

Urban Perspectives from the Global South

Koech Cheruiyot *Editor*

The Changing Space Economy of City-Regions

The Gauteng City-Region,
South Africa

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Koech Cheruiyot
University of the Witwatersrand, Gauteng
City-Region Observatory, a partnership
between the University of Johannesburg,
The University of the Witwatersrand, the
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organized local government
Johannesburg
South Africa

ISSN 0924-5499 ISSN 2215-0072 (electronic)
GeoJournal Library
ISSN 2511-2171 ISSN 2511-218X (electronic)
Urban Perspectives from the Global South
ISBN 978-3-319-67482-7 ISBN 978-3-319-67483-4 (eBook)
<https://doi.org/10.1007/978-3-319-67483-4>

Library of Congress Control Number: 2017952517

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Printed on acid-free paper

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The registered company is Springer International Publishing AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

*The book is dedicated to my immediate
family—my wife, two daughters and a son.*

K. C.

Preface

This volume's central theme is city-regions and their changing space economies in the Global South. These are regions that are witnessing new scales of urbanisation, which are integrated by global economic relationships, by transportation infrastructures and, increasingly, by new information and communications technologies. These regions also witness many spheres of government and governance structures. These features shape these regions immensely. Specifically, the volume focuses on the Gauteng City-Region (GCR), the largest agglomeration in a country and on a continent bedevilled by myriad development challenges. This largest agglomeration contributes a third to the South African national economy and a tenth to Africa's gross domestic product (GDP). The volume is timely in many respects. It explores and discusses key development processes, which, while not exhaustive, contribute substantially to informing policy debates around the GCR. The findings also offer potential learning experiences for policy development in other city-regions, especially in the Global South. Across the various chapters, readers, including planners and policy makers in governments, undergraduate and graduate students and scholars in economic geography, economists of various sub-fields of specialisation, are invited to explore:

- Theoretical, conceptual, empirical and methodological issues about the space economy in Gauteng and its surroundings;
- Economic geography debates relating to economic regions/city-regions;
- Discourses on interrogating several internal and external drivers of change in the context of global economic dynamics; and
- Necessary lessons regarding which economic drivers the GCR should focus on going forward.

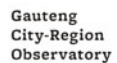
The production of this volume benefited from colleagues—many to cite here—who contributed and peer-reviewed various chapters. Many past and current colleagues at the Gauteng City-Region Observatory (GCRO) assisted with contracting, preparation of maps, and shared words of support when it was most needed. I also wish to thank Prof. Christian Rogerson for technical editing, Hazel Cuthbertson for proofreading, and Ambrose Berkumans and Stefan Einarson of Springer Publishers

for all the help and support. To all of you, I will always be indebted. All errors, however, remain my own.

Johannesburg, South Africa

Koech Cheruiyot

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Abbreviations

ABI	Area-based Initiatives
ACC	African Centre for Cities
ADEP	Aquaculture Development and Enhancement Programme
AEP	Average Expenditure Propensities
AIC	Akaike Information Criterion
AIS	Automotive Incentive Scheme
ANC	African National Congress
APS	Advanced Producer Services
ARP	Alexandra Renewal Project
AsgiSA	Accelerated and Shared Growth Initiative for South Africa
BBBEE	Broad-Based Black Economic Empowerment
BEE	Black Economic Empowerment
BPO	Business Process Outsourcing
BPS	Business Process Services
BRICS	Brazil, Russia, India, China and South Africa
BRT	Bus Rapid Transit
CBD	Central Business District
CDE	Centre for Development and Enterprise
CDP	Cluster Development Programme
CID	City Improvement District
CIP	Critical Infrastructure Programme
CITF	Creative Industries Task Force
CO	Cluster Organisation
CoJ	City of Johannesburg
CoO	City of Opportunity
CPFP	Capital Projects Feasibility Programme
CRS	Computer Reservation System
CSID	Corporate Strategy and Industrial Development
CTCIP	Clothing and Textile Competitiveness Improvement Programme
CTCP	Clothing and Textile Competitiveness Programme

DA	Democratic Alliance
DDVE	Development Dialogue on Values and Ethics
DoRA	Division of Revenue Act
DRDLR	Department of Rural Development and Land Reform
DTI	Department of Trade and Industry
ECB	European Central Bank
ED	Economic Development
EED-SACN	Economic Development Department & South African Cities Network
EIU	Economist Intelligence Unit
EPWP	Expanded Public Works Programme
ESDA	Exploratory Spatial Data Analysis
FAE	Formal Advanced Economy
FDI	Foreign Direct Investment
FIFA	Fédération Internationale de Football Association
G2055	Gauteng 2055 Discussion Document
GaWC	Globalization and World Cities Research Network
GCI	Global Cities Index
GCI	Good City Index
GCO	Global Cities Outlook
GCR	Gauteng City-Region
GCRO	Gauteng City-Region Observatory
GDED	Gauteng Department of Economic Development
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GEP	Gauteng Enterprise Propeller
GFC	Global Financial Crisis
GFCI	Global Financial Centres Index
GFIP	Gauteng Freeway Improvement Project
GGDA	Gauteng Growth and Development Agency
GHS	General Household Survey
GIBUS	Gauteng Informal Business Upliftment Strategy
GPCI	Global Power City Index
GPG	Gauteng Provincial Government
GSAM	Gauteng Social Accounting Matrix
GTERS	Gauteng Township Economy Revitalisation Strategy
GVA	Gross Value Added
GVC	Global Value Chain
HSRC	Human Sciences Research Council
I-O	Input-output
i.i.d.	Independent and identically distributed
IBUF	Informal Business Upliftment Facility
ICT	Information and Communication Technology

IDC	Industrial Development Corporation
IDRC	International Development Research Centre
IES	Income and Expenditure Survey
IKD	Innovation Knowledge Development
IME	Informal Modernizing Economy
IPAP	Industrial Policy Action Plan
ISBDS	Integrated Small Business Development Strategy
JDA	Johannesburg Development Agency
JIA	Johannesburg International Airport
JIPSA	Joint Initiative for Priority Skills Acquisition
JSE	Johannesburg Stock Exchange
LFS	Labour Force Surveys
LM	Lagrange Multiplier
LSS	Living Standards Survey
MCEP	Manufacturing Competitiveness Enhancement Programme
MDG	Millennium Development Goals
MEC	Minerals–Energy Complex
MEP	Marginal Expenditure Propensities
MERS	Micro-economic Reform Strategy
MHCV-AIS	Medium and Heavy Commercial Vehicles Automotive Investment Scheme
MICE	Meetings, Incentives, Conferences and Exhibitions
MLL	Minimum Living Level
MMF	Mori Memorial Foundation
MNC	Multinational Corporation
MNE	Multinational Enterprise
NDP	National Development Plan
NDP	Neighbourhood Development Programme
NDPG	Neighbourhood Development Partnership Grant
NGP	New Growth Path
NIBDS	National Informal Business Development Strategy
NIBUS	National Informal Business Upliftment Strategy
NIDS	National Income Dynamics Study
NPC	National Planning Commission
NSDP	National Spatial Development Perspective
NSPCA	National Society for the Prevention of Cruelty to Animals
O/D	Origin/Destination
OECD	Organisation for Economic Co-operation and Development
OHS	October Household Survey
OLS	Ordinary Least Squares
P-AIS	People-carrier Automotive Incentive Scheme
PCA	Principal Component Analysis
PCE	Per Capita Expenditure

PI	Production Incentive
PIC	Potential Industrial Clusters
PoP	Power-of-Pull
PwC	PricewaterhouseCoopers
PWV	Pretoria–Witwatersrand–Vereeniging region
QLFS	Quarterly Labour Force Survey
QoL	Quality of Life Survey
RDP	Reconstruction and Development Programme
RIDS	Regional Industrial Development Strategy
RSA	Republic of South Africa
RVC	Retail Value Chain
SACN	South African Cities Network
SADC	Southern African Development Community: Angola, Botswana, Democratic Republic of the Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe are members
SALDRU	Southern Africa Labour Development Research Unit
SAM	Social Accounting Matrix
SAMP	Southern African Migration Programme
SANRAL	South African National Roads Agency Limited
SAR	Spatial Autoregressive (or lag) model
SARS	South African Revenue Service
SCI	Sustainability City Index
SDI	Spatial Development Initiatives
SEM	Spatial Error Model
SESE	Survey of Employers and the Self-Employed
SIC	Standard Industrial Classification
SITC	Standard Industrial Trade Classification
SME	Small and Medium Enterprises
SMME	Small, Medium and Micro-Enterprises
SPA	Structural Path Analysis
SPII	Support Programme for Industrial Innovation
SSAS	Sector-Specific Assistance Scheme
StatsSA	Statistics South Africa
STP	Seda Technology Programme
T&IS	Townships and Informal Settlements
TIP	Trade and Industrial Policy
TIPS	Trade and Industrial Policy Strategies
TMR	Transformation, Modernisation and Re-industrialisation
TOD	Transit-oriented Development
TTRI	Training for Township Renewal Initiative
UDZ	Urban Development Zone
UK	United Kingdom

UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Social Affairs
US, USA	United States
VAT	Value-Added Tax
VFR	Visit Friends and Relatives
VIF	Variance Inflation Factor
WIDER	World Institute for Development Economics Research

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Chapter 1

City-Regions and Their Changing Space Economies

Koech Cheruiyot

1.1 Introduction

As with any intellectual endeavour, mainstream economic thought has its share of unresolved discourses. Storper (1997) points out that for almost a century economists have been pulled in different directions, with no indication of when the prevailing issues and discourses will be resolved. He notes that mainstream economic thought has emphasized the forces that lead to convergence, normalization, and equilibrium in the face of change. Within this school of thought, central concepts include perfect competition, diminishing returns, mobile resources, and reversibility of processes. Storper (1997) also describes an alternative school of thought that views the world as inclined to creativity, disruption and dynamism and constantly in a state of disequilibrium. Concepts considered salient according to this point of view include market imperfections, increasing returns, asset specificity, slow moving or fixed factor inputs, and the possibility of irreversibility of processes. Storper (1997) concludes that using these theoretical oppositions in silo is wrong. Rather, he argues that the world is characterized by dualism. Consequently, he advocates for the examination of economies through an economic geography lens that allows for theorizing the world in terms of specificity and difference, divergence and convergence of economic processes, and mobility and immobility of resources, for example.

