-connected and largely disconnected cities in Sub-Saharan Africa. Source: Author's own compilation

essential to GVCs. Gauteng has a local economy and population size similar to less connected, oil-exporting Lagos. Even though Gauteng is strongly linked to the export of mining resources, it also has well-established manufacturing and advanced services sectors that it combines with relatively good logistical infrastructure, resulting in a high level of connectivity. Port Louis, meanwhile, is the smallest of the cities analysed and has a modest hinterland economy. Its location is even more peripheral than that of Gauteng. However, it reaches an outstanding performance with regard to its logistics, manufacturing and advanced service sector activities.

In the zero-sum game of intercity competition for foreign investment and markets, as described by Short (2004), it is expected that many cities will remain under-connected or even largely disconnected. In sub-Saharan Africa, there is a clustering of under-connected cities in resource-rich parts of the subcontinent—particularly around the oil-rich Gulf of Guinea and in mineral-rich Southern Africa. Nairobi also appears to serve as a central node in agriculturally important East Africa. The largest category hereof is largely disconnected cities, with disproportionately low connectivity. These cities are characterised as experiencing, to different degrees, the effects of high levels of poverty, limited markets, internal instability and self-exclusion.

4 Conclusion

Gateway cities is a term used for locations that serve as critical nodes in GVCs, connecting regional hinterlands and global markets. Rather than serving as mere intermediary terminals, gateway cities host essential functions for value chains—ones that enable local firms to upgrade processes, products and related functions, thereby capturing a larger share of value-addition in GVCs. Gateway cities thus have a globalising role, in which spillovers enable local firms to better integrate and compete in the global market. This is a new concept, contrasted to that of world cities, because the concentration of global command and control functions does not necessarily correlate to the level of participation in GVCs. Instead, the gateway concept aims at divulging the particular role that each city plays in value-addition and related upgrading along entire value chains.

One of the most important implications of this concept is that the spatial centrality or peripheral nature of locations, as well as the size of regional hinterlands, become less important than the level of participation in global trade. The two cities identified as gateways in the research presented in this chapter are not centrally located in sub-Saharan Africa—and only one of them, Gauteng, has a major economic hinterland. The other, Port Louis, does not. In the global transmission of products and services, centrality becomes a function of the connectivity within value chains—which results from logistics performance, manufacturing capacities, command and control functions, consumer services and knowledge-generating industries, irrespective of the significance of local resources and spatial proximity. The analysis has implied that other context characteristics also become critical for acquiring gateway status: the stability of the city's host state, the ability to capture increasing

returns through the agglomeration of the aforementioned functions and a socially heterogeneous workforce—able to reach greater levels of networking within the region, and between the Global North and Global South more generally too.

In contrast to Gauteng and Port Louis, the remainder of the cities in sub-Saharan Africa are best classified as under-connected or largely disconnected. Under-connected cities have a lower level of connectedness in terms of the share of global services production, relative to the population size and scale of trade in value-added products occurring in the city and in hinterlands. As substantiated by the analysis, under-connected cities are typified as ones overly dependent on the export of unprocessed raw materials—particularly mining ores and liquid fuels. They lack the diversified local economies necessary for the provision of essential functions that would turn them into gateways. The analysis indicates that these cities are handicapped by poorly developed local manufacturing and services sectors. They are also plagued by corruption, increasing the risks in doing business there. Largely disconnected cities, which include the majority of primary ones in sub-Saharan Africa, have disproportionately low connectivity. They are further marginalised by high levels of urban poverty, limited markets, extensive corruption and political instability, a large informal sector, significant social fragmentation as well as heavy dependence on foreign aid and remittances.

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A Hub for Africa? The Information and Communications Technology Sector in Cape Town

John Stuart

1 Introduction

Services in information and communications technology (ICT) are a critical input into economic development, since unlike any other service they are uniquely able to shift the production possibility frontier outwards over time and enable the better utilisation of scarce resources. In South Africa, the ICT sector has grown in tandem with the rapid expansion of the sector globally—and the level of sophistication of both the hardware and software components of the industry is on a par with the developed world (Gillwald et al. 2012). Cape Town hosts its own 'Silicon Valley' hub of ICT firms, collaborative initiatives, funders and governmental partners. The City of Cape Town and the Western Cape Government, together with non-profit partners, have consciously driven the process of developing the sector to the point that it is a continental leader today (Brand South Africa 2014). As a world city, Cape Town is globally integrated both culturally and technologically; it is to Africa that it must surely now look to further leverage development of its ICT sector, however.

This chapter explores the nature and dimensions of the South African ICT sector and within it, the one in Cape Town. For the purposes of this chapter, Cape Town is understood to refer to the greater Cape Town metropolitan area, including Paarl, Somerset West and Stellenbosch. The reason for the focus on Cape Town is that business and software services are the highest value-added ICT activities and these are the ones on which the sector in Cape Town is largely based. The empirical section of this chapter elaborates on the sector's backward and forward linkages, referring to statistical information obtained from Statistics South Africa and the World Bank. It then presents feedback from a sample of four firms, with a view to understanding the extent of their integration in value chains, their experiences with value-chain governance and upgrading, and the challenges that they face in

J. Stuart (✉)
Trade Law Centre, Stellenbosch, South Africa

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expanding their operations. It is not implied that these case studies are representative of the entire sector. They rather represent four distinct and diverse ones drawn from a survey with a limited distribution. Before coming to the empirical findings, conceptual background information on value chains in the ICT sector and the methodology applied in this chapter is provided.

2 Conceptual Context and Methodologies

The originator of value-chain analysis—Michael Porter—developed the model for the manufacturing industry, but it has since been applied to the services sector too (Choi 2001; Gabriel 2006). The central concept in Porter's (1985) model and that developed in derivative research is that production is not a black box of inputs and outputs, but rather a complex and interrelated set of activities from the conceptualisation of the product all the way through to its final disposal or recycling. This is known as a value chain in the sense that it is an interrelated set of value-generating processes culminating in a finished product (or service).

One valuable insight gained from the description of value chains is the ability to identify areas in the production process where additional value could be generated. Similarly, it allows the chain to be broken down and potentially dispersed to other business units, subsidiaries or even other companies. This dispersion of the value chain is elaborated on further below, since it is of particular relevance to certain aspects of the ICT sector. Applying value chains to the ICT sector would, therefore, seem to a viable and popular research exercise, but there is surprisingly little published research in this area. One notable contribution is that of McCormick and Onjala (2007), who attempt to describe value chains in both the hardware (physical) and services segments of the sector. Since ICT services—such as application or web development—are entirely generated by knowledge workers, the value chain is comprised of stages of services beneficiation such as the following:

- problem assessment and solution conceptualisation,
- initial design (use case model),
- refined design (process flow model),
- application development,
- testing and debugging,
- marketing and distribution, and
- support.

This is just one example of a value chain within the ICT context, and it could be described more complexly if more information were available as to the precise nature of the service. Yet, this chapter will not delve into the nature of the structure of specific value chains within the ITC sector. Its purpose is, rather, to understand the environment around ICT value chains in Cape Town. The approach taken is to follow the primer methodology found in the literature (Gereffi and Fernandez-Stark 2016; Kaplinsky and Morris 2001), where the value-generating environment of a sector is conceptualised in terms of a number of aspects. Once understood, these

aspects provide an essential background to explaining the sector, its challenges and potential to develop:

- participation in global and regional value chains andgovernance thereof,
- upgrading,
- regulatory environment,
- stakeholders such as industry associations, trade unions and their impact on value generation,
- access to markets,
- access to training,
- access to collaboration and coordination with other industry players, and
- access to finance.

Within every production process that involves the beneficiation of raw materials into a finished product, a chain of input–output ones are involved in adding value to the point that a product is finalised. This conceptual mechanism can be readily understood and applied in the context of physical-goods production but, as noted, it is increasingly being applied to the production of services too. Were the value chains to remain internalised within one enterprise within a single country, they would be of limited interest—and then mainly to the business economist. The fact that they have also become distributed both geographically within a single enterprise as well as across different ones means that they have become of interest to the trade economist.

In the globalised economy, especially with regard to certain ICT services that are hardly affected by physical distance (such as outsourced help desks), developing nations now have an opportunity to enter value chains in a manner that a few decades back would have been simply impossible. Multinational enterprises of varying sizes can optimise their production process by distributing it globally, and so bring down costs and increase efficiency. In the ICT sector, the most obvious form of globalised value-chain practice is offshoring, whereby a component of production is moved to an affiliate in a different country—and possibly a different continent (Abramovsky and Griffith 2006; Bartel et al. 2005). An affiliate of Amazon Web Services (AWS) based in Cape Town is an example of this (more on this later). A related form of dispersion of ICT value chains is outsourcing, whereby production of a component is outsourced to a domestic or foreign enterprise (Huws et al. 2004; Stuart 2015b; Sturgeon and Gereffi 2009). The most well-known example of offshoring and outsourcing in the ICT sector relates to the role played by India in the distributed value chains of many multinational enterprises such as Dell, Hewlett-Packard, Oracle, Schlumberger and Texas Electronics (Business Maps of India 2017; Khan et al. 2003; Walsham 2010).

These new approaches to fragmenting production are not exhaustive, but remain the most common forms found in the ICT sector. The existence of global value chains (GVCs) of these types is undisputed, however regional value chains (RVCs) are less well known in the ICT sector, especially in the case of Africa. Considering that there appear to be major opportunities for Cape Town's ICT sector as a hub for Africa, meaning for RVCs, particular attention is paid to this issue in the empirical analysis presented in this chapter. The first part of this study involves the basic arrangement and presentation of data sourced from Statistics South Africa and the World Bank. Use is made of the Visual Understanding Environment Tool from Tufts

University to present input–output figures for supply-use data. World Bank data used is that from the Export Value Added Database. Both these statistics disseminators use standard data collection and cleaning techniques to ensure data integrity. More information hereon can be found on their respective websites.

The only way currently to source information on the value-chain positioning of a firm is to ask it directly, because there exists no publically available database with this information. For this reason, a survey form was designed using the aforementioned seven features of the value-generating environment. The firms were asked to describe their basic features, the stages of production of their main service, the potential involvement of other parties in the production process and governance, the existence or potential for upgrading and/or extending the value chain of the service, the regulatory environment (if relevant), the main stakeholders and their roles as well as issues with access to market, training, industry coordination and finance. The author then attempted to draw out insights from the responses, and to generalise them where possible. Of the sample of 11 firms approached, only a small proportion responded to the request for feedback (which was by means of Google Forms). There were four responses in total, and by no means is it implied that they are somehow representative of Cape Town's ICT sector in its entirety. The respondents were not obligated to provide the name of their company. In the event, two of the respondents declined to name their company and two did not. For the sake of symmetry, no company names are disclosed at this point.

3 The ICT Sector in Southern Africa: Linkages and Supply-Use Flows

Services are primarily forward-linked flows of value. In other words, the value streams from services are primarily inputs into the production of other services and goods rather than being themselves finally consumed. The ICT services sector is no exception to this, and is in fact one of the more forward-linked such sectors. Based on calculations regarding data contained in a World Bank (2015) database and reported in Stuart (2015a), the ICT sector has a ratio of forward to backward value added for Africa of 4.5 to 1. This means that for every 1 unit of value absorbed by the sector, 4.5 units thereof are input into other sectors.

This forward-heavy relationship can be better understood by visualising it in a flow diagram. Figure 1 presents regional-export-value-added flows for the business services and IT sectors for the Southern African Development Community (SADC). The figure shows value flows as arrow-headed lines, the weight of which reflect the size of the value flow. As is evident from the figure, the backward linkages (the lines on the left-hand side) are lower-value flows than the forward ones (the lines on the right-hand side). Mining and primary industries, which make up seven of the top ten export sectors in SADC, are important buyers of IT services as well as machinery (also in the top ten) and chemicals.[1] This pattern is due to IT services' nature as

[1]These trade patterns can be verified by using data from an online portal such as: http://www.trademap.org.

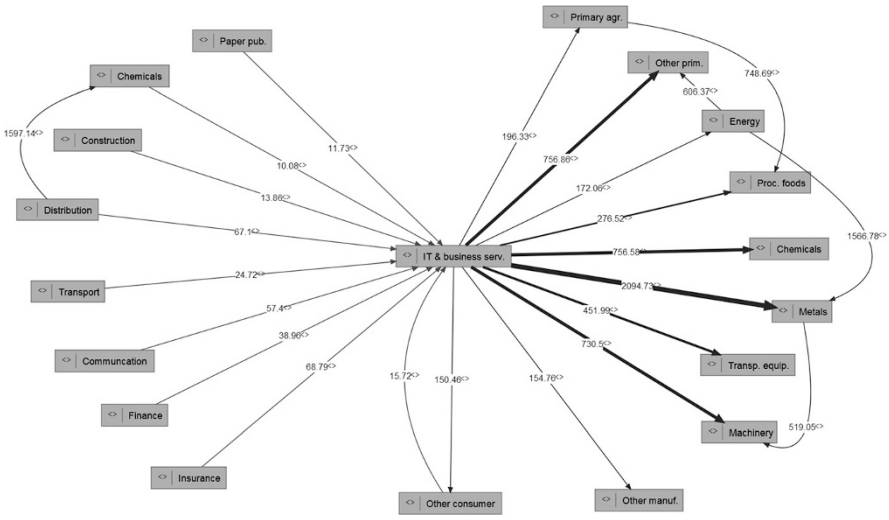

Fig. 1 SADC export value added in IT business services. Source: Author's own compilation, based on data from the World Bank (2015)

generic back-office ones rather than as specific services—such as mining engineering or research chemistry.

The importance of the ICT sector as a provider of intermediate value can be further explained by visualising the supply-use flows for the sector. This data is not the same as the export-value-added data provided by the World Bank, which shows the linkages between goods and services industries. Although the database is referred to as the Export Value Added Database, it contains two matrices—one of them focussed on export value added and the other on value added to domestic production. The supply-use tables published by the South African Statistical Service (or Statistics South Africa) show the linkages between an industry and the type of upstream or downstream activities linked to the industry. These tables are accounting in nature, in that the total of supply items should balance with the total of use items.