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In light of these unresolved debates, we need to question how we should understand the economic processes we are dealing with. Specifically, how does economic geography (or the study of space economy) enable us to make sense of the dualism that exists in national and regional economies? Space economy is defined here as a concern with economic “spaces that share common or related flows” (for example, capital, labour, produce, raw materials, value chains and information) and markets for economic activities such as “labour and land markets and infrastructure platforms” (EED-SACN 2013, p. 5). The spatial manifestation components of “hundreds of individual economic decisions, actions and connections that together influence space, and are in turn influenced by space,” is central to the study of space economy (Ibid., p. 5).

The study of space economy thus addresses questions involving the “spatial and locational (or, in another vocabulary, the urban and regional) foundations of economic life” (Scott 2000a, p. 21; see also Scott 2000b, p. 484) at the national level, and attempts to arrive at an understanding of the patterns of international trade and their consequences for localities at the local level (Krugman 2000). In doing this, the study of space economy not only recognizes existing unresolved debates, but also recognizes dualism in the form of specificity and difference, divergence and convergence, mobility and immobility of resources, among others (Storper 1997). This paradigm is a useful frame of reference and serves as a foundation for the discussions that make up this volume.

City-regions and their changing space economies is the central theme of this volume. The geographical focus is South Africa’s economic heartland, the Gauteng City-Region. The research presented in this book builds upon an earlier cluster of works that examined the shifting space economy under apartheid of what was then termed the Pretoria–Witwatersrand–Vereeniging (PWV) region. During the 1970s and into the early 1980s, the economic base of this region experienced considerable change, most notably linked to the decline of gold mining. The detailed investigations undertaken by the Urban and Regional Research Unit of the University of the Witwatersrand under the leadership of T.J.D. Fair, provided a richly crafted and textured analysis of the growth of this urban region and its changing space economy during the apartheid period (Fair 1956, 1971; Fair and Mallows 1959; Hart 1974; Rogerson and Parnell 1989). A number of pioneer investigations were published by Fair and his students about the importance of this incipient city-region within the national space economy of South Africa (Browett 1976; Browett and Fair 1974; Pirie and Mather 2016; Rogerson 1975a, b). With the closure of this research unit in 1978, the tempo of economic geographical research into cities and their spatial development in South Africa slowed. A number of useful studies appeared during the early 1990s, focused on industrial restructuring in general, and the decline of military spending in particular (Rogerson 1990, 1995, 1996, 1998; Rogerson and Rogerson 1995, 1996, 1997, 1999). New opportunity was given to research on the space economy in 2008 with the establishment of the Gauteng City-Region Observatory (GCRO). The role of the GCRO is essentially to help facilitate “a fast growing and dynamic urban region through better planning and management”,

with, in particular, improved co-operative relations between the spheres and sections of government responsible for the various parts of the region (GCRO 2008). These initiatives will ultimately lead to a city-region that is “more functionally integrated, spatially coherent, economically competitive, creative, innovative, environmentally sustainable and socially inclusive” (Ibid.). This collection of research papers on the changing space economy of the present-day GCR is, in large measure, a reflection of GCRO-supported research that is in progress.

Recognizing that the GCR has major place-based variations in the intensity and nature of its economic fabric, and thus it evidences dualism, the chapters in this volume explore the significant processes that shape the spatial location, structural patterns and trends (incorporating space and time as important elements, as in any theory of economy (see Isard 1956), and spatial impacts in this space economy (Dicken and Lloyd 1990). The exploration untangles the critical foundations of the development processes—both internal and external—that stimulate both growth and despair in this city-region. It examines key processes and aims to be comprehensive, but is not exhaustive. The book contributes to the modest body of local research related to South Africa’s economic geography (Rogerson 2002a) and is also significant in two other ways. First, since the GCR is a growing, but polarised economy that shapes the national economy significantly in various ways, the manner in which its economic dynamics are understood and guided is crucial in building a dynamic and competitive national economy and promoting social cohesion. Second, the book is perhaps the most detailed examination to date of one of the major metropolitan areas in the Global South. The GCR is a focus for global capital and is characterized by extensive financial inflows and outflows, and high international immigration. It is also a continental leader in research and innovation, and consequently, this publication is of international significance.

1.2 Understanding Space Economy

1.2.1 *Competing Economic Geography Approaches*

Two fundamental questions—‘How do regions grow?’ and ‘How does growth manifest across space, time, and among people residing in a region?’—need to be answered if we are to understand space economy adequately (Isard 1956). In the literature, three broad categories of general theories attempt to explain the patterns and extent of regional economic development: (1) theories of regional economic convergence; (2) theories of regional economic divergence; and (3) structural theories of regional economic development. Other perspectives, either grounded in mainstream economics or Marxist approaches, have also been used to explain regional economic development (for a more in-depth discussion see Dicken and Lloyd 1990; North 1955; Higgins and Savoie 1995; Dawkins 2003; Cheruiyot 2011).

Boggs and Rantisi (2003), decrying the inability of past theoretical models in economic geography to account for the prevailing micro-level dynamics, contrast neoclassical economic geography and political-economic approaches. They note that neoclassical economic geography focuses on the self-regulating market and tendencies towards inter- and intra-regional convergence, in the process, unfortunately, evading questions of why some regional economies remain persistently underdeveloped. Political-economic approaches, they argue, blame the contradictions inherent in capital accumulation for economic divergence, while offering limited explanatory power for understanding how some regional economies, such as the East Asian ‘Tigers’, were able to develop (Boggs and Rantisi 2003).

Acknowledging that “empirical reality is too complex to be compartmentalised; it defies single paradigms”, Boggs and Rantisi (2003, p. 114) offer a relational turn in economic geography as a way of overcoming the limits posed by the two approaches described above. This entails clarifying prevailing tensions between, for example, structure versus agency; macro- versus micro-level analysis; and local versus global geographical scale (for a more in-depth discussion of these tensions, see Boggs and Rantisi 2003, pp. 110–114). Similarly, in *Geographies of Economies*, Crang (1997) argues strongly for the need to reconstitute economic geography to reflect socio-cultural constructions. Chapters in that edited volume explore various types of possible resultant cultural-economic geographies. Hudson, in turn, focuses on the economies of capitalism and the social relations of capital, and is of the opinion that cultural-economic geography recognises that “capitalist economies are constituted via a complex mix of social relations, of understandings, representations and interpretations, and practices” (2004, p. 449).

Beyond neoclassical, political-economic, and cultural-economic geographies, Sheppard (2006) also considers feminist and geographical economist approaches. Feminist approaches, cognisant of the analysis and goals of political economy, place the economic role of women in society at the forefront. According to Sheppard, feminist economic geographers assert that “patriarchy pre-dates and exceeds capitalism, even if the forms it takes under capitalism are distinctive” (2006, p. 15). In addition, he recognizes that other social markers, including “race, age, ableness, sexuality, and location”, are also instrumental in shaping geographical livelihood possibilities (Sheppard 2006, p. 15). Geographical economists, following Krugman (1991), Venables (1999) and others, share many similarities with location theorists in considering that firms that benefit from scale economies, in different sectors, compete monopolistically with each other. Faced with two regions where food is produced under constant returns, competing firms choose the location that will be most profitable for themselves. Sheppard concludes that therefore “three different spatial equilibria are possible (agglomeration in one or the other region, or dispersed production), depending on transport costs and other parameters” (2006, p. 16). He considers extensions of this research to include research into old questions of whether the economic fortunes of regions converge under capitalist competition, and identifies renewed interest in explaining the rank–

size rule, as well as an emergent focus on how physical geography shapes economic growth and livelihood possibilities (Sheppard 2006).

Amin (2001) advocates for an institutional turn, and argues that the economy is mediated by practices of varied constitution, including legal rules and state policies, for example. Acknowledging, however, the small contribution of institutionalists on the themes of uneven development and spatial inequality, he notes that the institutional turn's "contribution has been to open a meso-level understanding of the economic life of different cities and regions, their relative prosperity, their trajectories, their potential for development, ... demonstrating that the economy is an instituted process" (2001, p. 1238).

Economic geographers and others interested in the analysis of regional and urban development have relied on evolutionary perspectives, stemming originally from evolutionary economics, to study issues such as "the geographies of technological progress, dynamic competitive advantage, economic restructuring, and economic growth" (Boschma and Martin 2010, p. 3). This paradigm argues for an appreciation of the importance of history with respect to the economic landscape since this enables us to understand economic landscapes as they evolve over time. In *The Handbook of Evolutionary Economic Geography* (Boschma and Martin 2010), perhaps the largest collection of theoretical, conceptual, and empirical aspects of evolutionary economic geography at different geographical scales, three chapters focus on the major theoretical developments in evolutionary economics that economic geographers rely on. These are complexity theory, path-dependence, and generalized Darwinism, which all emphasize different moments in the evolutionary process. Complexity theory focuses on "the creation of variety, path-dependence stresses the retention of existing information and knowledge, and generalized Darwinism examines how a population of heterogeneous entities evolve through interaction among themselves and with the environment that they help shape" (Essletzbichler and Rigby 2010, p. 43. See also Essletzbichler and Rigby 2007; Martin and Sunley 2006, 2007, 2010).

On an empirical level, Nel and Rogerson (2009) draw lessons from international experiences to offer four explanations of why spatial disparities exist, and what factors are responsible for spatial inequality. These are:

- (1) the differential natural resource endowment of regions, the selectivity of migration (citing Henderson and Wang 2005; Kanbur and Rapoport 2005), and the powerful self-reinforcing forces of agglomeration (in the form of enhanced processes of innovations, increasing returns, and low transportation costs) (Kanbur and Venables 2005).
- (2) the "impress of powerful factors of globalization and especially of traditional liberalization" (pp. 148–149).
- (3) the role of public infrastructure as the core variable in development processes.
- (4) the global trend towards greater devolution and decentralization.