Figure 2 visualises the supply-use relationship for the South African ICT sector in aggregate. The sector's role primarily as a supplier of intermediate goods and services is evident from this figure, with intermediate usage of the ICT sector's output at 63%—as against only 24% used by domestic households. Imports are also very important, accounting for 31% of the value of inputs into the sector, with domestic output at 61%. By contrast, exports are only 8% of the usage of the domestic industry's output. The sector can, therefore, be characterised in aggregate as an intermediate industry with high import content.

The ICT sector can be disaggregated into six sub-sectors, as presented in the left-hand column of Table 1 below. Salient features of the supply-use relationships for these sub-sectors are presented in the same table. Figures 3, 4, 5, 6, 7 and 8 show supply-use data for these six sub-sectors. The data has been visualised in the same way as for Fig. 1 above. It is evident that the service-based sub-sectors are quite

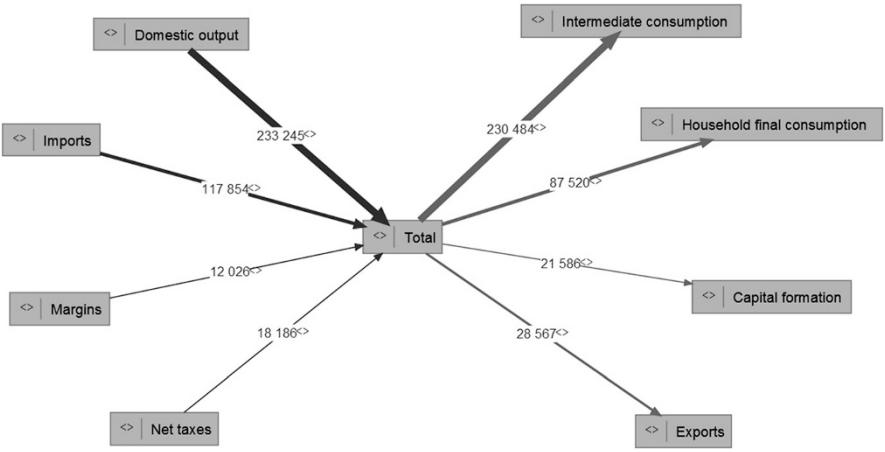

Fig. 2 Supply-use flows for the South African ICT sector (Total). Source: Author's own compilation, from data in Statistics South Africa (2017). Note: Margin means the difference between revenue and the cost of sales plus overhead. Net taxes are the effective tax liability of the sector

Table 1 Supply-use characteristics of six South African ICT sub-sectors

Sub-sector	Characteristic features
Office, accounting and computing machinery	Imports account for 76% of inputs
	Output destined for intermediate uses is nearly double that for final consumption
	Highest percentage of capital formation of any sub-sector at 61%
Radio, television and communication equipment	Imports are 61% of inputs
	Share of output to intermediate use is 73%, final consumption only 18%
	Exports are only 5% of output
Miscellaneous ICT components and goods	Domestic output is 55% of input into this sub-sector
	Share of output to intermediate use is 76%, final consumption only 6%
	Margins are relatively high for this sub-sector, probably due to lower reliance on imports
Leasing or rental services without operator	99% of inputs into this sub-sector made up of domestic output
	93% of output to intermediate uses, only 7% to final consumption
Other professional, technical and business services	Imports are only 5% of inputs into the sub-sector
	Exports are only 6% of output, making this a largely domestic, non-traded sub-sector
Telecommunications, broadcasting and information supply services	84% of inputs are sourced domestically
	56% of output is to intermediate uses, 34% to final consumption

Source: Author's own calculations, based on Statistics South Africa (2017)

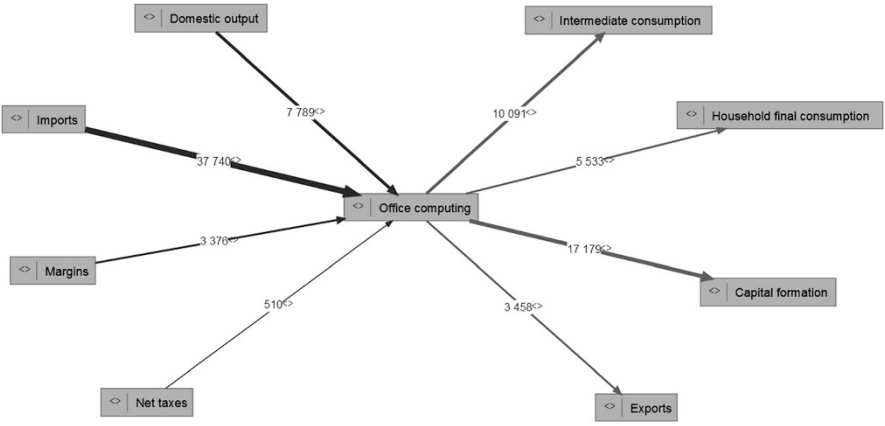

Fig. 3 Supply-use flows for office, accounting and computing machinery. Source: Author's own compilation, from data in Statistics South Africa (2017)

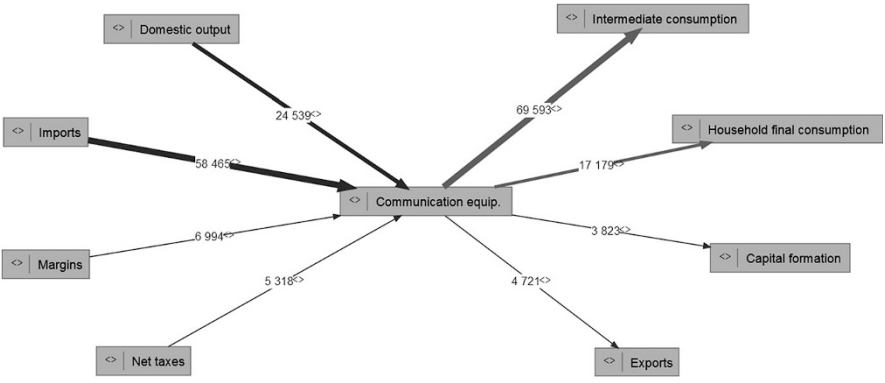

Fig. 4 Supply-use flows for radio, television and communication equipment. Source: Author's own compilation, from data in Statistics South Africa (2017)

different from the goods-based ones; these important differences are lost when considering only the aggregate data. Notable features of some of the sub-sectors are:

- Leasing or rental services without operator: Since this sub-sector involves leasing and rental of equipment, its supply-use structure is unique. It is based almost entirely on domestic output and domestic business consumption.
- Other professional, technical and business services: This sub-sector is service-based and highly focussed on intermediate demand. Intermediate consumption is 92% and final consumption is only 2%. Unlike leasing services, however, it does have a small import component.
- Telecommunications, broadcasting and information supply services: This sub-sector is also service-based but a little more traded internationally than the previous sub-sector. Imports and exports are both approximately 10% of total

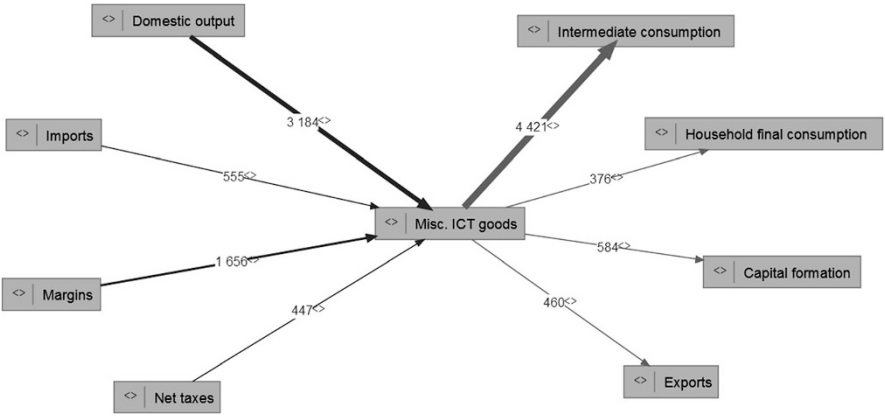

Fig. 5 Supply-use flows for miscellaneous ICT components and goods. Source: Author's own compilation, from data in Statistics South Africa (2017)

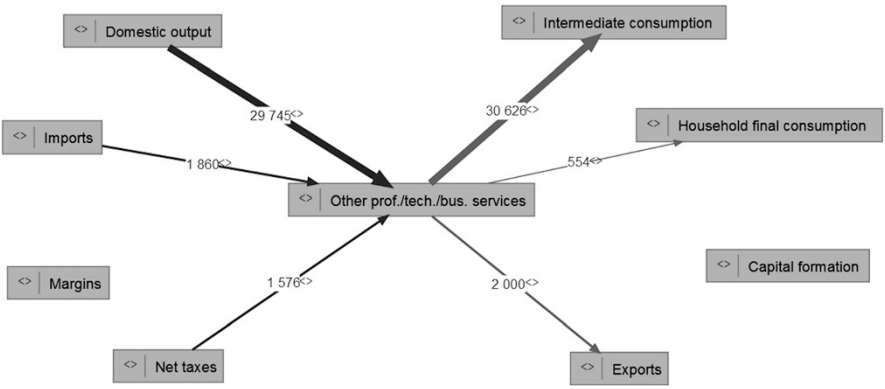

Fig. 6 Supply-use flows for other professional, technical and business services. Source: Author's own compilation, from data in Statistics South Africa (2017)

input and output respectively. The sub-sector is also more geared towards final consumption than the previous two sub-sectors.

Figures 3, 4, 5, 6, 7 and 8 also suggest that within South Africa, the ICT sector's main supply category is domestic consumption, followed by imports. The main uses of the sector go to intermediate consumption (business to business, or B2B), with final consumption being only about one-third of the value. The service-based sub-sectors are different from the goods-based ones: the latter are mostly involved with importing equipment and supplying it to intermediate and final users, whereas the former primarily generate value from domestic skills and supply it to intermediate users.

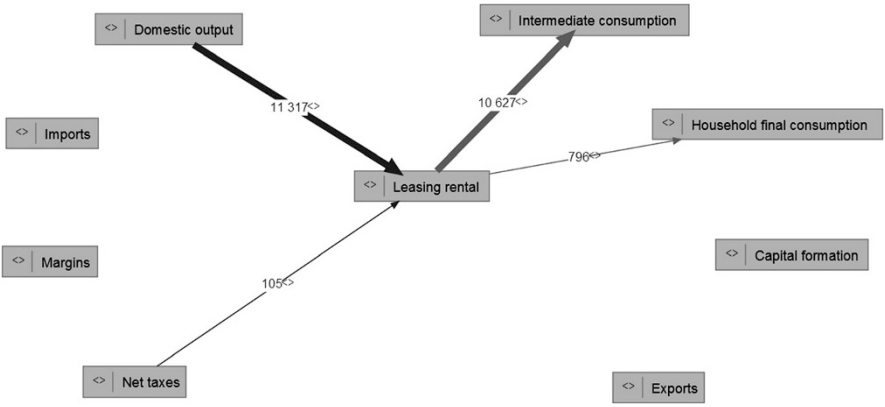

Fig. 7 Supply-use flows for leasing or rental services without operator. Source: Author's own compilation, from data in Statistics South Africa (2017)

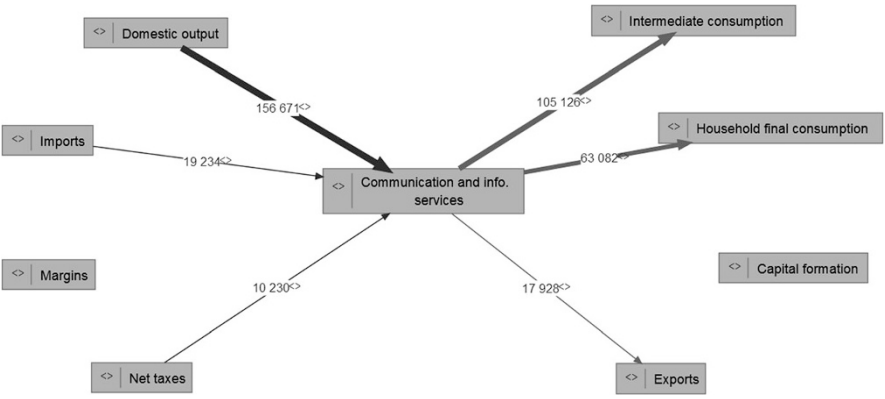

Fig. 8 Supply-use flows for telecommunications, broadcasting and information supply services. Source: Author's own compilation, from data in Statistics South Africa (2017)

4 The ICT Sector in Cape Town: Outstanding Firms and Survey Results

> 'If you're launching a tech start-up in Africa, [Cape Town] is the place to be. It is the most mature economy in terms of tech support, so to be part of that community and that hub and that wave was very important for us.' Thatoyaona Marumo, chief operating officer of Domestly (quoted in City of Cape Town 2017: 3)

Cape Town has a well-documented pedigree as an investment city for ICT in South Africa. It is the location of choice for tech investors and start-ups for a number of reasons. The city is a hub of technology companies, ranging from micro start-ups in the drone-data industry such as Aerobotix to outsourced sub-divisions of massive

multinationals such as AWS. Cape Town provides a large talent pool of diverse skills, fed into by a number of high-quality tertiary institutions. It is also a concentration of venture capital and angel investors focussed on the sector.[2] Public institutions actively encourage the ICT sector, and there is a network of support services such as fibre connectivity and strong infrastructure (Carstens 2013; Wesgro 2013). This set of characteristics has contributed to historical and forecast growth for this sector, which eclipses that for any other services sector in the Western Cape (shown by Fig. 9 below). The strong technology sector presence in Cape Town has given rise to several initiatives to encourage collaboration and networking among market players. The most prominent of these are listed in Table 2.

Of these initiatives, only CITi has included the development into Africa as part of its mission. The creation and fostering of RVCs is not a specific prerogative of any of these entities, which are instead focussed on developing the hub that is already established in the Cape. However before regional collaboration can become a reality, sector development in African countries has to progress to a certain level. This requires investment of both human and financial capital, and one way this technology transfer takes place is by foreign direct investment (FDI).