Nel and Rogerson (2009) note that the factors listed above work alone or together to cause varied spatial inequality impacts in both developed and developing countries.¹

1.2.2 *South African Space Economy*

Spatial inequalities in South Africa, as elsewhere, are seen as part and parcel of growth and development processes (Kanbur and Venables 2005; Lall and Chakravorty 2005). South Africa's space economy is characterised by stark disparities and dualisms, and at the macro scale, by "two clearly distinguishable sets of spatial arrangements and settlement patterns:

- (1) Concentrated areas of high economic growth, high population densities and high levels of poverty.
- (2) Areas with low economic growth, high population densities and high levels of poverty (particularly in the former Bantustans).²

(Presidency 2006, p. vi. See also Krugell and Naudé 2005).

Nel and Rogerson attribute the consequences of disparities between rural and urban areas, and geographically advantaged and disadvantaged regions, to various overlapping factors, including:

geographical isolation or resource scarcity; historically enforced processes of 'over-concentrating' people in marginal areas deprived of adequate facilities, resources and opportunities; changes in the economic fortunes of regions (through for example mine closure or deindustrialization); exposure to the global economy and the differential access to infrastructure and urban agglomerations (2009, p. 152).³

The overlay of apartheid planning ideology and top-down regional development, based on selective encouragement of manufacturing investments in growth points or poles,⁴ exacerbated spatial disparities that had been caused by regional inequalities in terms of access to resources and land originating in the colonial period (Nel and Rogerson 2009). This created what proved to be an unsustainable, costly and distortionary system (Tomlinson and Addleson 1987).

¹See also Rodríguez-Pose and Gill (2003), as well as Henderson and Wang (2005), Kanbur and Rapoport (2005), Kanbur and Venables (2005), Lall and Chakravorty (2005), and World Bank (2009) for further explanations.

²Bantustans were areas designated as 'homelands' for different black South African ethnic groups under apartheid legislation (See Fig. 2.1 in Chap. 2).

³See also Gotz and Todes (2014, p. 117) for various factors exacerbating old or generating new forms of spatial inequalities in South Africa.

⁴This stems from regional development logic that predominated in developing countries' regional development discourses from the mid- to late twentieth century after the ideas of Perroux (1955).

1.2.2.1 Government Initiatives

With the end of apartheid and the ushering in of a democratic South Africa, the need to address prevailing development challenges led the new government to apply a range of interventions designed to create employment, deal with development backlogs, empower local governments and create opportunities for the historically disadvantaged (Lester et al. 2000). Among the various interventions were some efforts to address persisting spatial inequalities. A few of these are reviewed below.

The 2006 National Spatial Development Perspective (NSDP) (Presidency 2006) identified various categories of development potential in the space economy of the country and provided the basis for determining guidelines and interventions appropriate to the development needs of different economic regions. A large percentage of the population of South Africa is concentrated in the economic core. In 2006, economic growth amounting to R1 billion gross value added (GVA) was generated in this area, according to the NSDP. The economic core is made up of 26 areas, corresponding to major towns and cities with an economic accessibility proximity radius of 60 km. These areas generated 95.6% of national GVA, housed 84% of all households in South Africa, and were home to 77.3% of all people living below the minimum living level (MLL) in the country (Presidency 2006). With higher multiplier potential for less investment, the NSDP recommended these areas as fertile grounds where more aggregate returns could be obtained.

The draft 2006 Regional Industrial Development Strategy (DTI 2006) also intended to address spatial inequalities in South Africa, as did a range of other spatial development initiatives, cluster development support programmes, provincial growth and development strategies, and local economic development interventions, which were to be implemented by most South African municipalities (Nel and Rogerson 2009, 2016; Turok 2010b). Rogerson also lists a number of other strategies including “the National Development Plan; the New Growth Path; new national infrastructure; ... industrial, urban and LED strategies target[ing] support for co-operatives and informal sector activities in deprived areas, rural development, public works, tourism support and small business activities” (2014, 2015).

The National Development Plan (NDP) attempted to address what the 1994 Reconstruction and Development Programme (RDP) (ANC 1994) could not achieve, and prioritised spatially-based socio-economic redress and development. It proposed a strategy to tackle “apartheid geography and create the conditions for more humane—and environmentally sustainable—living and working environments” (NPC 2011, p. 260). More specifically, it recognised the need to:

- respond systematically, and over time, to entrenched spatial patterns across all geographic scales that exacerbate social inequality and economic inefficiency.
- implement strategically chosen catalytic interventions to achieve spatial transformation in a manner that supports locally driven spatial governance.

- achieve a creative balance between spatial equity, economic competitiveness and environmental sustainability.
- expand personal freedoms by providing the residents of South Africa with greater choice of where to live.
- support individuals, communities and the private sector in engaging with the state on the future of the spaces and settlements in which they live and work while streamlining processes to enable local governments to implement strategic spatial interventions.

(NPC 2011, p. 260)

1.2.2.2 Persisting Spatial Inequalities: Some Evidence

According to Rogerson (1999, 2002b), the spatial interventions introduced by national government during the 1990s were limited to a set of under-funded, ad hoc strategies, such as support for Industrial Development Zones and Spatial Development Interventions that favoured well-off areas with the implied understanding that poor areas would benefit as well. Nel and Rogerson (2009) argue that these interventions were not, in fact, designed explicitly to respond to regional and national spatial inequalities, and so, despite some good efforts, the South African space economy is still beset by spatial imbalances pitting core areas, on the one hand, against peripheral areas on the other (Turok 2010a, b).

The NPC warns that improving the national space economy will not be easy, since “there are powerful interests concerned with maintaining the spatial status quo, while the massive existing investment in fixed assets means that transformation will invariably be incremental” (2011, p. 260). This becomes evident when one considers how national wealth is generated and distributed. For example, Naudé and Krugell highlight that “only 20% of places (towns and cities) produce 82% of South Africa’s gross domestic product (GDP). The richest 20% of places had an average per capita income in 2000 of R25, 277, compared with an average per capita income of R5, 452 of the poorest 20% of places” (2003, p. 477). More recent evidence shows persisting disparities between large metros and the rest of the country. The South African Cities Network (SACN 2011, p. 20), in its *State of the Cities Report* showed that nine large South African metros contributed up to 60% of the nation’s GDP in 2011. Even more worrying is how the five largest metros [Johannesburg, Tshwane, Ekurhuleni, Cape Town, and Durban (eThekweni)] together accounted for 52% of the national output, and the three Gauteng metros (Johannesburg, Tshwane, and Ekurhuleni) accounted for about 32%.

Although GVA per capita is a crude measure, Fig. 1.1, which presents the GVA per capita for local municipalities in South Africa, nevertheless demonstrates the uneven space economy in the country with the concentration of higher incomes being predominantly in the large dense human settlements (especially in the metros of Gauteng, Durban, Cape Town and Port Elizabeth). Mining areas, for example, around Thabazimbi (in Limpopo province), Rustenburg (in North West province),

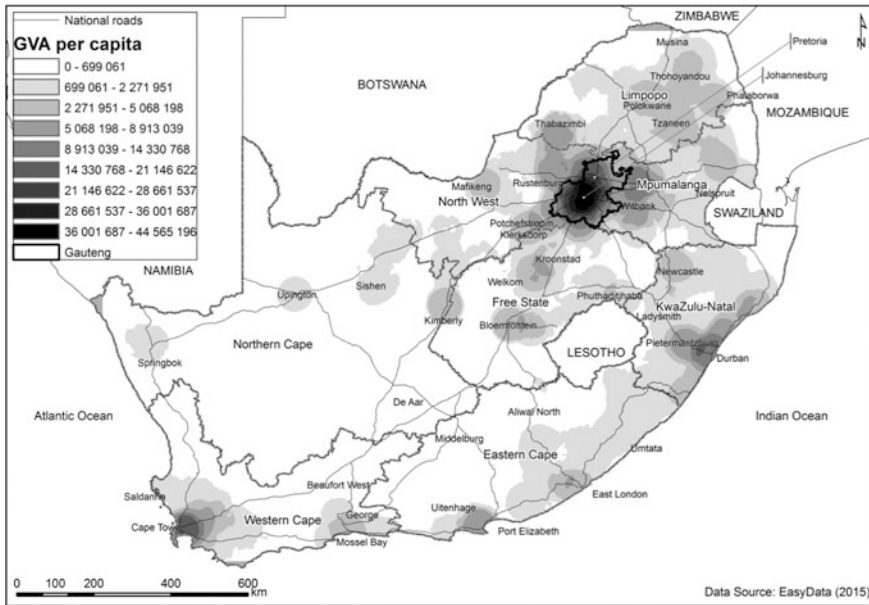


Fig. 1.1 GVA per capita for local municipalities in South Africa, 2015 *Note* South Africa has six neighbouring countries (Namibia, Botswana, Zimbabwe, Mozambique, Swaziland, and Lesotho) and nine provinces, including Gauteng, as indicated in the map

and Springbok, Upington, and Sishen (all in the Northern Cape), also show significantly higher GVA per capita. The magnitude of deviation in terms of the range between lowest and highest is a clear indication of the uneven space economy in South Africa.

The NDP’s diagnostic report revealed the prevailing complexity of South Africa’s space economy and questioned commonly-held assumptions about the conditions necessary for regional and local economic growth (NPC 2011, 2012). Nel and Rogerson (2009) state that post-apartheid governments have found it difficult to develop a coherent national spatial policy because of complications resulting from ongoing tensions in the post-apartheid spatial economy. These relate to the co-existing imperatives of building agglomeration economies in metropolitan areas to drive national competitiveness, and direct resources towards the former, mainly rural, Bantustans.

Some studies have explored South Africa’s space economy further, in support of national initiatives. For example, Cheruiyot and Harrison (2014) report that despite the complexities of the space economy, where there are multiple nodes of economic concentration, accessibility to the growth of regional economies exists. In a related work, Msulwa and Turok (2012) provide evidence of a significant relationship developing between population and economic density and economic growth in particular local municipalities. They note, in particular, that the influence of human skills on local growth is more of a factor than population density. An important

conclusion that can be drawn from the projects and studies discussed above is that eliminating spatial inequalities is a difficult task that calls for the formulation of more contextually responsive spatial policies focused at national, provincial and local levels. With this in mind, the dynamics of the GCR's space economy, the leading economic core in the country, are examined in the next sections in more detail, to facilitate the proposal of appropriate policies.