When examining data for FDI into the ICT sector in Africa, it is obvious that South Africa is the primary destination herein—attracting 204 projects, or 22% of the total number of them between 2003 and 2014. Johannesburg is the top-ranked

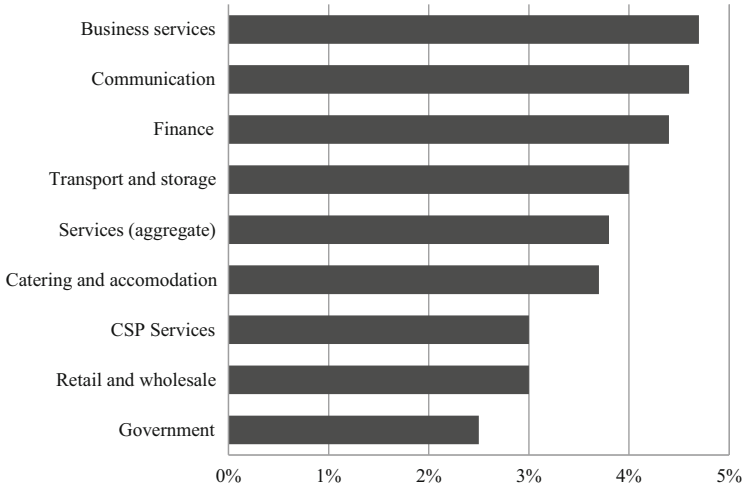

Fig. 9 Forecast growth for the services sector in the western cape. Source: Western Cape Government (2013). Note: Data is per year for 2013–2018. The category of business services in this figure includes computer services. CSP refers to community, social and personal services

[2]An angel investor, also known as a business angel or seed investor, is an affluent individual who provides capital for a business start-up, usually in exchange for convertible debt or ownership equity.

Table 2 ICT sector collaborative initiatives in cape town

Name	Website	Description
Cape IT initiative (CITi)	www.citi.org.za	non-profit organisation tasked with developing an IT hub in the Western Cape and further afield into Africa; bridges between government and the private sector
Bandwidth Barn	www.bandwidthbarn.org	subsidiary of the CITi, an IT business incubator; supports ICT entrepreneurship in the Western Cape and has graduated more than 50 businesses
Silicon Cape Initiative	www.siliconcape.com	non-profit organisation with 4000 members; focussed more on awareness-raising and public relations than on business incubation; dedicated to establishing the local IT sector as a world-class IT hub in Africa
South African Business Link to Experts Accelerator (SABLE)	www.sablenetworks.com	international group that helps entrepreneurs and innovators commercialise technology and access markets
InnovUS	www.innovus.co.za	Stellenbosch University company for technology transfer and commercialisation, development and support of technological innovation; supports staff and students of the university

Source: Wesgro, City of Cape Town and PwC (2013)

city for inward FDI, with Cape Town ranked sixth, receiving 30 projects for this period. South Africa also contributed most outward FDI investment into Africa (compared with other African countries), initiating 65 projects from 2003 to 2014. The majority of FDI projects into Africa were capex-based and involved communications infrastructure. Software and IT services accounted for approximately 30% (Wesgro 2015). Western Cape outward FDI into Africa is primarily based around services—software and business services, to be precise—with the category of communications technology only ranking sixth out of six. This reflects the fact that the Western Cape is more focussed on software and business services than Johannesburg, which is more geared towards communications: the mobile communications company MTN is the top South African investor in Africa. Interestingly, for the period from 2003 to 2014, there was more outward FDI from the Western Cape into the rest of Africa than the reverse, and the investment from Africa into the Western Cape was based around the communications sub-sector (Wesgro 2015). This shows that, unlike the developed world, Africa has not yet leveraged the business and software services strengths of the Western Cape ICT industry.

To better understand the nature of the Cape ICT sector, it will be worthwhile to briefly survey the leading companies in the sector since these essentially define the sector. Their successes and innovations are reflected in many of the smaller, satellite ICT businesses that share their environment. The following paragraphs draw primarily on a joint publication by Wesgro, the City of Cape Town and PwC (2013).

- Naspers is primarily a media-technology company, providing, for instance, digital-pay television. It also owns the massive Tencent messaging platform in China, and has interests in e-commerce, advertising and content provision. Naspers is a multinational company with investments primarily in other emerging markets (both BRICS and Africa), indicating an ability to identify opportunities and take risks. It has bought existing businesses and has actively expanded South African-grown ones such as Kalahari.net into Africa.
- Fundamo is a multinational company founded in Cape Town. It is a mobile-payments facilitator to the unbanked sector in the developing world, both Africa and Asia. In 2011, it was acquired by the multinational payments giant Visa.
- Clickatell is a mobile-messaging enabler to private sector and governmental entities. It enables custom messaging platforms to be developed to facilitate communication between entities and their clients. It is heavily Africa-focussed, with multiple clients across the continent.
- ACI is the ultimate owner of a Cape Town start-up—Mosaic Software—that created an electronic payments enabler called Postilion in the late 1990s. The system is now one of the top four global payments providers with presence in Africa, the Asia-Pacific region, Europe, the Middle East and the United States.
- AWS is a hardware and software service provider to a wide array of companies, from micro-enterprises to huge multinationals like Instagram and Netflix and even public organisations like the National Aeronautics and Space Administration (of the US). AWS has a developer support team based in Cape Town, and this operation has shown steady growth since its inception in 2005 as the Cape Town Amazon Development Centre.
- Entersekt is a payments-authentication service aimed at the mobile-phone platform. The software allows users to authenticate communication directly between their mobile phone and their banks' servers. A Cape Town-spawned business, Entersekt, has grown since its inception in 2008 to a point where it has branch offices in the United Kingdom and US.

These firms are a sample of the leading firms in the sector. All of them are internationally integrated, most as parent companies or original parent companies. Only one—AWS—is a subsidiary of a larger global enterprise. This demonstrates the extent of innovative and creative talent in the sector in Cape Town. It attests to the effectiveness of private venture capital funding in the sector. Given the international profiles of these firms, it would be valuable to understand the extent of their participation in global or regional value chains but corresponding data is not freely available. The following paragraphs now present data from the aforementioned survey of four Cape Town-based ICT companies in order to better understand the nature of value chain-participation.

The responses that were received to the survey template provide raw feedback from each of the four unique firms. Each produces a different service and only one—company 3—is primarily focussed on the domestic market, on web development to be precise. The other three are international companies either in terms of their client base (demand side), global integration of their production (supply side) or both. This

represents an interesting cross-section of enterprises, even though it is not possible to say to what extent they are representative of the rest of the industry. In order to draw out common threads, to the extent that they are even present, a summary of results by theme is presented next.

Of the four firms, only one—company 2—is integrated into a third-party value chain, and this is a GVC rather than a regional or local one. There was no evidence of regional or local value chains in the sample. The firm integrated in a third-party value chain is the youngest and smallest of the sample, and this could mean that in the longer term it would be motivated to extend its production process so as to absorb the component that is now contributed by a third party. Also notable is that company 2 is the lead firm in the value chain, in that it is responsible for around 75% of the production process and maintains governance of it in its entirety.

Three of the firms in the sample have been involved in upgrading their service offering over time, two of them strongly so. This includes company 2, implying that at one point in the firm's life it was not the lead firm in the production process. Furthermore all firms identified the need to continue to advance up the value chain, in the sense of producing a more sophisticated service that embodies higher-skilled labour and more specialised resources. In fact, this is not only desirable but essential in the ICT sector—to avoid redundancy. More so perhaps than with any other sector, to fail to progress in the ICT sector is to regress rather than merely to stand still (Gibson 2017). Only one of the firms has entered a new value chain over the course of its life, but three have extended the scope of their production processes to cover more of the value chain over time. The only firm that has not upgraded is company 3.

The responses to questions on the regulatory environment were as diverse as the companies included in the sample. In terms of local legislation, company 2 felt hindered by the Financial Intelligence Centre Act (FICA) and the Financial Advisory and Intermediate Services Act (FAIS)[3]; company 1 by the Independent Communications Authority of South Africa (ICASA) and the Protection of Personal Information Act (POPI) meanwhile.[4] Company 4 mainly serves the US market and so is not affected by South African legislation, at least within the delivery of its service. However, this firm's response did indicate that unfamiliarity with the sports media establishment in the US and corresponding policies did impact on them.

Two of the firms cited venture capitalists as their most importance stakeholders, indicating the sensitivity of the sector to funding availability. The ICT sector itself is only a few decades old, and this is very young compared with other services sectors such as finance and transport. In addition, the industry is volatile—with a rapid rate of redundancy and the keen presence of bubbles. Funding support is therefore critical, especially for younger businesses and those operating in more contested

[3]FICA deals with money laundering and tax evasion and FAIS with consumer protection on insurance products. Both increase the regulatory compliance burden with regard to payments processing, especially international payments.

[4]ICASA is a regulatory body in the communications sector. It has been accused of gross inefficiency and poor management practices. POPI prescribes much stricter requirements for the management of online personal information.

markets. Access to training was not cited as an issue by any of the companies, confirming earlier points made about the quality of tertiary education and training providers in the Cape Town area. Two of the companies noted that self-training is possible simply through accessing online resources.

Three firms in the sample are primarily B2B focussed; one firm exclusively business to customer (B2C) focussed. Market access issues are diverse, with stiff competition being a problem for the B2C firm, while the B2B firms face challenges with direct marketing (referrals being more successful). Information asymmetries were also cited—whether on the part of the firm about the market (company 2) or on the part of the client about the service offering (company 4). This is interesting given that we are living in the information age; however, it has sometimes been suggested that there is too much information now, leading to diminishing returns and the excessive need to search for what one is looking for.

With regard to access to collaboration and coordination with other industry players, company 2, which provides software as a service (SAAS) and is involved in the application programming interface (API) business,[5] noted that: 'Being in South Africa, we are not close to the global tech hubs and the tech communities that develop there. South Africa is too small to have significant communities focussed on specific technologies'. This is interesting because none of the other respondents made a point along these lines. This younger, more globally integrated firm is clearly aware of being somewhat isolated in South Africa. This could indicate pressure towards more concentration of the global ICT sector, to Silicon Valley in the US for example, suggesting that as advanced and vibrant as the ICT sector in Cape Town is, its role as a small satellite of the global sector is not surmountable without significant market penetration above the current level. This is where the potential of the African market becomes significant. If Cape Town's ICT sector can continue to draw on the global sector and remain at the cutting edge technologically, it could find the regional market opening up to it in the near future—with the benefits of economies of scale and scope allowing the sector to grow to the point where it is a major, not minor global player.

For such a growth strategy, access to finance would be critical. Yet, two of the companies had a similar criticism of the local venture capital market: according to them, South African investors are mainly interested in going concerns and are not, therefore, true venture capitalists at all. Company 4 compared this with the US, where venture capitalists are—from that company's perspective—more interested in investing in potential growth in value than in current cash-flow performance. Furthermore, it was criticised that, in South Africa, the typical quantum of funding is not sufficient to seed a business and that low-growth, stable companies are given preference over riskier potential stars. It becomes clear from the survey that at least

[5]Providers of SAAS sell a continually beneficiated application platform to clients. For example, Windows 10 is such a product. Its licensing rights include regular beneficiation of the operation system application. An API is a software tool that allows clients to develop their own software modules to uniquely access and manipulate the data marketed by the service provider.

one firm—company 3—has completely bootstrapped itself and sees no need for venture capital funding. As impressive as this is, for every firm that makes it against the odds many more potential success stories never see the light of day due to poor financial and regulatory support.

5 Conclusion

This chapter has examined the ICT sector in Cape Town within the broader context of the South African ICT sector. This sector is primarily forward-linked with respect to other industries, playing a very important role in the main production sectors in SADC and South Africa: chemicals, machinery, metals, transport equipment and primary production. Within South Africa, the sector's main supply category is domestic consumption, followed by imports. The main uses of the sector go to intermediate consumption (B2B), with final consumption being only about one-third of the value. The service-based sub-sectors are different from the goods-based ones: the latter are mostly involved with importing equipment and supplying it to intermediate and final users, whereas the former primarily generate value from domestic skills and supply it to intermediate users.

Cape Town's ICT sector is a globalised and leading services sector in Africa. Many firms in the sector—not just the large multinationals—have international clients, financiers, investors, partners and suppliers. The sector is more than the sum of its parts, because it rests on a localised hub of diverse enterprises, financier support, a skill pool, local and provincial government support, as well as a strong physical infrastructure. It is the fastest-growing services sector in the Western Cape. Despite the commercial presence of some of the larger ICT enterprises from Cape Town in parts of Africa, when it comes to investment the sector is relatively isolated from the rest of the continent, with little exchange of FDI with the region. This suggests that, unlike the developed world, Africa has not yet leveraged the business and software services strengths of the Western Cape ICT industry.

The empirical section of this paper presented the results of a survey taken by a sample of four ICT firms from Cape Town. These case studies are not necessarily representative of the industry, but the sample is relatively diverse and the results do offer some relevant insights:

- The youngest and smallest of the firms is the most globally integrated in terms of its value chains.
- Funding was cited as one of the most important success factors. Two of the companies took issue with the local venture capital funding sector due to its emphasis on stable cash flows over growth potential. They also pointed at insufficiencies regarding the quantum of funds typically available.
- Market access issues appear to be caused by information asymmetry, both among potential clients and with the firms themselves.

- Despite the perception of Cape Town as a leading ICT sector hub, at least one company finds the local sector to be too small to generate a collaborative impetus in the area of their speciality.
- Only one firm has been established by bootstrapping, and it appears to be the least aware of the importance of value chain-upgrading.

Cape Town's ICT sector is without doubt the leading such sector in Africa, and probably one of the leaders in the Southern Hemisphere. Since many of its firms are already relatively advanced, there is probably far less scope for value chain-upgrading than in other local sectors such as agriculture or mining. However, the sector has the potential to play a leading role in Africa and the broader Global South through collaboration and technology transfer. In order for its potential to be realised, the funding model available to dynamic and cutting edge micro-enterprises and small enterprises has to be revised to make it more relevant and helpful to this local industry.

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Tradable Services, Value Chains and the Gauteng Economy

Ivan Turok and Justin Visagie

1 Introduction

The contribution of service industries to national and regional economic development is subject to increasing debate. For centuries, manufacturing has been seen as the catalyst for growth and services as subordinate because material goods are more easily traded than services—most of which are for local consumption. It has also been simpler to raise productivity in manufacturing, and exports of goods generate larger multiplier effects (Kaldor 1967; Thirlwall 1983). However, the spread of digital technologies and the falling cost of air travel mean that service industries have become less dependent on local demand and more able to access external markets. Knowledge-intensive producer services have become increasingly important because of the improvements that they can trigger in the quality, cost and functionality of manufacturing, mining and agricultural products as well as processes (Doloreux et al. 2000). This is relevant to many African countries, which are struggling to transform from primary sectors to secondary and tertiary industries in the face of intensified international competition and weak domestic capabilities (Ghani and O'Connell 2014). Perhaps there is a complementary path to economic development through tradable services (Balchin et al. 2016; Ghani and Kharas 2010; Loungani et al. 2017; Zahler et al. 2013)?

Changing patterns of global trade and resource flows are also relevant. Concerns about the unequal effects of globalisation have provoked growing interest in regional economic integration—that is, flows of tangible goods, finance and information within continents. The latest example is an agreement signed by 44 heads of state in March 2018 to create the African Continental Free Trade Area. This is intended to simplify and standardise the rules and procedures governing intra-African trade, and

I. Turok (✉) · J. Visagie
Human Sciences Research Council, Cape Town, South Africa
e-mail: iturok@hsrc.ac.za

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thereby help to expand and diversify African economies. Exports of most countries continue to be dominated by raw commodities, while imports consist mostly of finished goods to which value has been added elsewhere (African Development Bank 2017). Regional integration could create larger markets to attract foreign direct investment and economies of scale in production and distribution to make African firms more competitive. Localised clusters of related firms buying, selling and servicing each other might be better placed than isolated enterprises to gain a stake in global value chains (GVCs). Regional integration could extend to a host of services or tasks such as banking, design, higher education, engineering, insurance, logistics, research, telecommunications and specialised training (Lanz et al. 2011). This would improve human capital, connectivity, access to finance and innovation across the continent.

The argument for taking tradable services seriously extends beyond their direct export opportunities to their potential for embedding GVCs. Strengthening high-order service functions could enhance the position of regions in these systems and networks by upgrading their technical abilities and simultaneously increasing output and jobs among domestic suppliers of related goods and services (Fessehaie 2017; Heuser and Mattoo 2017). In other words, high-level tradable services could bolster other industries by improving their competitive strengths and opening up new markets. For example, built-environment professionals designing major housing projects, office parks or shopping centres in other countries could smooth the path for construction firms and their suppliers to build these. Consulting engineers—designing electricity networks, renewable-energy systems and other infrastructure schemes—could open the door to manufacturers of building materials and capital equipment to supply these facilities. Further business opportunities could arise from the ongoing operation of these installations, including maintenance, repair and the logistics to ensure reliable supplies of the necessary inputs.

These issues are highly relevant to South Africa, the largest and most diversified economy in Africa. It has relatively robust capabilities in various secondary and tertiary industries and a well-developed economic infrastructure. It also has a financial system and universities that are rated highly by international standards, and accredited professional associations offering reservoirs of technical know-how and managerial expertise. In recent years traditional manufacturing sectors have suffered from international competition, whereas many service activities have performed much better (Luiz 2016). These include tradable services such as tourism and various business and financial services, which have tradable elements such as call centres and other outsourced functions. Nevertheless, the overall performance of the economy has been sluggish and unemployment is very high. In contrast, many African economies have been growing relatively quickly, matched by faster demographic growth and consumer spending than in South Africa. With the projected three-fold increase in the population of African cities by 2050, burgeoning urbanisation presents immense possibilities for supplying all kinds of tradable services.

The question arising is whether these trends offer genuine markets and customers for go-ahead firms in South Africa that face depressed domestic circumstances. In principle, superior knowledge of operating conditions on the continent should confer

an advantage over competitors from the Americas, Asia and Europe. Spatial proximity should make it easier for firms to work closely with clients to co-produce solutions to infrastructure bottlenecks and business obstacles. Working across similar time zones should also help service providers to meet the real-time needs of customers elsewhere in Africa (Stein and Daude 2007). South African companies have considerable technical proficiency and know-how in industrialisation, infrastructure planning, mining and advanced urban services that could support development on the continent. Public and private sector actors have a long-term interest and incentive to improve Africa's prosperity and governance because they stand to benefit from the commercial opportunities and social stability that would follow. The question is whether knowledge-rich producer services supplied by firms in South Africa could promote collaborative ventures, regional value chains (RVCs) and economic integration across the continent.

The purpose of this chapter is to assess the importance of tradable services to South Africa's economic heartland, the province of Gauteng: Which services are most significant, and to what extent are they engaged in international markets and value chains? Given the lack of prior research on this theme, the chapter provides a preliminary analysis to see what can be learnt from available secondary data sources. The research presented here is the first output from an ongoing study to assess the role of tradable services. Gauteng is the focus of attention as the country's (and continent's) largest city-region economy with the most potential to function as a gateway, supplying a range of high-order services within RVCs.

2 Conceptual Issues

Contemporary globalisation is characterised by the deepening and widening of economic interactions and resource flows between countries. Deepening means the fragmentation of production through heightened trade in intermediate inputs and greater specialisation of firms in narrow capabilities that make up GVCs (Kaplinsky 2013). Final goods delivered to markets emerge from a complicated series of horizontal and vertical exchanges that span continents, combine components from diverse sources and embed many different services in the whole process. Widening reflects the pervasive pursuit of policies aimed at opening up markets and levelling the playing field to facilitate trade by reducing traditional tariffs and quotas, harmonising different regulatory standards and lowering local content requirements and other non-tariff barriers.

It is no longer a question of whether to participate in the global economy but how to do so in the most advantageous manner possible (Kaplinsky and Morris 2016). Firms within developing countries often struggle to break out of the lower-value, price-sensitive parts of value chains. These countries' rich deposits of agricultural produce and minerals may be extracted without benefiting from downstream processing and value addition. Firms within advanced economies tend to locate their production in regions where the capabilities exist to generate sustained returns

on their investment. Their activities can be protected from competition through internal sources of advantage such as technical adaptation, product differentiation, innovation and/or through access to external assets—such as experienced human capital, superior infrastructure and specialised suppliers (Fessehaie 2017). Within clothing, electronics and textiles, for example, leading multinationals outsource their routine manufacturing processes and instead focus on capturing value within high-order product design and branding activities (Gereffi 1999).

Services have become increasingly important and profitable elements of GVCs. They may offer alternative or complementary paths to manufacturing-led export growth (Ghani and Kharas 2010; Ghani and O'Connell 2014). Service exports are the fastest growing portion of world trade, having risen exponentially from 9% of global exports in 1970 to approximately 20% thereof in 2014 (Stephenson and Drake-Brockman 2014; World Bank 2018). Technical change has reduced the friction of distance through advances in telecommunications and international travel. The Internet and other digital technologies have standardised some service and knowledge inputs, thereby diminishing certain forms of face-to-face interaction (Fessehaie 2017). As services have become more tradable, the opportunities to do business across borders have multiplied. Some developing countries appear to have successfully grown their service exports twice as fast as advanced economies (Loungani et al. 2017). South Africa may be well positioned to take advantage of such opportunities, with a highly educated section of the population and a higher share of tertiary activities in its gross domestic product than other strong service exporters such as India or the Philippines (McKinsey 2015). It also has language and time-zone advantages to compete for lower-value services such as call centres and tourism.

The role of services is bound to become even more important with the proliferation of disruptive new technologies, summed up in the notion of the 'fourth industrial revolution'—which arises from the fusion of biological, digital and physical innovations (Schwab 2016). High-level producer services can perform a generative role in GVCs as developers and carriers of knowledge and information, as well as diffusers of innovation. They can play a part in initiating economic change, monitoring progress and enabling learning and adaptation through advances in cloud computing, smart data, artificial intelligence, the Internet of Things and machine learning (African Development Bank 2017). Knowledge-rich services help to connect distant processes, make associations between diverse phenomena and facilitate communication and relationship-building. This fosters economic interaction, negotiation and deal-making, which are vital for creativity, mutual learning and innovation (Heuser and Mattoo 2017).

The complementary, intertwined relationship between services and manufacturing is reflected in the notion of the 'servicification' of manufacturing (Fessehaie 2017; Hallward-Driemeier and Nayyar 2017). Services embodied within the process of production may account for a significant and rising share of total value-addition. For example, a study of the Nokia N95 phone estimated that more than half of its value could be attributed to service activities such as software (Ali-Yrkkö et al. 2011). Bamber et al. (2017) estimate that as much as 40% of gross manufacturing

exports from the European Union may comprise embodied services. Without such inputs, manufacturing may become routine and get demoted to a subordinate position in global and regional value chains. Focussing on manufacturing improvements through industrial policy represents a false dichotomy in choosing goods over services. It might better be conceived as enhancing the productive sector more broadly (Kaplinsky and Morris 2016), especially if the propulsive role of tradable services is recognised. However, like many countries, policy mandates in South Africa tend to be confined within silos such as the Department of Trade and Industry and the Department of Communications, whereas these boundaries are increasingly blurred in the real economy.

A core ingredient of the service-based upgrading of the economy involves strengthening local capabilities. Advanced knowledge and technical expertise are crucial to improving the competitive position of business processes and products over time. The accumulation of such skills and aptitudes is a better predictor of service-export competitiveness than the degree of market openness (Sáez 2010). It requires nurturing human competencies, cognitive skill sets and creative talent through local institutions and service providers that enable selected industries and economic functions to develop in particular places (Farole and Sharp 2017). Firms that cluster together can benefit from the pool of proficient labour, technology spillovers, tacit knowledge, shared infrastructure and sophisticated suppliers (Glaeser 2011; Storper et al. 2015). Core specialisations can emerge that drive productivity growth and shape the development trajectory and identity of the local economy. These places may become centres of learning and know-how that function as service hubs for much larger geographical territories.

South Africa may be well placed, then, to support development elsewhere in Africa through its capabilities. The banking sector has expanded substantially across the continent since the 1990s, reflecting the locational advantages mentioned above. About 17% of South African banking revenue is generated from these operations. The insurance industry is less advanced, but there are similar prospects for South African brokers with experience in servicing low-income groups (McKinsey 2015). Shoprite is Africa's largest consumer retailer with 143,000 staff in stores across 14 countries across the continent (Shoprite Group 2018). Yet, other South African firms have not had anything like the same success. The telecommunications giant MTN was recently heavily fined in Nigeria and Uganda for infringing local regulations. Retailers like Nando's and Woolworths have often struggled to adapt to local market conditions. Nedbank's Africa strategy has significantly underperformed compared to Standard Bank's and Barclays's (*Business Report*, 8 March 2017). Firms seem to underestimate the importance of tailoring their products to suit local circumstances and traditions. Parachuting external consultants into unfamiliar environments is notoriously problematic, and guidance from the South African government to its firms engaged in service exports appears to have been thin on the ground.

Although trade between Africa and the rest of the world has expanded four-fold over the last two decades, intra-African trade remains low at 15–18% of all exchanges (African Development Bank 2017). At first sight, South Africa seems

to punch well below its weight in services: estimates suggest it accounts for less than 2% of total service imports into sub-Saharan Africa (McKinsey 2015). South Africa's industrial policy supports manufacturing and tends to neglect opportunities in services, with a few exceptions (Draper and Scholvin 2012; Farole and Sharp 2017). In contrast, China has shown how concerted efforts by the state can pave the way for commercial opportunities and regional investment by promoting high-level cooperation, encouraging skills transfer and deploying technical expertise strategically to design and develop dams, housing and transport infrastructure in many African countries (*Financial Times*, 13 June 2017).

South Africa has experienced de-industrialisation for several decades now, with manufacturing shrinking from nearly 25% of GDP in the 1980s to less than 15% thereof in 2016 (World Bank 2018). The economy was dominated historically by the extraction of minerals and capital-intensive production of aluminium, chemicals and steel. Rapid trade liberalisation during the 1990s resulted in many factory closures and contractions in the face of foreign competition. The government subsequently increased financial support for manufacturing, but this has not reversed its trajectory. Even within the automotive industry, which receives generous state subsidies and market protection, value-addition remains essentially limited to vehicle assembly—although roughly half of production is exported (Barnes et al. 2017).

Conversely, South Africa's reintegration into the global economy after apartheid has been accompanied by the growth of services—which have expanded from roughly half of GDP in 1980 to almost 70% thereof in 2016 (World Bank 2018). The continuing expansion of business and financial services set against the decline of manufacturing and mining might be interpreted as an indication of economic adaptability and structural transformation, especially if they are traded externally. However, from the evidence presented below, it seems that these services are largely dependent on domestic demand and have not yet realised their potential to drive economic growth in a more substantial way—both at home and abroad.

3 Data and Methods

To the best of the authors' knowledge, there has been little prior research on the performance and scale of tradable services in South Africa, including the extent to which they are susceptible to international competition and trade. The paucity of official statistics and firm-level data is part of the problem. Some inferences about their significance can be drawn from detailed labour market data on the structure and occupational profile of services. Tradable services are distinct from non-tradable ones in that they can be produced in one location and consumed in another. A high

concentration of production unrelated to the local population or demand—reflected by a high location quotient—is an indicator of such tradability.[1]

Identifying sector specialisations and niche skill sets requires highly disaggregated information. We make use of a novel source of pooled labour force data that combines four consecutive quarters of the Quarterly Labour Force Survey into one much larger annual survey; it is, therefore, more robust at a fine-grained scale. Capturing the monetary value of services within global and regional value chains is also very difficult. Their inherently intangible character causes complications where services are bundled together with other goods, rather than priced separately. Moreover, there is no universal accounting system for allocating value in relation to services. In this chapter, we make use of three complementary indicators for understanding the significance of knowledge-intensive tradable services: the structure of occupations and service industries respectively, and the pattern of cross-border trade in services too.