1.2.3 *The Space Economy of the Gauteng City-Region*

1.2.3.1 Why City-Region?

Jacobs (1990) argues that nations are composed of collections or grab bags of very different economies—rich regions and poor regions. She disputes Adam Smith's (Smith and Nicholson 1887) widely acclaimed notion that nations are the salient entities for understanding the structure of economic life, noting that this body of thought borrows heavily from mercantilist theory. Mercantilist theory equates wealth with national treasure that is acquired by nations competing against each other and, in the process, amassing large amounts of gold. Acknowledging that nations are political and military entities, she refutes the view of nations on equal terms as "the basic, salient entities of economic life ... particularly useful in probing the mysteries of economic structure, the reasons for rise and decline of wealth" (Jacobs 1990, p. 31). She argues instead that the appropriate unit of analysis is the city, since cities "are unique in their abilities to shape and reshape the economies of other settlements, including those removed from them geographically" (1990 p. 32. See also Friedmann and Alonso 1964; Schragger 2008).⁵

Jacobs describes city-regions as "cities with their own regions" (1990, p. 45), incorporating extended hinterlands beyond the city suburbs and encompassing rural, industrial and commercial workplaces, and mixtures of the three types. She adds that city-region boundaries are fluid and not limited by natural boundaries. The nucleus of the city is nevertheless all-important since the boundaries of city-regions move outward or are halted according to the dictates of the emerging city economic energy. The ability of cities to shape and reshape the economies of other settlements, including those far removed from themselves geographically (Ibid.), inevitably contributes to the global city-region debate in the sense that it posits that cities/city-regions have local, national, and global ties. These ties determine cities/city-regions' internal and external dynamics.

In *Global City-Regions: Trends, Theory, Policy*, Scott (2001) defines global city-regions as new social formations that are not subservient to the dictates and

⁵Some authors, including Krugman (1991), argue for the firm as the key unit of analysis. However, this volume takes the city, and more particularly, the city-region, as the appropriate unit of analysis (see also Camagni 2001). Olsen (2002, p. 158) criticizes the ambiguity in the work of Krugman and his followers, noting that their models suffer from inter-scale problems because they do not acknowledge spatial units, per se, as the basis of their analysis.

protection of the central state(s) as previously postulated. Rather, global city-regions are dynamic entities that are transformed by the impacts of globalization. They are new forms and dynamics in that they are the foci of significant new experiments in local political mobilization and reorganization, which are necessary responses to the dictates of globalization (Scott 2001, p. 1). Present in both developed and developing economies, global city-regions play important roles in today's world economy. One type of global city-region is characterised by a functional interdependence between a strongly urbanized core and the adjacent territories. These territories could have been hitherto connected, or were separate but are now connected, or have a semblance of administrative or political connections being formed (Scott 2001, p. 4). Evidence show that most global city-regions' networks transcend national boundaries (Sassen 1991, 2011).

1.2.3.2 Facts About the Gauteng City-Region

The Gauteng City-Region (GCR) (Fig. 1.2), a subnational extent that is functionally organized around the three large metropolitan municipalities of Johannesburg, Tshwane and Ekurhuleni, is South Africa's largest economic agglomeration (Greenberg 2015). The GCR's economic footprint extends beyond the borders of Gauteng into the neighbouring provinces of Free State, Mpumalanga and North West, constituting the wider GCR. Gauteng province alone contributes 34.73% of national GVA, while the wider GCR accounts for 43.25% of the national GVA (EasyData 2016). As one of the major economic core areas in the country, the GCR has:

- (1) high levels of economic potential, as indicated by high GVA.
- (2) relatively diverse economic activities.
- (3) high concentrations of people.
- (4) formal and informal economic activity, generally differentiated and with a significant segment in the services sector.
- (5) relatively high levels of formal infrastructure provision.
- (6) good transport connections and a wide choice of transport modes and inter-modal connection facilities.
- (7) a wide range of education and health services and facilities.
- (8) high levels of institutional density, both formal and informal.
- (9) strong and/or growing linkages to the global community.
- (10) mostly well capacitated local governments with access to relatively high tax bases, high and diverse skills base and job experience.
- (11) a sense of hope and a strong belief that a better life is possible.

(Presidency 2006, pp. 72–73)

As a result of the massive agglomeration economies identified above, the wider GCR is the main driver of the national economy (OECD 2011), and it exerts a significant influence over the lives of the people of South Africa. Figure 1.3 shows the economic nodes scattered across the GCR.

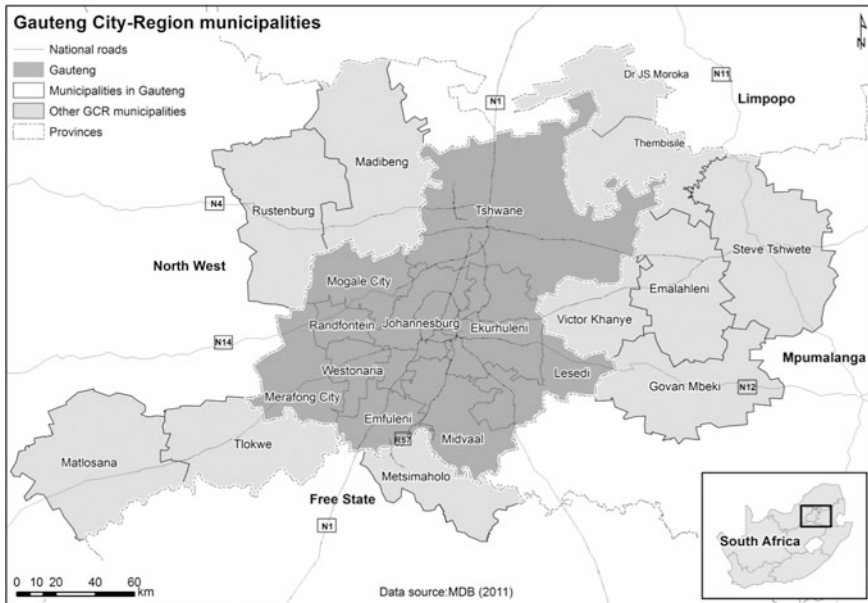


Fig. 1.2 Gauteng province and its surroundings *Note* In late 2016, the Municipal Demarcation Board of South Africa declared new municipal boundaries, according to which Randfontein and Westonaria local municipalities were amalgamated to become Rand West City local municipality. Also, the number of wards (according to 2011 administrative boundaries) increased from 508 to 529 wards (according to 2016 administrative boundaries). The analysis in this volume is based on the old administrative boundaries, where applicable, since at the time of declaration the manuscript was ready for press

The NSDP regards the GCR as the national economic heartland, and considers it to be characterized by:

- (1) “high levels of poverty and large numbers of people living below the Minimum Living Level.
- (2) huge disparities in income and access to services, coupled with marginalisation and alienation.
- (3) disentanglement from the formal institutions of society, despair.
- (4) a propensity to environmental degradation, resource inefficiencies, chaotic settlement patterns and ‘short-termist’ decision making and lifestyles.”

(Presidency 2006, p. 72)

As it will be evident across the chapters, the concomitant manifestation of the above features shapes the GCR’s growth and development in diverse ways (see, for example, discussions by Storper 2010a, b; Scott and Storper 2003).

Table 1.1 presents Gauteng province’s socio-economic characteristics. The table shows that Gauteng province is highly dense and it contributes significantly to the national GVA (34.7%). However, it also has relatively higher unemployment

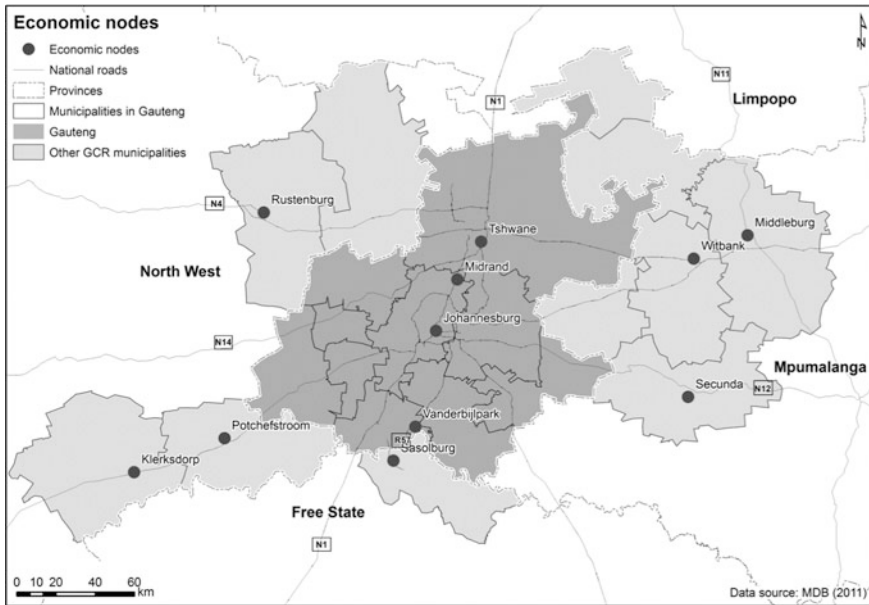


Fig. 1.3 Economic nodes in the Gauteng City-Region

(30.1%) than the national unemployment rate (26.7%). There are consequently significant poverty effects in the province. For example, Table 1.1 shows that, when measured by headcount rate, and based on StatsSA’s upper and lower bounds, the poverty incidence measures 29.2 and 18.9, respectively. Tseng (forthcoming) states that (at the time of estimation, 2010) these poverty levels had risen significantly from 1995 poverty levels, with blacks being affected more than other race groups.

Mushongera et al. (2015) used a multi-dimensional poverty index (calculated to incorporate standard of living, food security, economic activity, and education variables) for smaller geographical areas to show that, while the index for Gauteng province is low, marked variations exist between municipalities and wards, as well as across income groups. Figures 1.4 and 1.5 shows the number of businesses per square kilometre and the concentration of employment in Gauteng province, respectively. Figures 1.4 and 1.5 shows that there is a prominent concentration of activities in the larger metros and along infrastructure corridors (roads) across the province. A spatial mismatch is evident, with the majority of Gauteng residents (especially those residing in townships) being forced to travel long distances to work, and so current conditions ensure that historical inequalities are sustained, if not exacerbated.