Industries vary in their technical sophistication and knowledge abundance. Their importance is measured by their absolute size and relative share of formal employment. We explore how the structure of services has evolved over the last decade, and which segments have performed relatively well. Occupations reflect distinctive tasks within the economy and complement the analysis of service industries, but cover different ways in which value-addition occurs. Professional and technical know-how can be sourced externally through specialised service firms or provided through in-house expertise. The growth of high-order cognitive skills required to improve business products and achieve operational efficiencies is of particular interest. Finally, balance of payments data from the WTO-UNCTAD-ITC Trade in Services Dataset allows us to consider whether local service industries are succeeding in foreign markets.[2] We consider the size of service exports in relation to total trade, and whether advanced services show potential for future growth.

A logical next step would be to focus on trade flows into Africa, but the dataset does not provide the country-level information that would enable this. An avenue for future research would be to use an experimental database from the WTO: namely, the Balanced Trade in Services Dataset, which attempts to construct a complete and consistent matrix of trade in services by triangulating trade information across

[1]The location quotient measures the share of employment in an industry within a region relative to the national share. A location quotient greater than 1 implies higher economic concentration. Less than 1 implies lower economic concentration.

[2]Flows of international service trade are identified according to the General Agreement on Trade in Services. They are classified into four modes of service supply: first, cross-border supply, meaning service delivered within the territory of the member country, from the territory of another member country; second, consumption abroad, meaning service delivered outside the territory of the member country, in the territory of another member country, to a service consumer of that member country; third, commercial presence, meaning service delivered within the territory of the member country, through the commercial presence of the supplier; and, fourth, presence of natural person, meaning service delivered within the territory of the member country, with supplier present as a natural person.

countries. One drawback to this dataset is that the period, ranging from 1995 to 2012, is somewhat dated.

4 The Significance of Tradable Services in Gauteng

Figure 1 presents a breakdown of formal employment in each of South Africa's provinces into three broad industry sectors. The primary sector combines activities related to the extraction of natural resources (including agriculture and mining) with fairly low value-addition. The secondary sector incorporates activities that transform raw materials into higher-value manufactured goods. The tertiary sector consists of the full spectrum of activities that serve producers and consumers, including personal and government services, retail and wholescale trade, public utilities and logistics, basic services such as cleaning and security as well as more highly skilled and technically advanced professional and business-related service activities. Gauteng stands out by virtue of the sheer size and concentration of its workforce in services. They constitute almost three-quarters of all jobs, which is noticeably higher than elsewhere. Employment in secondary industries is much smaller, but still sizeable in absolute terms compared with other provinces. Predominantly rural provinces such as Limpopo, Mpumalanga and the North West tend to have more people employed in primary industries for obvious reasons.

Figure 2 examines the Gauteng economy in greater detail by mapping employment growth (y-axis), economic specialisation (x-axis) and industry size (bubble size) across a nine-sector categorisation of local industry. Distinctive economic strengths of the region are reflected in industries with disproportionate clustering of activity relative to the national distribution, measured by the location quotient of

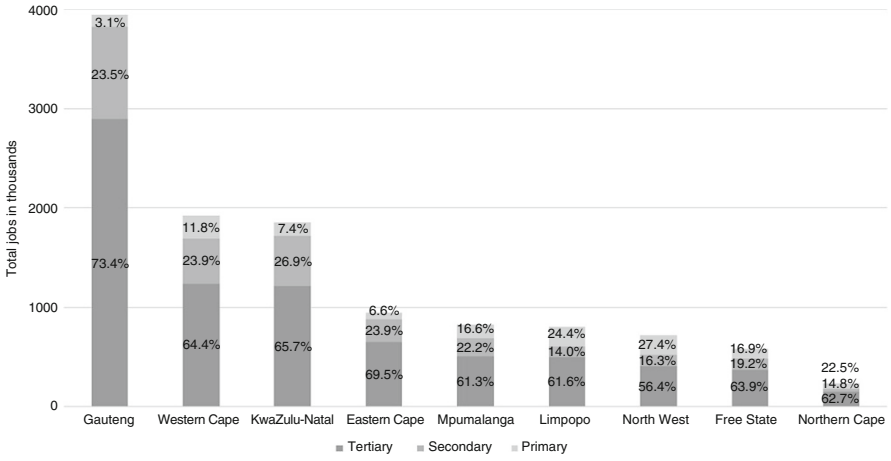

Fig. 1 Employment shares by sector and province. Source: Labour Market Dynamics in South Africa, 2008 (available online at: www.statssa.gov.za), own estimates

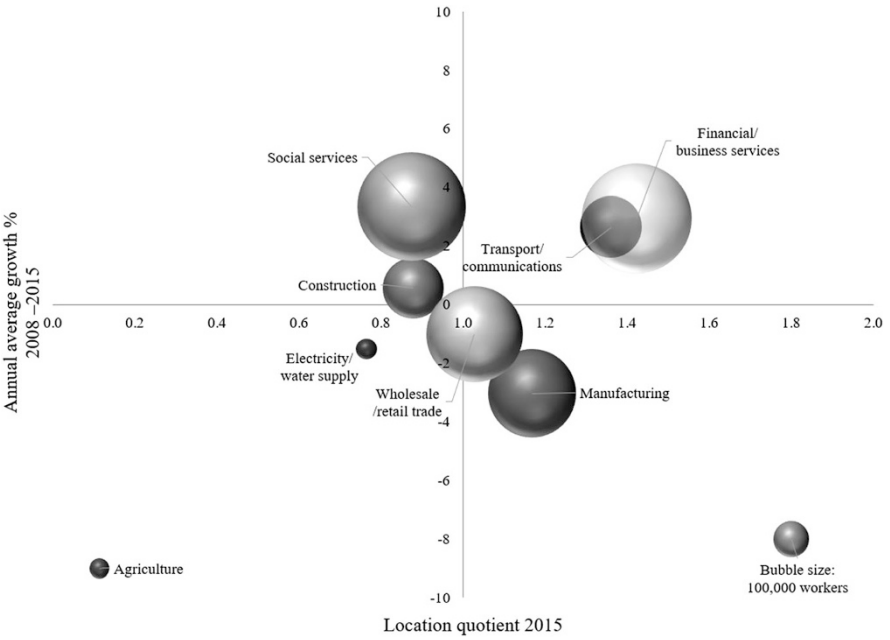

Fig. 2 Industry dynamics in Gauteng. Source: Labour Market Dynamics in South Africa, 2008 and 2015 (available online at: www.statssa.gov.za), own estimates. Note: Excessive growth in mining industry is not depicted

each industry.[3] Sectors that fall within the top-right-hand quadrant have experienced employment growth over the last decade, and are more strongly represented in Gauteng than in the rest of the country.

Gauteng's industrial structure reveals disproportionate employment in business and financial services, and in communications and logistics. The former are particularly prominent, contributing nearly a million jobs in 2015—equivalent to 25% of the total workforce (see also Table 1 below). Manufacturing is another area of relative strength, comprising more than 610,000 jobs—equivalent to 15% of the workforce. Historically, these components of the Gauteng economy were interdependent, reflecting backward and forward linkages between service inputs and the production of goods within local and regional value chains (Harrison and Zack 2012). The strength of these linkages today is not known. Retail and wholesale trade and social services employ very large numbers of people in Gauteng, but they serve overwhelmingly local customers and households and can, therefore, be

[3]The location quotient calculation is purely relative. For example, Gauteng has a social services location quotient of 0.87, which means there are fewer social services workers in Gauteng relative to the rest of its economy than nationally. Yet, in absolute terms, Gauteng still has by far the largest number of social services workers of any province.

Table 1 Employment and change in employment by sector in Gauteng, the Western Cape and KwaZulu-Natal

	Gauteng		Western Cape		KwaZulu-Natal	
	Employment 2015	Jobs 2008–2015	Employment 2015	Jobs 2008–2015	Employment 2015	Jobs 2008–2015
Agriculture	29,000 (0.7%)	−34,000	223,000 (11.6%)	70,000	128,000 (6.9%)	−2000
Mining	93,000 (2.4%)	59,000	3000 (0.2%)	1000	8000 (0.4%)	0
Manufacturing	607,000 (15.4%)	−145,000	274,000 (14.3%)	−53,000	302,000 (16.3%)	−50,000
Electricity and water supply	33,000 (0.8%)	−4000	16,000 (0.8%)	4000	16,000 (0.9%)	4000
Construction	288,000 (7.3%)	11,000	169,000 (8.8%)	3000	181,000 (9.8%)	27,000
Retail and wholesale	725,000 (18.4%)	−53,000	374,000 (19.5%)	16,000	308,000 (16.6%)	−50,000
Communication and transport	301,000 (7.6%)	51,000	99,000 (5.2%)	15,000	115,000 (6.2%)	−3000
Business and financial services	947,000 (24%)	174,000	339,000 (17.6%)	83,000	246,000 (13.3%)	−2000
Social services	919,000 (23.3%)	189,000	425,000 (22.1%)	79,000	547,000 (29.5%)	125,000
Total	3,942,000 (100%)	248,000	1,922,000 (100%)	220,000	1,852,000 (100%)	48,000

Source: Labour Market Dynamics in South Africa, 2008 and 2015 (available at www.statssa.gov.za), own estimates

regarded as essentially non-tradable. Unsurprisingly, the location quotient of these sectors is close to one for all provinces.

The overall performance of the Gauteng economy over the last decade has been lacklustre, with employment increasing by less than 1% per annum. This is slower than the growth in the working-age population, resulting in higher unemployment. Professional services outperformed most other sectors, although the rate of job creation was still unexceptional at around 3% per annum. A striking finding is that manufacturing firms in Gauteng shed almost one in five of their jobs between 2008 and 2015, meaning 145,000 in absolute terms (as shown by Table 1). These job losses were the result of factory closures and contractions, on the one hand, and higher productivity from work intensification and investment in new techniques, on the other.

The experience of the other metropolitan regions in KwaZulu-Natal and the Western Cape was similar in many respects. Total employment increased by 0.35 and 1.75% per annum, respectively. Both shed around 50,000 manufacturing jobs as well. Employment growth in KwaZulu-Natal has been very unbalanced and arguably unsustainable, with limited expansion beyond publicly funded social services. Growth in the Gauteng and Western Cape has comprised a mixture of social services and business and financial services. These are predominantly white-collar jobs, rather than the manual ones badly needed to reduce unemployment among low-skilled workers.

The sluggish performance of the overall Gauteng economy may hide important variations within a wider spread of service industries. Further disaggregation of the pooled labour force data is necessary to identify the knowledge-intensive sectors of particular interest to this chapter. Unpacking the data into 20 detailed categories is technically feasible, although the sample sizes in some instances are quite restricted. Therefore, the results should be interpreted with caution, particularly for niche industries such as architecture/engineering and advertising. Figure 3 shows that there is indeed considerable diversity across sub-sectors. Most of the employment in Gauteng's service industries seems to comprise somewhat routine and low-productivity services such as construction, hospitality, retail and wholesale trade as well as other business services. These made up two-thirds of all jobs in services, or 1.5 million workers in 2015. Roughly half of all jobs within 'other business services' are comprised of low-value and non-tradable private security services. Some of these sectors managed to create jobs at up to 4% per annum. This is respectable rather than exceptional by international standards. Meanwhile, retail/vehicle trade shed almost 100,000 jobs over the period studied.

A group of professional services are clear strengths of Gauteng. They include advertising, architecture/engineering, real estate, legal/accounting, technology and telecommunications. Their higher location quotients suggest that they are tradables and that they serve markets beyond Gauteng. Yet, the performance of most of them was pedestrian. Only a handful of seemingly unrelated services approached coveted levels of double-digit employment growth, namely advertising, air transportation and architecture/engineering. The latter is bound to be linked to the presence of South Africa's international airport hub in the province. It is the only sector with a very strong presence in Gauteng that has been growing quickly. Advertising and

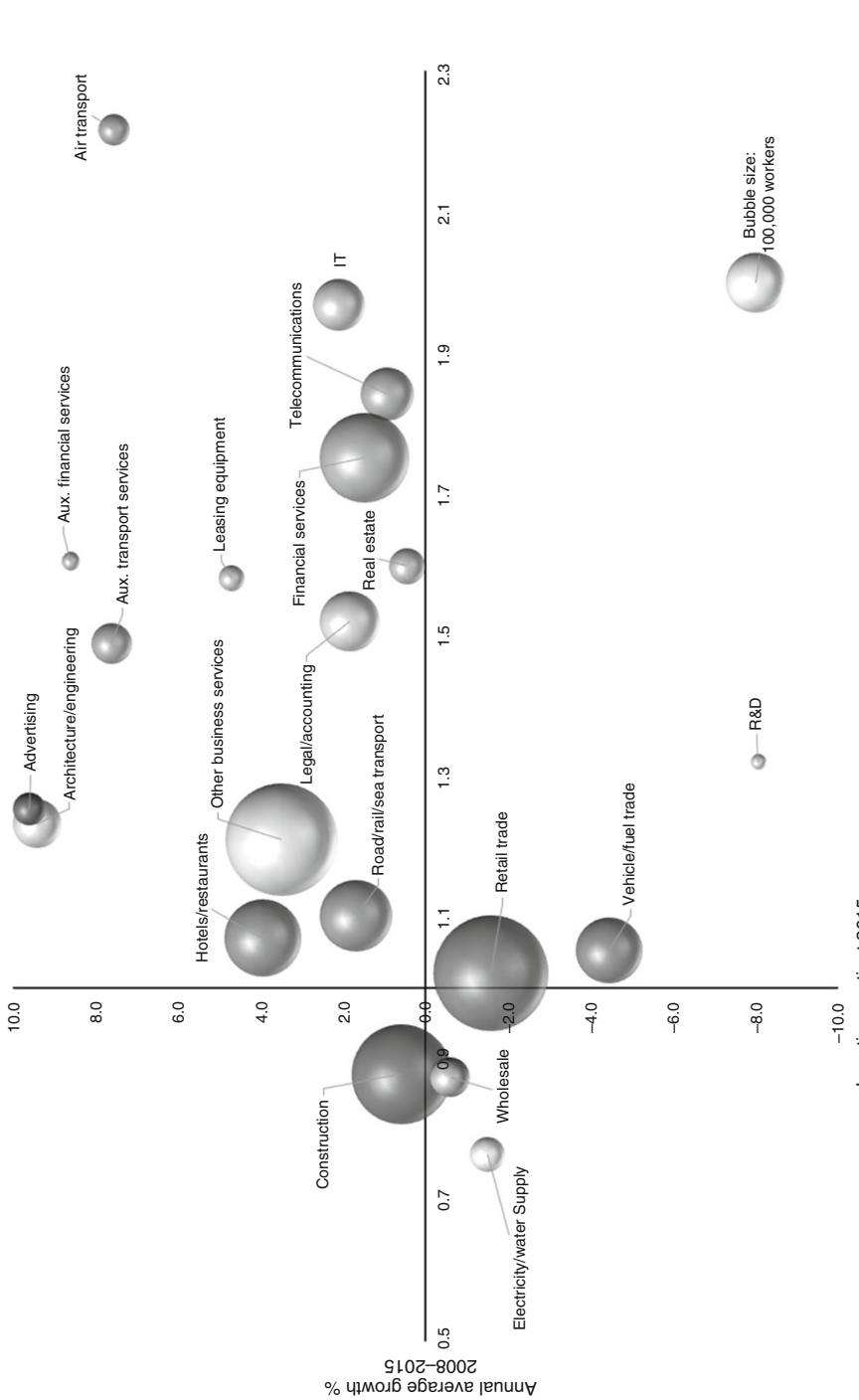

Fig. 3 Service industry dynamics in Gauteng. Source: Labour Market Dynamics in South Africa, 2008 and 2015 (available online at: www.statssa.gov.za), own estimates

architecture/engineering grew quickly, but are not particularly dominant in Gauteng. Their rapid growth certainly warrants further research.