Table 1.1 Key performance indicators for Gauteng

Indicator	Performance
Population (% contribution to national population of 55.6 million) in 2016	13,399,727 (24.1%) ^a
Land area (% of national land area)	18,182 km ² (1.45%) ^b
Total GVA (% contribution to national GVA)	R964 trillion (34.7%) ^c
Gauteng's % contribution to Africa's GDP	10% ^d
GVA growth rate	
Manufacturing % to Gauteng economy (Gauteng's manufacturing share of national manufacturing)	16% (40%) ^e
Tertiary sector % to Gauteng economy (Gauteng's tertiary share of national tertiary sector)	75% (38%) ^f
Unemployment rate (national unemployment rate)	30.1% (26.7%) ^g
FDI investments into Gauteng	US\$8,126 ^h
Gauteng's FDI investments into other economies ⁱ in Africa	US\$9,142
North America (USA alone)	US\$21,568 (US \$19,016)
Asia and Pacific (China alone)	US\$4,164 (US \$3,380)
Rest of World	US\$7,319
Poverty rates:	
1. Headcount rate based on R577 upper-bound poverty line.	29.2 ^j
2. Headcount rate based on R416 upper-bound poverty line.	18.9 ^k
Proportion of the working age population running an informal sector business in Gauteng (nationally)	5% (4.3%) ^L

Notes ^a2016 population estimates (StatsSA Community Survey 2016a); ^bGIS area calculation by the author based on provincial boundaries (MDB 2011); ^c2015 GVA in R million at 2010 constant prices (Easy Data 2016); ^dsourced from Makhura (2015); ^e; ^f2015 values in R million at 2010 constant prices (Easy Data 2016); ^gunemployment rate estimate (StatsSA Quarterly Labour Force Survey, Q1, 2016b); ^h; ⁱ2003–2014 values from State of African Cities Report (forthcoming 2017); ^j; ^k2010 estimates (in March 2009 prices, StatsSA 2013); ^L2015 estimates (Stats SA 2014)

1.3 Overview of This Book

A variety of institutions in South Africa, with different orientations, currently undertake economic-related research.⁶ What little scholarship there is with a focus on space economy is dated, or peripheral at best. This publication attempts to fill the void by:

⁶See, for example, the economic-related work by Corporate Strategy and Industrial Development (CSID) (<http://www.wits.ac.za/csuid/16126/csuid.html>), Trade and Industrial Policy (TIPs) (<http://www.tips.org.za/>), and Centre for Development and Enterprise (CDE) (<http://www.cde.org.za/>).

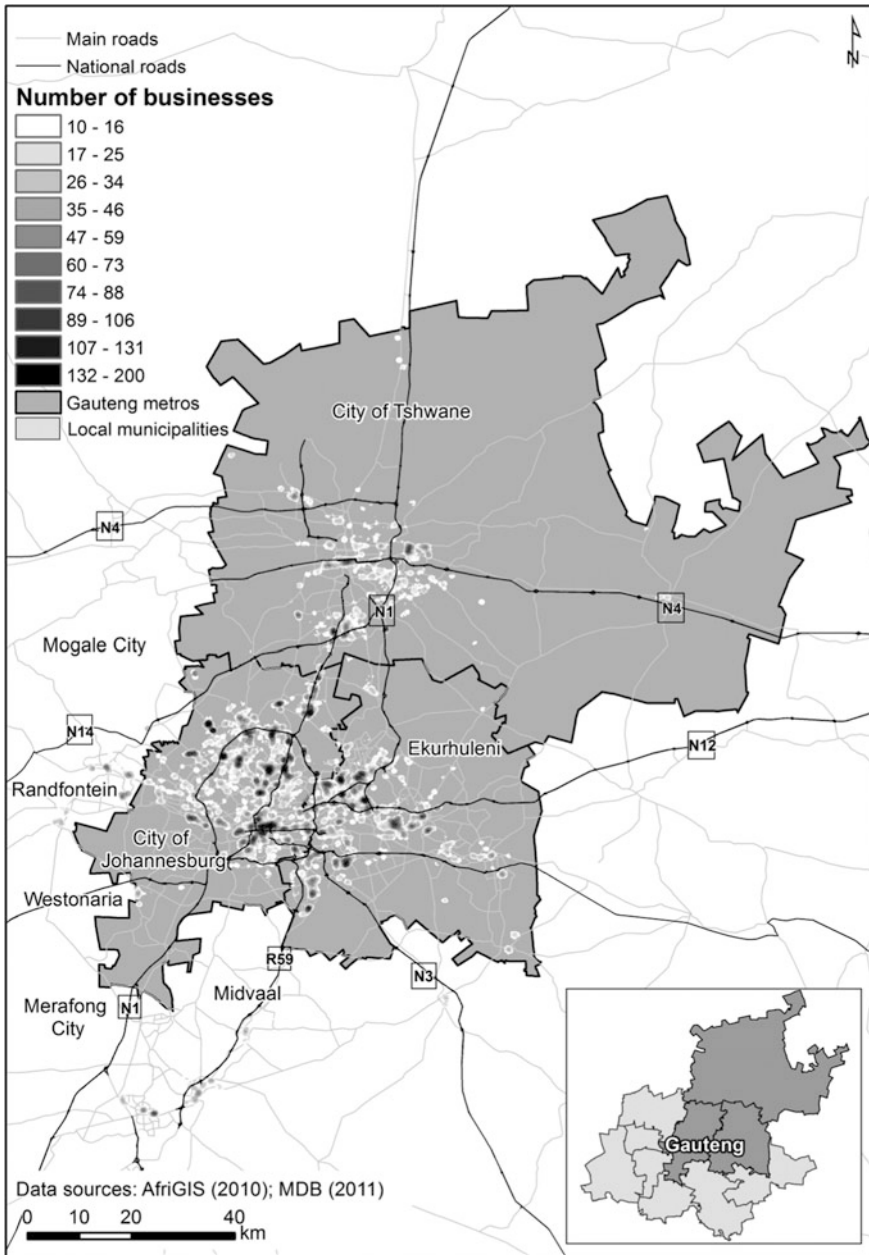


Fig. 1.4 Number of businesses per km²

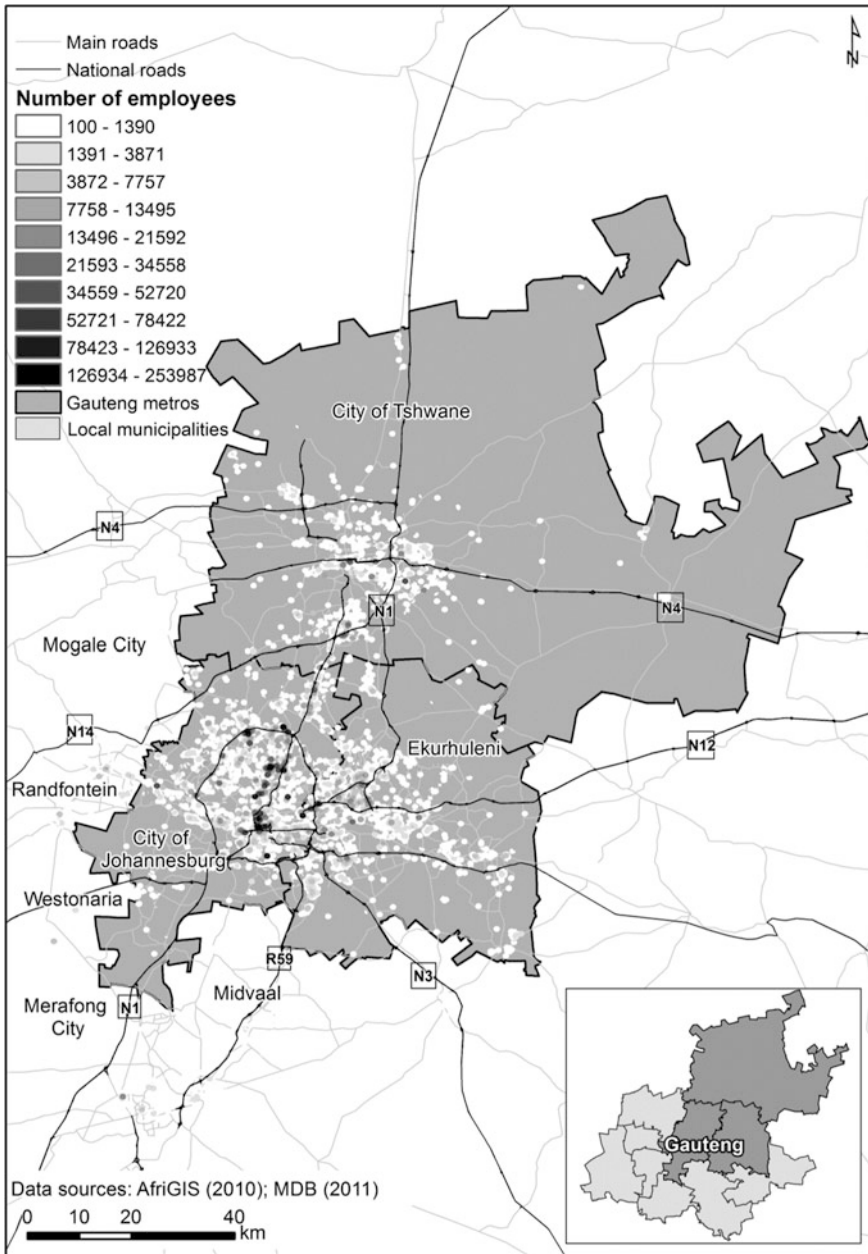


Fig. 1.5 Concentration of employment in Gauteng province

- exploring and documenting the various economic characteristics of the GCR's space economy.
- mining and analysing data to reveal prevailing patterns of spatial economies in the GCR.⁷
- reviewing government-related policies to determine what government should be doing to develop a GCR “that is competitive, spatially integrated, environmentally sustainable and socially inclusive”(GCRO 2008).