Information technology and telecommunications are pivotal these days for competitive success in manufacturing, the creative industries, producer services and a variety of value chains, so one might have expected stronger performance than the 2% average growth that they have achieved. Financial services was by far the largest relatively skilled sector, and employed almost 235,000 workers in 2015—including many jobs in retail banking and clerical work. Employment growth in financial services was modest at 1.5% per annum, having faltered after experiencing stronger growth prior to the 2008 recession.

The picture emerging is that service industries dominate the structure of employment in Gauteng. However, the potentially tradable, knowledge-intensive component thereof seems to be a very small portion of the total. Looked at in detail, the segments of relatively rapid growth appear to be disparate and unconnected, rather than focussed on a particular cluster or small group of clusters of closely related activities with real strength. The rate of growth among most service industries has been subdued, and coincided with sizeable job losses in manufacturing. There may well have been a connection between these two dynamics, with the difficulties in manufacturing holding back the growth of services in several ways—including backward linkages and induced multiplier effects. In short, the available data does not provide strong evidence of tradable services driving the growth and modernisation of the Gauteng economy over the last decade.

5 The Significance of Highly Skilled Occupations in Gauteng

High-order services depend above all on the technical and professional capabilities of the workforce. Gaining access to global and regional value chains requires accumulating or assembling an appropriate mix of specialist expertise and tacit knowledge. Experience, know-how and talent can be supplied to clients and customers through internal corporate staff or by drawing together project teams of specialist contractors from a range of different firms for particular assignments. Over time, the changing composition of skills within the workforce is an important indicator of the evolution of service industries in a region (Storper et al. 2015).

Figure 4 outlines the broad skills profile of each South African province. Occupations are categorised by the South African standard classification of occupations. Skilled occupations include managers, senior officials, professionals and technicians. Semi-skilled occupations include clerks, plant/machinery operators, craft/trade workers and service/sales workers. Unskilled occupations include elementary workers. Gauteng has much larger and deeper skill sets than the other provinces, with 1.4 million skilled workers—representing 35% of its workforce. There are more skilled workers in Gauteng than the entire labour force of other provinces, apart from KwaZulu-Natal and the Western Cape. In contrast, elementary workers make up less

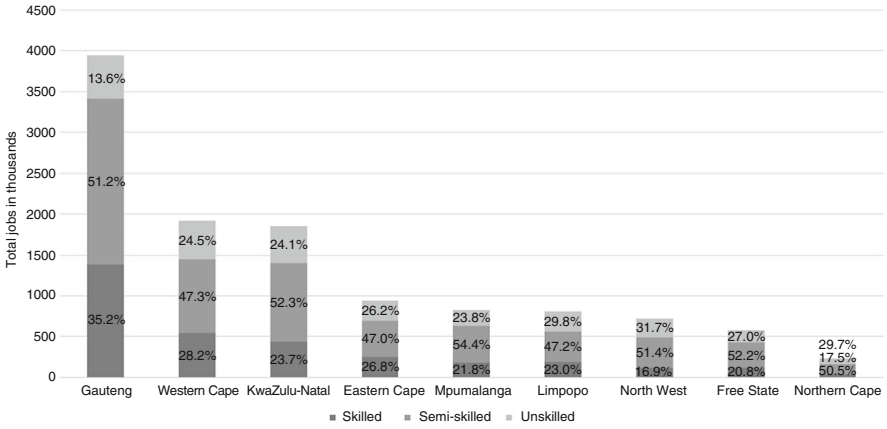

Fig. 4 Employment shares by skill level and province. Source: Labour Market Dynamics in South Africa, 2008 and 2015 (available online at: www.statssa.gov.za), own estimates

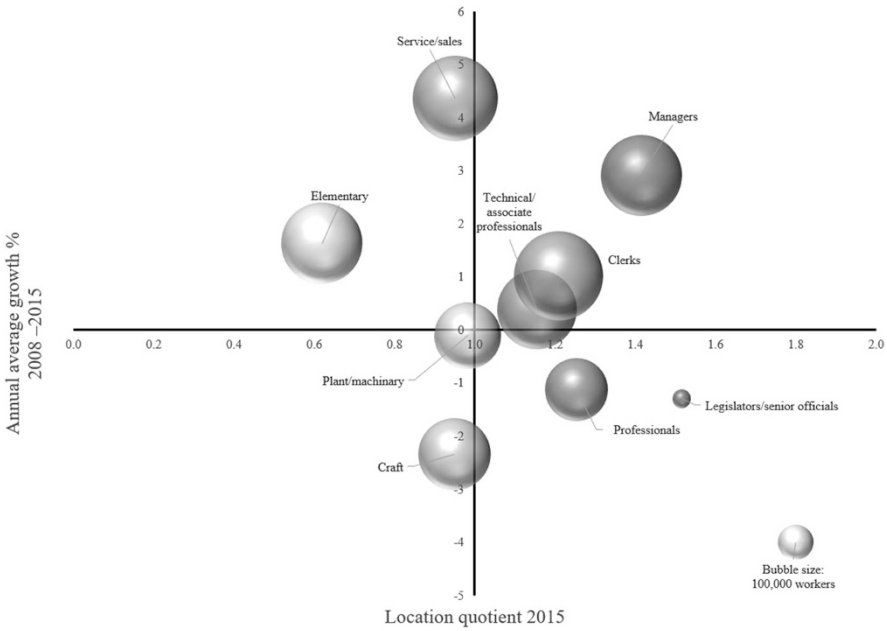

Fig. 5 Occupational dynamics in Gauteng. Source: Labour Market Dynamics in South Africa, 2008 and 2015 (available online at: www.statssa.gov.za), own estimates. Note: Skilled agricultural workers are an outlier, losing half of all jobs; they are not depicted

than 14% of total employment in Gauteng, compared to about one-quarter of the workforce in most other provinces. The stronger aggregate skills profile of Gauteng is consistent with the disproportionate number of jobs it has in manufacturing and tradable services.

Figure 5 below provides a more detailed analysis of occupational change in Gauteng by calculating location quotients for nine occupational classes (x-axis), combined with job growth (y-axis) and occupation size (bubble size). Occupational location quotients estimate the extent of regional clustering of occupations compared to the national skills profile. The figure confirms some specialisation of high-order occupations within Gauteng, particularly among managers and—to a lesser extent—professionals. Yet, changes in the aggregate skills composition of the workforce over the last decade do not provide strong evidence of professionalisation. In fact, there was a net loss of 26,000 professionals and almost no change in the number of associate professionals and technicians, while the number of workers with more generic managerial skills increased. Occupations with less demanding cognitive requirements, including sales, clerical and elementary work accounted for most of the employment growth that occurred. The available data does not provide strong evidence of the amassing of human capital and technical know-how. Instead, it seems more likely that there has been some combination of deficient demand for and constrained supply of highly skilled workers.

Table 2 compares changes in the occupational profile of Gauteng with the other two key provinces. The Western Cape reflects a similar pattern of restrained skills evolution, losing some of its professional/technical base but growing the number of clerical and managerial workers. KwaZulu-Natal lost skilled and semi-skilled jobs across the board, except for some growth in sales and personal services workers. There was a sizeable increase in the number of jobs for elementary workers in all three provinces.

Summing up, the available evidence on occupations suggests that Gauteng possesses a sizeable concentration of skills. However growth over the last decade has been in relatively routine tasks (service/sales) and generic skills (managers), rather than in the sought after category of professional and technical workers, who would support advanced service industries and other high-productivity tasks. Further research is required to explore the decline in skilled professional employment that is apparent in the data.

6 Trade Opportunities in Knowledge-Intensive Service Exports

Analysing balance-of-payments data enables identification of the kinds of firm that engage in external trade, and the types of good or service that they provide. Service exporters are likely to be more competitive and technically advanced than service providers who are confined to domestic markets. The former are, therefore, more likely to have potential to induce backward linkages to domestic producers and integration into RVCs. This section considers how opportunities for trade in services have grown, and the extent to which these relate to more valuable, knowledge-intensive activities.

Figure 6 shows the contributions from merchandise and services trade to South Africa's total exports over the last two decades. Services constitute only a

Table 2 Employment and change in employment by occupation in Gauteng, the Western Cape and KwaZulu-Natal

	Gauteng		Western Cape		KwaZulu-Natal	
	Employment 2015	Jobs 2008–2015	Employment 2015	Jobs 2008–2015	Employment 2015	Jobs 2008–2015
Legislators/senior officials	26,000 (0.7%)	−2000	3000 (0.1%)	−6000	8000 (0.4%)	−2000
Managers	530,000 (13.4%)	97,000	209,000 (10.9%)	64,000	117,000 (6.3%)	−11,000
Professionals	318,000 (8.1%)	−26,000	137,000 (7.1%)	6000	99,000 (5.3%)	−10,000
Associate professionals and technicians	514,000 (13%)	14,000	193,000 (10.1%)	−15,000	214,000 (11.5%)	−36,000
Clerks	641,000 (16.2%)	44,000	265,000 (13.8%)	27,000	208,000 (11.3%)	−1000
Sales and service workers	593,000 (15%)	153,000	289,000 (15.%)	93,000	327,000 (17.7%)	90,000
Skilled agricultural workers	5000 (0.1%)	−8000	14,000 (0.8%)	−1000	13,000 (0.7%)	−2000
Craft/trade workers	425,000 (10.8%)	−76,000	204,000 (10.6%)	−38,000	196,000 (10.6%)	−29,000
Plant/machinery workers	358,000 (9.1%)	−3000	136,000 (7.1%)	−4000	224,000 (12.1%)	−7000
Elementary workers	535,000 (13.6%)	57,000	471,000 (24.5%)	95,000	445,000 (24.1%)	57,000
Total	3,946,000 (100%)	250,000	1,922,000 (100%)	220,000	1,852,000 (100%)	49,000

Source: Labour Market Dynamics in South Africa, 2008 and 2015 (available online at: www.statssa.gov.za), own estimates

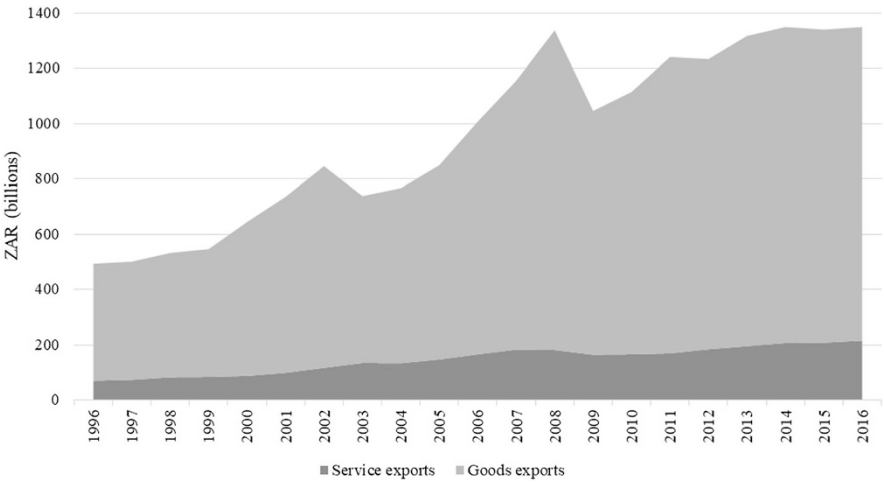

Fig. 6 Exports of goods and services from South Africa. Source: Open trade and competitiveness indicators, 2017 (available online at: tcdata360.worldbank.org). Note: Exports are measured in constant 2016 prices

small proportion of total export revenue, which is dominated by agricultural produce, manufactured goods and minerals. Tradable services are clearly no substitute for the export of goods, although they may of course have greater potential in the future. Nevertheless, services increased steadily over the period at an average growth rate of 6% per annum. They increased their share of total export revenue from 13.5% in 2000 to 16% thereof in 2016. Merchandise exports accelerated during this period until the recession of 2008 hit, then suffered a major setback; only recently have they regained their previous peak.

Disaggregating service exports into their different components reveals that the bulk (70%) of international services trade relates to the traditional sectors of tourism and transport services, as shown by Fig. 7. Tourism dominates the picture, and consists of regular tourism (personal travel) and business travel (including conferences and conventions). Assuming that all other tradable services comprise modern professional ones—including business, finance, government, IT and telecommunications ones—only ZAR 1 out of every ZAR 25 of goods and service exports involves knowledge-intensive activities. This amounts to ZAR 57 billion worth of turnover in absolute terms, but only a fraction of the ZAR 1.32 trillion total value of goods and services exports in 2016.

Among higher-value tradable services, the financial sector contributed ZAR 11.8 billion to export revenues. Figure 8 below shows that financial services enjoyed a strong net trade surplus of ZAR 10.5 billion, whereas other knowledge-intensive sectors tended to incur trade deficits. This is an important indicator of whether or not particular sectors are internationally competitive. Intellectual property stands out as particularly imbalanced, with ZAR 29.6 billion in service imports and only ZAR 1.6 billion in service exports. Overall, South Africa experienced more imports of advanced services than exports thereof. The scale of this should be kept in perspective,

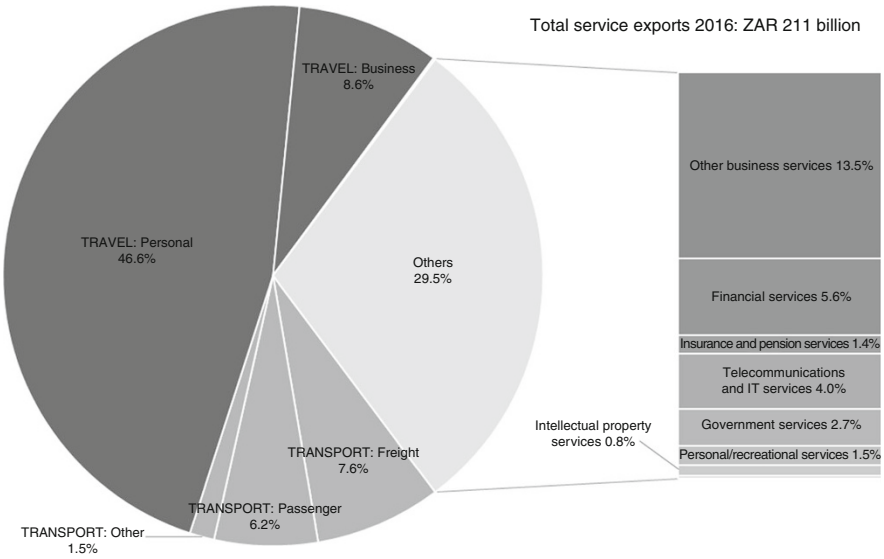

Fig. 7 Composition of South African service exports. Source: WTO-UNCTAD-ITC trade in services dataset (2017), own estimates

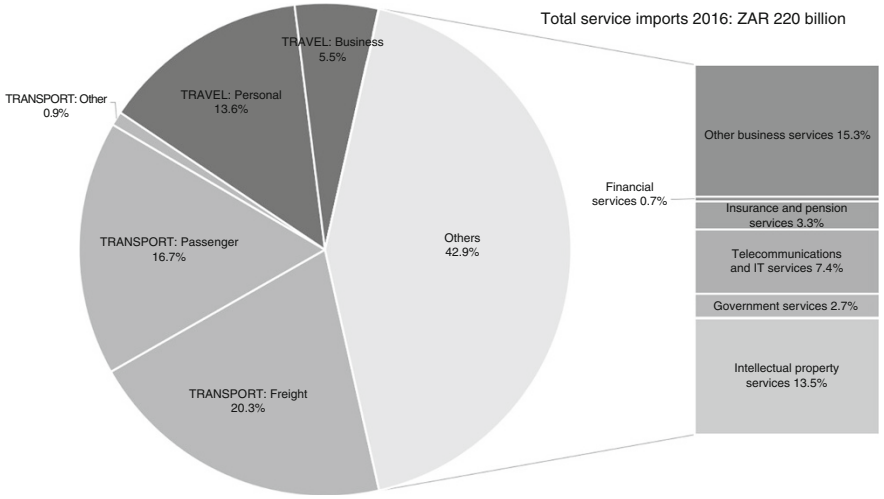

Fig. 8 Composition of South African service imports. Source: WTO-UNCTAD-ITC trade in services dataset (2017), own estimates

however. Transport services incurred a much larger deficit than this (reflecting the dominance of foreign-owned airlines and shipping companies). Tourism enjoyed a much larger surplus (reflecting South Africa's popularity as a tourist destination).

Figure 9 shows the export performance of each service sector between 2005 and 2015, in order to identify the areas of particular strength and weakness. The y-axis

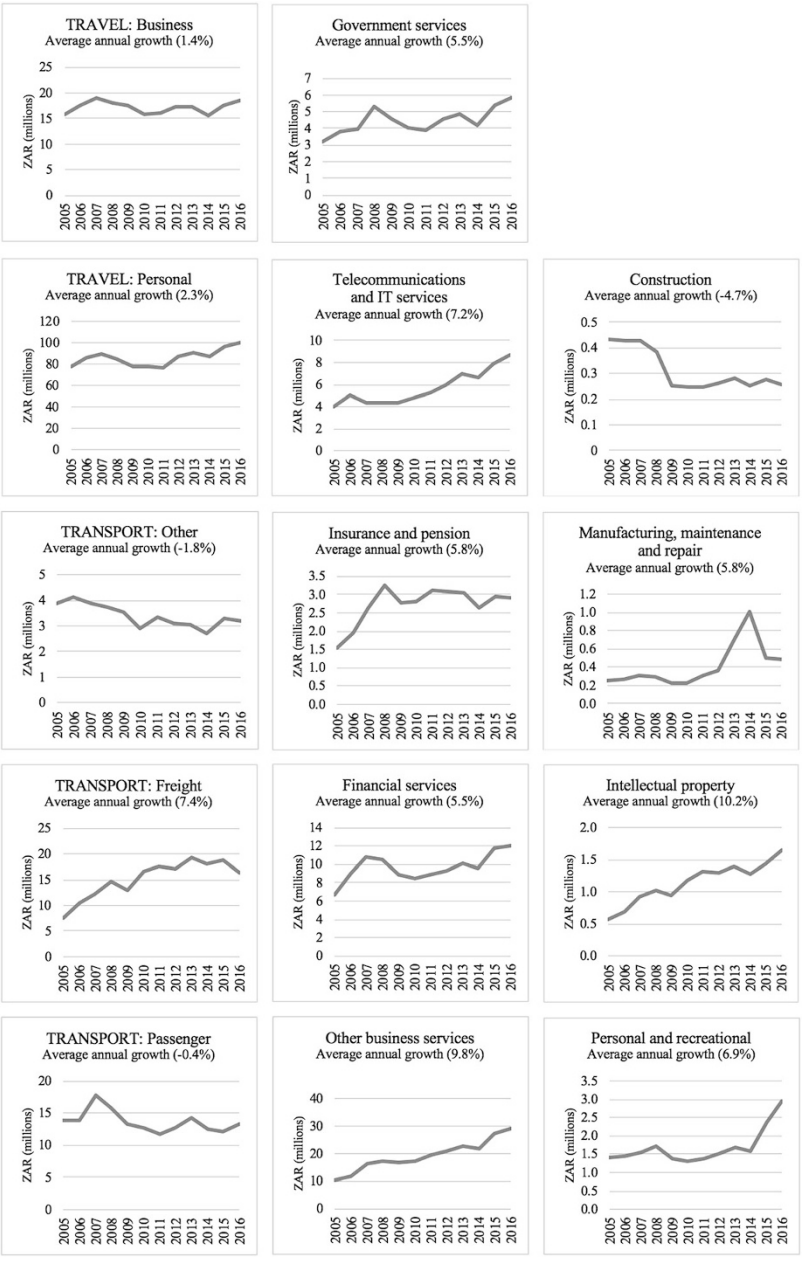

Fig. 9 Growth in South African service exports by sector. Source: WTO-UNCTAD-ITC trade in services dataset (2017), own estimates. Note: Exports are measured in constant 2016 prices. Average growth is compounded annually between 2005 and 2015

shows that personal travel was the biggest contributor to export earnings by far, followed by other business services (incorporating professional, management and engineering ones). Some of the fastest-growing exporters were linked to modern technologies such as intellectual property, IT, telecommunications and other business services. They increased their exports rapidly by 7–10% per annum. Finance and insurance services showed strong but less impressive export growth of just over 5% per annum, while construction services contracted quite sharply by almost 5% per annum. Tourism experienced surprisingly slow growth of just over 2% per annum. Overall, the growth trajectories of tradable services were very mixed, with some possible evidence of a modest shift towards knowledge-intensive sectors.

7 Conclusion and Outlook

There appear to be increasing opportunities for tradable services to contribute to economic development in Africa and elsewhere with the spread of digital technologies, falling air travel costs and more open national markets. This offers an additional growth path to the traditional emphasis on manufacturing and mining. Harnessing this potential seems important to broaden and diversify the base of African economies that depend heavily on the export of raw commodities. India's success at breaking into IT-related GVCs and that of Mauritius at growing tourism and professional services are good examples of this (Balchin et al. 2016; Eichengreen and Gupta 2011). Stronger economic ties across Africa could help to expand markets, create economies of scale in production and distribution, and to stimulate industrialisation and structural transformation. The growth of producer services could benefit both their providers and users by upgrading economic capabilities, improving the performance of public and private organisations, and by boosting output and jobs across supply chains.

Evidence from elsewhere in the world suggests that knowledge-intensive services such as design, engineering and software can enhance many different kinds of product, process and infrastructure, thereby raising productivity and innovation—and thus helping firms to move up global and regional value chains (Doloreux et al. 2000). The importance of high-order services is bound to increase with the unfolding of broader economic, environmental and technological transitions. South Africa is arguably well-positioned to provide some of these services to support development elsewhere in Africa because of its extensive skill sets and experience. There is some evidence of this happening in sectors such as banking, retailing and telecommunications, although there has been no systematic research on the subject to evaluate the actual achievements. It is also unclear whether RVCs are indeed being established, or whether services are simply being exported.

The chapter has shown that services dominate the composition of employment in South Africa, making up more than two-thirds of all jobs. Services are even more important in the economic heartland of Gauteng than elsewhere. There have been two main sectors of job growth in the last decade: business and financial services—some elements of which are tradable—as well as social services, which are

meanwhile largely non-tradable. Disaggregation of these categories reveals that the knowledge-rich component is a tiny portion of the total, and that the sub-sectors showing relatively robust growth appear to be heterogeneous and unrelated to each other. There seems to be no particular cluster of closely associated activities that indicate genuine specialisation and strength in depth, with the possible exception of financial services.

These findings are supported by the evidence on occupations. Gauteng possesses a sizeable reservoir of reasonably skilled labour. However, employment growth over the last decade has been in somewhat routine tasks (service/sales) and generic skills (managers), rather than among professionals and technical workers. These are the capabilities required to spur economic progress by stimulating creativity, efficiency and innovation. Further confirmation is provided by evidence on patterns of cross-border trade in services. Services constitute less than one-sixth of total exports, and the bulk of this stems from the traditional tradable sectors of tourism and transport. High-order tradable services are a small and disparate group with very mixed export trajectories. Yet, there are some signs of progress within the knowledge-intensive sectors of business and financial services.

The analysis presented here is only preliminary, and further research is required to substantiate the findings and delve more deeply into the underlying dynamics—including the creation of localised clusters and RVCs. A useful starting point would be to quantify the significance and size of tradable services to the national economy. Analysing the strength of their embeddedness and linkages to manufacturing, construction and other branches of the economy is part of this. The co-location of many of the key firms in places like Sandton suggests that there are interactions between them, but this still has to be firmly established as true. Comparisons with other middle-income countries would help to shed light on whether South Africa's experience is typical, and how much scope there is for future growth. Disaggregation of tradable services is vital to identify distinctive strengths within such diversity, bearing in mind wider market opportunities. The intra-African trade flows and value-chain relationships are worth special investigation, because of the potential for Gauteng to become an influential knowledge hub servicing rapid urbanisation and infrastructure development elsewhere in Africa.

Additional firm-level analysis is required to gain insights into the experiences of companies seeking to internationalise in this way. Distinguishing between the performance of multinationals and domestic enterprises could shed light on whether ownership matters to the way firms supplying tradable services grow and become embedded in RVCs. A fuller understanding of this growth process and its impediments is essential for policy purposes. It matters a great deal whether it is mainly bureaucratic procedures, state regulations and trade barriers that hamper the expansion of tradable services—or, conversely, the strategies, mindsets, financing and internal capabilities of firms themselves.

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Conclusion

Sören Scholvin, Anthony Black, Javier Revilla Diez, and Ivan Turok

In this conclusion, we summarise key findings of the book, elaborate on their broader implications and hint at key questions for follow-up studies. We highlighted five issues that we consider to be of outstanding importance for global value chains (GVCs) in the introductory chapter, also because not all of them have been adequately covered in the literature to date:

- Policies are essential to promote GVCs and their impact on economic development.
- GVCs are diverse, and their diversity has major economic and political implications.
- Regional value chains (RVCs) appear to constitute an alternative to value chains global in nature (or at least complementary to them), promising better developmental outcomes for the Global South.
- Political and socio-economic aspects are important considerations for a complete assessment of GVCs.
- Cities and city regions are also crucial objects of study to achieve a comprehensive assessment of GVCs.

S. Scholvin (✉)
Institute of Economic and Cultural Geography, University of Hanover, Hanover, Germany
e-mail: scholvin@wigeo.uni-hannover.de

A. Black
School of Economics, University of Cape Town, Cape Town, South Africa
e-mail: anthony.black@ect.ac.za

J. Revilla Diez
Institute of Geography, University of Cologne, Cologne, Germany
e-mail: j.revilladiez@uni-koeln.de

I. Turok
Human Sciences Research Council, Cape Town, South Africa
e-mail: iturok@hsrc.ac.za

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Beginning with the relevance of policies, the analysis of Zambia's retail sector in chapter by Mwanda Phiri and Francis Ziba reminded us of the challenges that local suppliers face when trying to plug into value chains dominated by foreign firms. In spite of comparative advantages, local firms will fail to participate in GVCs, with opportunities for development foregone, if they do not meet the standards demanded by related lead firms. As Phiri and Ziba argued, government agencies are essential facilitators of the integration of local firms into GVCs (or into value chains regional in scope) because they can protect nascent industries, enforce local content through corresponding legislation, ease access to finance so that local firms upgrade their production processes as well as promote regional integration—which enables local firms to expand into new markets.