In focusing on the city-region's economic dynamics as shaped by local, national and global ties, through extensive empirical work, the book contributes to:

- theoretical, conceptual, empirical, and some methodological discourses of space economy in Gauteng and its surroundings.
- economic geography debates relating to economic regions/city-regions.
- identification of past and contemporary economic geography issues that situate and question the position of the GCR within global-economic dynamics.
- empirically interrogating internal dynamics (such as poverty and inequality, and industrial clusters).
- drawing necessary policy lessons regarding what economic drivers the GCR needs to focus on going forward.

After an introductory chapter (Chap. 1) that focuses on key theoretical and conceptual issues of the space economy of city-regions more broadly, and of South Africa and the GCR specifically, the following two chapters broadly identify past and contemporary economic geography issues that situate and question the position of the GCR within global-economic dynamics. The first of these, Chap. 2, by Mfaniseni Sihlongonyane, deals with the economic drivers of urban change in the GCR since the dawn of democracy in 1994. The chapter reflects on matters of economic policies and growth and their impact on the attraction of investments, creation of employment and the reconfiguration of the regional space economy. Hinging the discussions on the three national administrations to date—that of presidents Nelson Mandela, Thabo Mbeki and Jacob Zuma—the chapter documents the history and the geography of labour and capital: their location, growth, distribution and their influence on the spatial form of the city-region. The thrust of the argument in this chapter is that urban change in the region is shaped by the apartheid legacy; national economic policy; provincial and local interventions; the spatial mobility of people in the country; as well as the vicissitudes of political and economic dynamics on the continent. It concludes with an overview of the functions of the *multiple landscapes* of the city-region and how these landscapes are the products of evident disjuncture between the objectives and actual consequences of public policy. The author calls for a re-examination of public policy in order to identify the appropriate basics that needed for building an ‘inclusive’ city-region.

⁷See, Gotz and Todes (2014) for available data that can be used to understand the space economy. The authors also highlight some of the shortcomings associated with these data sets. Various chapters in this volume used some of these data sets, along with others from different sources.

In Chap. 3, Koech Cheruiyot and his colleagues assess the GCR as a global city-region through current global city-region conceptualizations, rankings and mechanisms. The GCR's growth is shaped by local, regional, and global factors. The power of the GCR as the economic heartland of the country transcends its boundaries to connect with and influence other economic conurbations. The authors' analysis demonstrates its economic viability, for example, as a player in global capital and financial flows. This understanding will serve as a useful tool for governments to improve on overall performance, and initiate and adjust policies to make their 'regions' more attractive to foreign investment. This chapter demonstrates the feasibility for global firms of investing and operating within certain key regions. However, faced with ambiguities in how rankings are measured and calculated, it must be stressed that rankings are either effective or ineffective depending on which parameters corporates and city governments choose to focus on.

Chapters 4, 5, 6, 7, 8 and 9 focus on an interrogation of the internal dynamics that form the cornerstones of the GCR's economy. Each of these chapters uses various techniques and makes use of extensive empirical work using data from several sources, and sets out some necessary lessons regarding the economic drivers and policies the GCR should focus on going forward. In Chap. 4, Rainer vom Hofe and Koech Cheruiyot investigate industrial clusters as building blocks of the Gauteng economy. The authors note that economic clusters are spatially-concentrated critical masses that are somehow related and impact on one another as a result of their complementarities or similarities. They reflect synergies between industries, suppliers and the public sector. The authors apply a multiplicative decomposition model to Gauteng's 2006 Social Accounting Matrix (SAM) and identify six key industrial clusters as well as inter-industry linkages in the regional economy. The key clusters are: services and trade; food products; metal products; chemical products and petroleum; building and metal products; and light manufacturing products. They confirm that the services and trade cluster is dominant since it alone provides 68.5% of Gauteng's regional employment and contributes 55.9% to the GVA. Vom Hofe and Cheruiyot suggest policies that could generate benefits from cluster-related agglomeration economies for economic growth and employment creation, leading to sustainable economic development in the Gauteng regional economy.

In Chap. 5, Sam Ashman and Susan Newman situate manufacturing in Gauteng within the overall development of the Minerals–Energy Complex (MEC), South Africa's distinctive capital-intensive system of accumulation, and identify and trace the evolution of the most important sectors of manufacturing within Gauteng. Their analysis—based on latest EasyData records—suggests that the MEC is still central in GCR manufacturing and that it remains highly path-dependent, both in terms of its spatial distribution and the subsectors that dominate. Manufacturing (in terms of either employment or capital stock) is concentrated in a few sectors that are highly capital intensive and closely linked to, and dependent upon demand from, mining. With plummeting global prices and crises in the mining sector further threatening the ailing manufacturing sector, Ashman and Newman suggest various

interventions that are needed for MEC and non-MEC sectors in the Gauteng regional economy.

In Chap. 6, Christian Rogerson draws on existing data sources, including materials and data from Global Insight, EasyData and the GCRO, to explore dynamics and provide an overview of the current state and spatial distribution of the formal tertiary sector, a critical key driving sector for the economy of the Gauteng City-Region. The analysis in this chapter reveals the spatial polarization of the tertiary sector at the national scale and the geographical unevenness of the tertiary sector within the GCR, since Johannesburg is the overwhelming focus. Within Johannesburg, at the core of the GCR, distinct geographical trajectories are observed for the city's finance activities, tourism and creative (including advertising and new media) industries—the latter being seen as at the cutting edge of a new tertiary sector.

In Chap. 7, Sally Peberdy situates the informal economy of Gauteng in the South African and international contexts and looks at different approaches to the informal economy and their policy implications. The chapter explores the distribution, role and penetration of the informal sector in terms of both entrepreneurial activity and employment in the available spatial and economic landscapes, as well as how it extends the spatial economic footprint of the GCR. The discussion draws on a GCRO survey of over 1,567 South African, migrant, and cross-border informal sector entrepreneurs operating at selected sites in Gauteng, and a GCRO survey of 1,270 informal sector cross-border traders, and also makes use of StatsSA data. It explores the spatial distribution of informal sector entrepreneurial activity, and the links between businesses and suppliers in the GCR, as well as between the formal and informal sectors within the GCR and further afield, including neighbouring countries. It examines the distribution and structure of informal employment in the GCR and its role in household livelihoods. The chapter suggests relevant policy options and discusses the need for further investigations that could enable development of the more marginal economies in township and other spaces in the GCR, while facilitating integration into the formal sector.

In Chap. 8, Koech Cheruiyot and Darlington Mushongera discuss how, despite the implementation of several policies by the post-1994 South African democratic government administrations that were specifically designed to address inequalities, it is starkly clear that inequalities still persist along racial lines and across space. The authors apply neoclassical growth theory and spatial econometric techniques to ward-level median household incomes, calculated from census data for 2001 and 2011, to test the extent of economic growth convergence. They show that, while exploratory spatial analysis does not clearly indicate unconditional convergence or divergence, spatial models suggested a divergence rate of 0.7% between the two censuses. In addition, the growth rate of divergence is significantly clustered, with the north–west and south–west of Gauteng having higher growth rates of ward-level median household incomes. They suggest that policy should incorporate a spatial targeting element.

In Chap. 9, Phindile Ngwenya and Precious Zikhali use global value chains to show how South Africa's township economies could be integrated with global

and/or local value chains. They identify the presence of both ‘vertical’ and ‘horizontal’ aspects of value chains, and the possible implications of these for township economic development processes. Placing special emphasis on townships in Gauteng, and using Diepsloot as a case study, Ngwenya and Zikhali employ econometric techniques to analyse Diepsloot longitudinal household survey data collected by the World Bank. They show evident relationships between suppliers and consumers of goods and services, highlight the nature of integration into the local, regional, and global value chains, show impacts of such integration on the performance of township businesses, and detail how the impact of integration into value chains is influenced by the characteristics of the enterprise as well as the community in which the enterprise operates. The authors conclude the chapter by exploring policy implications and the role and responsibility of both the public and private sectors in value chain development as a strategy to revitalize South African township economies.

Finally, Chap. 10 presents concluding remarks covering key themes, policy, and research implications in the Gauteng City-Region space economy and beyond. Acknowledging that while the array of key development processes explored in each of the chapters is not exhaustive, it contributes substantially to informing policy debates around the Gauteng City-Region and offers potential learning experiences for policy development in other city-regions, especially in the Global South. The author cautions about the need to account for factors that may shape the magnitude and direction of economic growth and development in the GCR. These include understanding and correctly contextualizing policy definition, change and implementation, as these are important ingredients for any development policy success.

Acknowledgements Mncedisi Siteleki and Samkelisiwe Khanyile are thanked for the preparation of the figures in this chapter. The useful comments of the two reviewers who read an earlier version of this chapter are acknowledged.

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Author Biography

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Chapter 2

The Economic Drivers of Urban Change in the Gauteng City-Region: Past, Present, and Future

Mfaniseni F. Sihlongonyane

2.1 Introduction

This chapter deals with the economic drivers of urban change in the Gauteng City-Region after the dawn of democracy in 1994. The chapter reflects on matters of economic policy and growth and their impact on the attraction of investments, creation of employment and the reconfiguration of the regional space economy. It is about the history and geography of labour and capital, their location, growth, distribution, and influence of the spatial form of the region. The thrust of argument in this chapter is that urban change in the region is shaped by the apartheid legacy; national economic policy; government interventions; spatial mobility of people; and the vicissitudes of political and economic dynamics on the continent.

The chapter discusses the economic development of the region in terms of the national administrations of Presidents Nelson Mandela, Thabo Mbeki and Jacob Zuma. While acknowledging some policy continuity between the administrations, the focus is on programmes and projects with significant interventions. It starts by describing the historical and economic location of the city-region. This is followed by a reflection on the national policy development under Mandela and its impact on the city-region. The following sections deal with the impact of the Mbeki era's economic policy on the development of the city-region, and influence of national and provincial economic policies under Zuma's administration. The last section sets out functions in the city-region and concluding remarks on overall outlook.

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2.2 Development of the Gauteng City-Region

During the apartheid era, South Africa had been constituted by four provinces and a number of ‘homeland’ areas. In 1994 after the first democratic government came to power, the country was divided along new political boundaries into nine provinces, one of which was Gauteng. Figure 2.1 shows the apartheid era homelands. Areas of the former KwaNdebele, Lebowa and Bophuthatswana were included in Gauteng, in the northern and north-eastern part of the province.