The research in chapter Phiri and Ziba implies that the integration into GVCs—once it has been achieved—is advantageous for local businesses because it comes with increasing capabilities and opportunities for various forms of upgrading, including export-processing abilities. Herman Geyer's contribution called this idea into question, however. Referring to research by Gibbon and Ponte (2005) and Pietrobelli and Rabellotti (2011), Geyer stressed that sub-Saharan African companies serve, as a tendency, as second-tier suppliers in highly asymmetric relations with first-tier ones and with overseas lead firms. Opportunities for upgrading in this constellation are low; so is the value capture in sub-Saharan Africa itself. Trade liberalisation—at least vis-à-vis the Global North—pushes sub-Saharan Africa into providing basic production inputs. The share of foreign value-added production inputs to sub-Saharan African exports, meanwhile, is high.

In our understanding, these problems call for well-designed policies that support local firms and allow for their closer integration into the global economy. In particular, the chapter by Cornelia Staritz, Leonhard Plank and Mike Morris demonstrated how this can be done: The Ethiopian government uses bank loans and foreign exchange to push apparel exports, increases domestic productivity and skills through sector-specific institutes, encourages firms that produce for the domestic market to export, supports companies in establishing backward and forward linkages within the country, and ties the textile and apparel sector to a green-economy strategy. It, moreover, pursues a proactive policy of attracting foreign investors—for instance by providing land and serviced industrial parks—so as to facilitate what Coe et al. (2004), Coe and Yeung (2015), Yeung (2009, 2015, 2016) and others call 'strategic coupling'.[1]

Richard Grant's and Martin Oteng-Ababio's contribution showed that there are prospects beyond formal economic activities, for example in electronic-waste recycling. The everyday lives of most people in sub-Saharan Africa are shaped by

[1]Strategic coupling is not always beneficial, however. There are three forms hereof: structural (foreign firms seek local assets for existing GVCs), functional (local companies meet the needs of existing GVCs) and indigenous (local firms expand globally, creating new GVCs) (Coe and Yeung 2015). Very generally speaking, indigenous coupling is best for the concerned places, whereas structural coupling tends to leave these places in a subordinate position; functional coupling stands between the two other forms.

the informal sector. Thus, policies aimed at development in and through GVCs must not forego opportunities in the informal economy. Public authorities should seek to incorporate the informal sector into their planning, without neglecting the serious environmental and social challenges that informal economic activities typically involve. However, sound policies are not a sufficient condition for positive developmental outcomes in GVCs. The relevance of forces beyond the control of sub-Saharan African states was probably best exemplified by the work presented in Stefan Andreasson's chapter wherein analysed how the exploitation of unconventional oil and gas resources in the United States has affected hydrocarbon-rich countries in sub-Saharan Africa (and how efforts towards global decarbonisation will do so in the near future too).

There is another aspect to policies that we consider worth discussing here, too. Research on GVCs, including in several chapters of this volume, tends to conclude with policy recommendations that seemingly show the way towards developmental outcomes that are in everyone's best interest. We do not call the relevance of policy advice on GVCs into question. On the contrary, we are convinced that its usefulness for practitioners is a particular strength of the GVC approach. Yet, political decisions, including those that matter to value chains, reflect conflicts between societal forces and powerful interest groups. They generally advance the interests of some, whilst at the same time working against those of others. Research on GVCs would benefit from acknowledging this fact, shedding more light on conflicts and showing that policies on GVCs necessarily produce losers as well as winners. For example, Sören Scholvin assessment of Mauritius as a gateway for the oil and gas sector presents in his chapter the attractiveness of the island state as a financial hub in a positive light. However, financial transfers from hydrocarbon-rich countries to Mauritius mean that value created in the former is reinvested elsewhere—with countries such as Angola and Ghana, to name just two examples, benefitting little from their own resource endowment. Large-scale foreign investment in the context of transport corridors in Parshotam and Revilla Diez chapter or extractive industries in chapters of Bidaurratzaga Aure, Artur Colom Jaén and Harvey which generates losers and winners, rather than simply being universally beneficial. The same applies to the restructuring of agricultural systems, especially with regard to land ownership, as indicated somewhat implicitly by Andries du Toit's contribution.

In the introduction to this volume, we stressed the diversity of GVCs. In spite of this diversity, some general conclusions can be drawn; in Geyer's chapter, for example, it was pointed out how sub-Saharan Africa is marked by a number of problems with concern to its role in the global economy. Domestic markets are volatile. Regional ones suffer from fragmentation, which leads to a low rate of regional trade. Technological capacities remain poor, and labour productivity is low. Many sub-Saharan African countries have to deal with a mismatch of domestic demand and domestic production, with the former being met by imported consumer goods and production inputs, while domestic output is exported as unprocessed materials. These features explain why sub-Saharan Africa hardly benefits from its increasing integration into global markets: domestic firms tend to be outcompeted,

and thus left with subordinate, hardly profitable roles. GVC upgrading happens elsewhere than in sub-Saharan Africa.

The overview provided by Geyer's chapter is valuable and we agree with the author's conclusions, at least at a high level of generalisation. However, there are major differences from one GVC to another. Eduardo Bidaurratzaga Aurre and Artur Colom Jaén showed in their chapter that Mozambican companies face serious obstacles to participate in GVCs in extractive industries and related processing because they do not possess the sophistication required by lead firms from overseas. With regard to agriculture, this appears to be less challenging, as in chapters of Parshotam and Revilla Diez and as well du Toit—despite the aforementioned challenges—and also in chapter Phiri and Ziba demonstrated.

Recognising the diversity of GVCs, moreover, means that we have to look beyond traditional cases such as agriculture, labour-intensive manufacturing and mineral resources. Ivan Turok and Justin Visagie highlighted the opportunities of tradable services in their chapter; so did John Stuart in his chapter. Focussing on manufacturing improvements, including the processing of primary-sector goods, appears to be a too narrow approach to development in value chains. As Kaplinsky and Morris (2016) suggest, economic policy—or, to use a somewhat controversial term among liberal economists, 'industrial policy'—should be conceived as enhancing the productive sector broadly, recognising that measures that lead to positive developmental outcomes in sector A do not necessarily do so in sector B. Hence, we see much potential for comparative, cross-regional research that derives lessons for a specific sector in region X from the development of the same sector in region Y—as done in chapter Markowitz and Black of this volume or, for instance, by Barnes et al. (2017).

Stuart as well as Turok and Visaguie chapters also highlighted the relevance of the sub-Saharan African market for South Africa, which leads us to the third critical issue addressed in this volume: RVCs. The comparison of the Indian and potential (Southern) African automobile market by Chelsea Markowitz and Anthony Black's chapter revealed that there is considerable potential for RVCs, even in sectors that require a large home market and are capital- and technology-intensive. Still, the two authors also explained that there are numerous challenges and we think that these can, with certain caveats, be generalised. First, the prospects of a truly integrated regional market are uncertain, in spite of regional integration making sound progress. Second, poor manufacturing capacities and unreliable basic services (electricity, transport and water) call the competitiveness of industrial production, even in the most advanced countries in the region, into question. Third, clustering at only a select few production sites would cause friction between the host countries of these sites and the regional states that come to matter merely as easily accessible markets. This tension would also involve trade unions, populist opposition parties and national industries in fear of being outcompeted by their regional peers. Fourth, restricting the import of used vehicles appears to be a necessary means to facilitate a regional automotive industry but such a measure would lead to affordability issues and not be supported by the regional states that are unattractive as production locations—another challenge that applies to all RVCs to a certain extent.

By stressing these obstacles, we do not want to say that RVCs are inherently unfeasible in sub-Saharan Africa. In fact, a compelling case can be made for a stronger regional approach—given that regional trade blocs in Asia, Europe and North America all try to promote RVCs, with sub-Saharan Africa arguably lagging well behind. With regard to the pharmaceuticals industry in India, Horner (2014) makes a convincing case for temporal 'de-coupling' from global competition; that so as to develop national—or, in our case, regional—industries and reintegrate into GVCs at a later stage. Hence, this volume encourages more research on the prospects for RVCs. For example, considering the findings in chapter Turok and Visagie, it would be worthwhile to learn more about RVCs in tradable services: Which firms based in South Africa (and other economic hubs) generate these services in which specific sub-sectors? How, and to what extent, do peripheral locations benefit? Or, more narrowly, how are power and profits distributed? Turok and Visagie stressed that it remains to be revealed whether South Africa actually generates RVCs, or rather merely exports services to regional countries. Further to this, their contribution implies that global and regional value chains are linked to one another—with the latter potentially benefitting from the former. This also appears to be a topic for follow-up studies of Stuarts chapter, the research in which showed that some of the various firms active in information and communication technology (ICT) in the larger metropolitan area of Cape Town are indeed involved in RVCs, while some almost only interact with overseas partners—and others besides are simultaneously globally and regionally interlinked.

Asmita Parshotam and Javier Revilla Diez also demonstrated in their chapter that global and regional value chains are tied to one another, as investments by major overseas companies are expected to help smallholder farmers in Tanzania to upgrade so as to serve local, regional and global markets. Because developing countries often lack the financial means to put key projects—and especially economic growth corridors—into practice, the incorporation of large-scale private firms via public–private partnerships appears to be the only viable alternative (see also Dannenberg et al. 2018; Miraftab 2004). This predominance of the global scale in the Southern Agricultural Growth Corridor of Tanzania—where overseas investment triggers local development—explains why the contribution by Parshotam and Diez forms part of Part II of this volume. Value chains across East and Southern Africa appear to be a vision, whereas global connections are a reality. In sum, we think that RVCs must not be conceptualised as an alternative to GVCs—at least not in the sense that they would lead to full import-substitution on the regional scale. Kaplinsky and Morris (2016) point out that it is no longer a question of whether to participate in the global economy but how to do so in the most advantageous manner possible. To us, this means that regional economic blocs and states ought to concentrate on those segments of GVCs in which they are competitive or have good chances to become so in the near future. These segments need to be promoted through a GVC-oriented industrial policy (Gereffi and Sturgeon 2013), including RVCs that are integrated with GVCs.

Analyses of GVCs—academic or policy-oriented—should not be limited to economic aspects. Economic upgrading within value chains, even if it has positive

effects such as increasing exports and a rising gross domestic product, is not necessarily beneficial from a broader development perspective. One of us has advanced this argument already with regard to the 2009 World Development Report (World Bank 2009), which disregards environmental and social issues relating to urbanisation in the developing world—instead being overly focussed on the economic benefits of what its author's label 'density'. Moreover, the report ignores politics, especially political conflicts over territorial development, which may interfere with market-led processes of development (Turok 2012). In this volume, Margareet Visser's chapter showed how changes in private and public GVC governance (through shifting power relations and new legislation) impact upon labour. Fresh-fruit production in the Western Cape has been marked by the co-occurrence of economic upgrading (the switch to seedless grapes, which sell at higher prices) and social downgrading (casualisation and externalisation of labour, combined with shortened seasonal contracts). In chapter of Ross Harvey, meanwhile, argued that Tanzania does not benefit as much as it should from its natural resource endowment because its government and its state-owned oil company have bargained inefficiently with transnational enterprises until now. Even though bargaining power and government efficiency do not stand at the heart of Harvey's chapter, his work nevertheless reveals that political dynamics influence GVCs and the wider socio-economic impact of GVCs, while being themselves influenced by these particular value chains too.

The fifth critical issue addressed in this volume is the subnational dimension of GVCs, namely the role of cities and city regions. In contrast to the other four cited core issues, our motivation to include chapters that deal with cities and city regions results from conceptual considerations. Ever since the publication of *Commodity Chains and Global Capitalism* (Gereffi and Korzeniewicz 1994), cities have been both simultaneously present and neglected in research on GVCs. In their contribution to that volume, Rabach and Kim wrote that 'without the integrating and coordinating function fulfilled by services, global commodity chains would not be viable in today's highly competitive economic environment' (1994: 123), which implies that GVCs and cities—the latter being key providers of services—have to be thought of in tandem. This idea has been taken up in some more recent publications, most prominently by the edited volume *Commodity Chains and World Cities* (Derudder and Witlox 2010). Therein, Brown et al. argue that cities are vital nodes for GVCs, providing essential control and service functions. Jacobs (2014) and Parnreiter (2015, 2017) have advanced this strand of research, concentrating on cities as the places from where GVCs are governed. Still, much conceptual and empirical work remains to be done so as to capture the role of cities for GVCs. Going beyond GVC governance, cities may be conceptualised as 'gateways' that interlink their hinterlands along five dimensions: transport and logistics, industrial processing, corporate control, service provision and knowledge generation (Scholvin et al. 2017).

Sören Scholvin's chapter in this volume took up this idea directly, showing that Mauritius plays a considerable role as an oil and gas gateway to sub-Saharan Africa, especially for logistics, corporate control and service provision. Following Pietrobelli and Rabellotti (2011), Geyer suggested in his second contribution to this volume, meanwhile, that gateway cities also bridge the gap between the codified

technical standards of modular value chains in the Global North and the face-to-face interaction characteristic of relational value chains in the Global South. Regardless of whether one shares Geyer's mostly negative assessment of the economic performance of cities in sub-Saharan Africa (on this debate, see Turok 2014), it would be worthwhile to examine more closely such gateway cities in order to learn about their precise role in intra-firm processes. Such an assessment would contribute to answering the question of whether these places generate impulses for peripheral development—a conviction that guides the 2009 World Development Report (World Bank 2009), and appears to be confirmed by the case of Cape Town and of the oil and gas sector (Scholvin 2017)—or rather concentrate segments of GVCs at the expense of their respective hinterlands (Breul and Diez 2018; Revilla Diez et al. 2018). Also regarding tradable services in Gauteng (see chapter Turok and Visagie), the oil and gas sector in Mauritius (see chapter Scholvin) and ICT in the larger Cape Town metropolitan area (see chapter Stuart), much remains to be learnt about the bright and dark sides of cities and city regions as gateways within GVCs.

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