The name ‘Gauteng’ is the Sesotho word meaning ‘Place of Gold’ (Duncan 2008), which was coined as a result of the mining industry that developed after the discovery of gold in the 1880s. This historical function has made the region to be South Africa’s and the Africa’s economic powerhouse, although Gauteng is the smallest of the nine provinces with only 1.4% of the country’s surface area.

The present-day province of Gauteng emerged from the renaming the Pretoria–Witwatersrand–Vereeniging (PWV) region in 1995, which encompassed the far West Rand, the West Rand, the Johannesburg area, the East Rand, and the Vereeniging area (South Africa Union 1955, p. 2). Hendler (1992) points out that the region was not a homogenous mass but three conurbations involving Pretoria, Johannesburg and Vereeniging. Its layout owed much to the Menz Committee, which planned ‘African townships’ in the 1950s and 1960s according to apartheid policies (South African Union 1955; Mabin 2013). This Committee divided the region into the Far West Rand; the West Rand; the Johannesburg area; the East

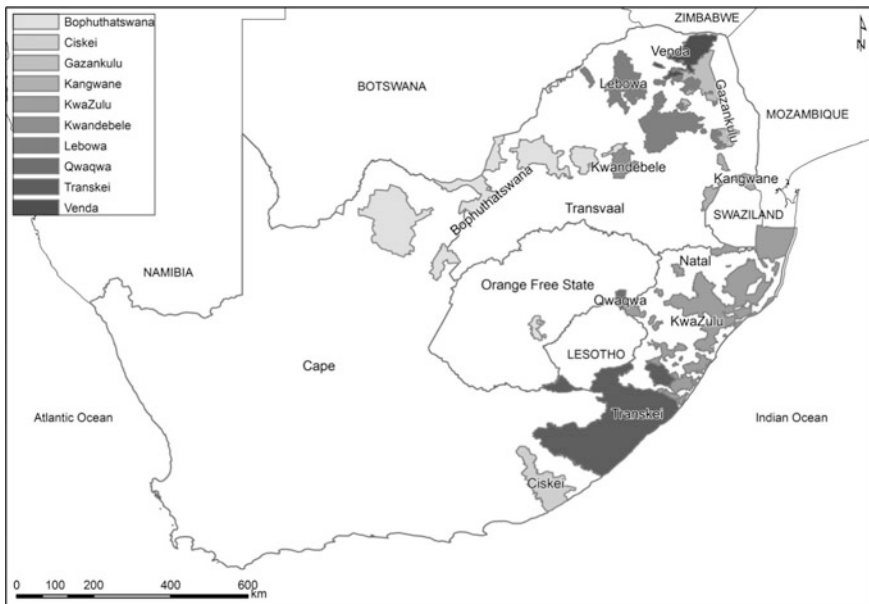


Fig. 2.1 The former South African homelands during the apartheid era

Rand; and the Vereeniging area (South African Union 1991). A system of freeways, developed in the 1970s to serve the mining and industrial belt, had a diverse set of linkages to peripheral towns. The Spatial Development Strategy of 1981, which also segmented the area in terms of a statutory guide plan of five sub-regions, contributed to the legacy (Hendler 1992, p. 41). The notion of a poly-nucleated megalopolitan structure (cf. Office of the Prime Minister 1981) was depicted in the guide plans which referred to the “Greater Pretoria area (three African townships); the Central Witwatersrand (seven African townships); the East Rand/Far East Rand (twelve African townships); and the West Rand (three African townships)” (Hendler 1992, p. 47). Before the end of the apartheid era, the region had an estimated population of 2,740,406 million people, with 1,349,080 in the Central Witwatersrand; 666,180 in the East Rand/Far East Rand; 356,027 in the Vaal River complex; and 369,119 in Greater Pretoria (Hendler 1992, p. 63).

Gauteng’s landscapes developed from the historical establishment of mining and commercial towns, as well as settler administrations in and around the Witwatersrand gold reef. Race groups were spatially segregated, with the poorest (mainly black) communities located at the edge in areas away from jobs and urban services (Harrison 2013). The predominantly white towns and suburbs of the PWV were well-resourced and provided with good infrastructure, while the black townships and informal settlements represented degraded living environments with poor infrastructure and minimal social facilities (Rogerson 1996). Generations of Chinese migrants were largely confined to communities in limited spaces in the CBD (e.g. the ‘Chinatown’ at the western end of Commissioner Street in downtown Johannesburg).

The distribution of residential areas, land uses, transport routes and statutory curbs on economic development resulted in a spatial pattern where extreme forms of social inequality and uneven access to the economy were manifest, and entrenched along racial lines: urban segregation was germane to the urban space economy of the region (Maylam 1995). Racial income inequalities were high and spatial/racial imbalances in service provision were pronounced.

Employment data for the period after 1989 indicate alarming declines in certain spheres of formal-sector employment, especially the manufacturing sector, which experienced a phase of major restructuring (Rogerson 1996). The rate of joblessness, by relatively narrow definition, was very high at 37% (Ibid 1996). A baseline study on poverty in the PWV region indicated that widespread inequality was due to “a consistent and singular increase in poverty in the PWV over a period of twenty years” (Hall et al. 1993, p. 219). Estimates of income disparities in 1995 suggest that average white monthly household incomes were four and a half times larger than those of black households (Gauteng Provincial Government 1995).

By 1995, then, when Gauteng came into being, the GCR was a network that had arisen from the socio-political engineering of apartheid planning. It consisted of “metropolitan cities, secondary cities, towns and smaller service centres, well connected by road and rail” (Harrison 2013, p. 11). However, today, the GCR has urban landscapes that reflect the spaces, identities, relationships and encounters of historical divisions, while also embedding the significant and complex generations

of difference that are produced by many overlapping economic histories and functions. These urban landscapes can be loosely divided into nine historical formations:

Old small towns landscape grew from the availability of agricultural land or the discovery of mineral resources to accommodate white settlers in the 1800. These landscapes have both colonial and apartheid beginnings and tend to have an old industrial plant and/or railway lines. They contributed significantly to the proliferation of dysfunctional settlements, dysfunctional space economies and, to the terrible trio of poverty, inequality and unemployment. They have declined since the slump in mineral prices and with the shift towards post-industrial production.

Metropolitan landscapes are large cities such as Johannesburg and Pretoria with large populations and social and economic relations with satellite towns of the region. These landscapes developed from old small town landscapes, of which they still have the vestiges, through trade and diversification. They contribute the highest earnings to the GDP of the province, but are characterised by remarkable economic, income, and social inequalities, and spatial fragmentation. They are responsible for unprecedented urban sprawl, new slums, and unbalanced development.

Suburban landscapes are part of metropolitan landscapes. They are places of privilege providing comfortable neighbourhoods for the middle and upper classes. They are produced largely through decentralisation urban growth away from the inner city. These are characterised by the post-industrial urban dynamics of office parks, residential estates (gated communities) and shopping complexes, which propagates fragmentation.

Gated community landscapes, developed over the last 15–20 years, are walled, residential communities or housing estates with strictly controlled access to “prevent penetration by non-residents” (Blakely and Snyder 1999, p. 2), and public spaces that are privatized.

Black township landscapes are areas created originally by the apartheid regime for ‘non-white’ residents—blacks (Africans), Indians and ‘Coloureds’, on the periphery of towns and cities, usually 20–30 km away from the CBD. These areas often have limited formal economic development apart from retail, and conflicting interests about peripheral land-use. Services such as electricity, water and heating are inadequate or unreliable.

Informal settlement landscapes are urban or peri-urban locations where houses and ‘shacks’ have been constructed on land that the occupants occupy illegally, without official approval. Many informal settlements are located on the outskirts of the city adjacent to black townships.

RD (Reconstruction and Development Programme) landscapes were established through the massive government housing capital subsidy scheme. They are sprawls of formal low-cost mass housing, largely at the edge of the cities where land is cheaper, far from job opportunities. Despite the government’s good intentions, they perpetuate the apartheid urban form (Horn 2010).

Peri-urban Landscapes are located on the periphery of the major cities. They contain a variety of restaurants, retail shops, conference facilities, a spa, and hotels. These are strategically located to provide touristic leisure and entertainment. They

are thriving economically. While not intense, they provide a lot of jobs to the lowly skilled. They include: Shell Ultra cities, cultural villages, botanical gardens, nature reserves, airports, and waterfronts. They often carry a mix of these activities. Such areas include: Muldersdrift, Walter Sisulu National Botanical Garden, Lanseria International Airport, Hartbeespoort Dam, Nature Reserves, Maropeng, and Lesedi Cultural Village.

One of the primary trends in the growth of tourism is the proliferation of *African cultural villages* within the Gauteng region. African cultural villages landscapes are defined as complexes that are purposely built with the help of ‘cultural workers,’ to aspects of cultural life for a group as it was at a specific period (or over several periods) of time (Van Veuren 2001). The ‘cultural workers’ are employed to perform and demonstrate a purportedly ‘traditional’ way of life for visitors. These landscapes are therefore purposely-constructed tourist attractions by people recruited (sometimes as families) from the relevant ‘ethno’-linguistic groups to live and work in the villages. They are tourist villages which celebrate the cultural traditions of several different people of Southern Africa.

The recent introduction of mega-projects provides yet another landscape that seek to stimulate economic activity in the already built environment. Whether these mega-projects are “a new stadium, a world-class museum, [or] a high-speed rail line, [they] are seen as transformative, placing a city on the world stage and attracting visitors, investment, jobs, and, ultimately, a higher quality of life for residents” (Bornstein 2010, p. 199). These projects are directed by spatial targeting and channel investment (in the form of large-scale facilities and infrastructure) into specific locations in the city. Sellers (2002) criticizes the influence of international business elites and external capital on urban-policy making in relation to mega project as the interests of the elite usually override the interests of the poor. Many of the above landscapes have evolved since democratic elections of 1994.

2.3 The Mandela Era: The Reconstruction Imperative

The era of political freedom was viewed as an important opportunity for building a new foundation for economic inclusion, and therefore economic prosperity. The government developed the Reconstruction and Development Programme (RDP) policy in 1994 “to mobilize all our people and our country’s resources towards the final eradication of apartheid and the building of a democratic, non-racial and non-sexist future” (ANC 1994, p. 1). The programme sought to enhance socio-economic growth and basic needs delivery, in order to address the legacy of injustice. It placed an emphasis on “people-centred development”, “integrated development” and “sustainable development” that was both democratic and participatory (ANC 1994). Munslow and Fitzgerald note that “[t]here is no doubt that the RDP played a pivotal role in ensuring the successful transition from separate development towards a more sustainable development future” (1997, p. 57). Lodge points out that, nationally:

between 1994 and the start of 2001, over 1.1 million cheap houses eligible for government subsidies had been built, accommodating five million of the estimated 12.5 million South Africans without proper housing. Between 1994 and May 2000 around 1.75 million homes had been connected to the national grid, while the proportion of rural homes with electricity grew from 12% to 42% ... By the beginning of 1998, standpipes had been installed within 200 metres of the dwellings of about 1.3 million rural people ... By 2000, a total of 236 projects had supplied clean piped water to nearly 4.9 million people—most of whom were inhabitants of former homelands (Lodge 2003, p. 57).

In Gauteng, this was achieved largely through various housing, public works and community development projects. Most notably, in the East Rand area, the province delivered houses, water, electricity and sanitation through the Kathorus Presidential Project that emerged from an ‘urban war’ in the months before the first democratic elections (Zack 2004). Many other communities received water, electricity and sanitation facilities as a result of the National Public Works Programme, or from Eskom, the state-owned electricity supply enterprise.

However, the welfare orientation of the RDP came under critical scrutiny as investors and international financial institutions demanded greater privatisation in relation to national economic policy. In 1996, a macro-economic strategy known as Growth Employment and Redistribution Strategy (GEAR) was developed, notwithstanding its affinity to neo-liberalism (Republic of South Africa 1996). The GEAR set of policies was developed to achieve high rates of economic growth, expand the private sector, improve output and employment, achieve fiscal reform as well as encourage trade and investment (Misuraca 2007). This was predicated on the assumption that the expansion of the private sector would have a substantial impact on the economy, while the role of the state was largely a facilitative one.

The democratic opening up of the economy and the country in general led to a surge in informal economic activity in the major cities. The “rise of the informal economy [was] evident in a host of new street or pavement-centred activities (including flea markets, hawkers, taxi drivers, street barbers, shoe shiners or prostitutes), the proliferation of home-based enterprises (child-minding, *spazas*—retail shops run from the home, *shebeens*—liquor-selling outlets run from the home, backyard or garage workshops/repairs, hairdressers, the showing of videos) and a small number of increasingly formalized ventures located on fixed business premises (small-scale manufacturers, liquor taverns)” (Rogerson 1996, p. 171). Urban areas in the region served an important function as reception areas or gateways for migrant populations—shack settlements provided a low-cost, accessible entry point from which to search for work and gain a foothold in the urban labour market (Cross 2010). Despite the building of significant numbers of low-cost houses, the proportion of households in informal dwellings in Gauteng rose slightly to 22.2% (Turok 2012). Land invasion by those intending to set up informal dwellings began to occur in the province in the 1990s, and migrants from countries experiencing political turmoil and/or economic difficulties, particularly, for example, from Ethiopia, Somalia, and the DRC, moved to South Africa in search of a better life (Kihato 2010; Landau 2010). In 1996, 4.6% of people living in the province were

born outside the country's borders, and in 2001, this had risen to 5.3% (StatsSA 2003).

Unfortunately, the influx of people into the cities was not accompanied by a process of industrialisation. The poor occupied marginal, low-lying, poorly drained and environmentally fragile areas (such as: floodplains, waste ground and dolomitic land vulnerable to subsidence), which endangered lives and local ecosystems (Turok 2012). The burgeoning of poor urban communities and the consequences of over-urbanisation were also driven by rural poverty, which government was unable to do much about (Turok 2012). The growing urbanisation of poverty—meaning a rising percentage of the poor living in urban areas—was augmented by the disconnection between urbanisation and industrialisation, which exacerbated inequality and joblessness.

2.3.1 Inner City Transformation

The huge influx of people increased the informal sector in inner city environments such as the city of Johannesburg. According to World Bank figures, the number of informal shacks in the Johannesburg municipality for the period 1996–2001 grew by an astonishing 42% to almost a quarter million, even though the number of formal dwellings increased by over 220,000 units (Honey 2004). The spreading informal sector created the impression that cities were in decline (Crankshaw and White 1995). High rates of crime generated fear and feelings of insecurity that undermined confidence in the inner city (Murray 2008). The sharp increase in the violence of almost all contact crimes and house burglaries, and a massive spike in car and truck hijackings, earned the province the nickname of 'gangsters' paradise' (Germaner and Flanagan 2015; Parker 2012).

Pessimism accelerated the rapid decline of property values in the inner city, to a large extent. A lot of 'big money', such as investment banks and financial consultants moved north of the city centre to new decentralised nodes such as Rosebank, Sandton, Rivonia, Sunninghill and Midrand (Crankshaw and White 1995), where a large amount of the city's A-grade office space was increasingly located. The Johannesburg Stock Exchange relocated its offices from the central business district (CBD) to Sandton in the late 1990s. This exodus from the inner city contributed to a rapid growth in lifestyle retail, hotels, high density exclusive apartment, and corporate office development, and speciality retail and residential densification in suburban areas. Sandton became the country's new financial district and the province's premier business centre (Mail and Guardian 1997). Even the Chinese community, resident in the older parts of the inner city, moved out to establish shops, restaurants, business and residences in other parts of the city. This transformation saw the concentration of more affluent populations in the northern suburbs, and the poor in the southern areas. In the process, the apartheid urban form was intensified.

2.3.2 Suburbs as Growing Areas

By the mid-1990s, the exodus of business from the inner cities of Johannesburg and Pretoria to the suburbs was widespread. Many suburbs became enclosed neighbourhoods by fencing in residential areas and closing off public roads, and “large luxury security villages or estates, such as golfing or country estates and other large, mainly residential, security areas” mushroomed rapidly (Landman 2004). Decentralised nodes in well-established suburban areas such as Sandton, Randburg and Midrand expanded (Landman 2004). Malls and shopping centres such as Melrose Arch, Montecasino, and Cresta, offering retail opportunities, employment, and recreation, developed in the northern suburbs, particularly in close proximity to highways. These ‘edge cities’ grew along with private car ownership, and provided the functions of former CBDs at convenient, decentralised locations.

The South African Cities Network report (SACN 2010) points out that the shopping centres developed before 1990 were mostly fairly small local convenience centres with a supermarket and up to 25 other stores, or neighbourhood centres with a few specialised stores. After 1990, there was a move towards establishing large malls with a major supermarket, national clothing stores, restaurants and other services, serving a suburban community of between 8500 and 17,800 households. The SACN report (2010) notes that regional centres with between 150 and 250 stores including hypermarkets, entertainment services and a greater choice of clothing stores and other services became part of the mix after 1994. Retail resources in the northern suburbs in areas such as Rosebank, Randburg, Cresta and Killarney expanded rapidly, as did the four ‘city entrance malls’ (Northgate, Southgate, Eastgate and Westgate) established during the apartheid era.

2.3.3 Government Interventions During the Mandela Era

2.3.3.1 Inner City Interventions

In Johannesburg and Pretoria, urban regeneration programmes focused on a number of inner city precincts, such as the city improvement districts (CIDs) established by the Central Johannesburg Partnership (CJP) in 1992 (CJP 2001), in the quest for urban revitalisation. These CIDs, included Gandhi Square, Bank City, and the Seven Building project, contributed to the safety and security of the inner city, and collected an estimated “R91 million [in] levies from property owners annually for the provision of supplementary services to the public space” (JHB CID Forum 2016). Suburban areas such as Rosebank and Sandton also put together urban development frameworks that included guidelines on public space, land-use management and municipal infrastructure investment, as well as private sector investment (Finweek 2007).

2.3.3.2 Townships—Public Works Programmes

In the 1990s, government focus on the inner city of Johannesburg overshadowed township development. For almost a decade, public investment went primarily into improvements of road networks and transport infrastructure. One notable exception during the Mandela era was the presidential project targeting a few townships that had been particularly affected by violence, such as Kathorus (Zack 2004).¹ The projects were in the form of socio-political interventions rather than urban projects aligned with official urban plans. The shopping centres and businesses that sprang up in and around townships, were developed mostly by residents themselves, close to their homes. The economy of the townships was not diversified beyond formal and informal retail, and therefore, they remained marginalised areas. With such a poor local economic base and a high dependency on northern areas of the city for basic commodities, services and employment, there was little impetus for economic and social development (Turok 2012).

2.3.3.3 RDP Upgrading in Peri-Urban Areas

The economic challenges of the poor in the city were intensified by the fact that the RDP housing scheme focused primarily on the periphery of the province. Turok (2012) points out that most of the RDP houses has been built on the outskirts of cities, where land is cheaper, and at low densities that inhibit the provision of public transport and other services. This has reduced people's chances of launching homebased enterprises, and the lower asset value of such housing restricts the likelihood of transferring the house to someone else when circumstances change and people wish to move on. He argues that, although the housing scheme extended formalisation of title deeds to the poor, it is not too emotive to say that RDP housing has "fixed" or "trapped" people in isolated places that perpetuate disadvantage through exclusion from jobs and amenities (2012, p. 33). It has also contributed considerably to urban sprawl in the region, which has seen its morphological footprint extent southwards to areas like Evaton, Sebokeng, and Sharpeville; northwards to Ga-Rankuwa and Hammanskraal, for example; and eastwards to areas such as Benoni, Daveyton, and Springs. The region is therefore still characterised by an economically inefficient, sparse and fragmented urban morphology analogous to its form during the apartheid era (Figs. 2.2, 2.3 and 2.4).

In spite of the GEAR macro-economic policy changes instituted in 1996, South Africa's economic performance was generally disappointing. Chikulo (2003) observed that the anticipated 6% GDP growth rate remained illusory nationally. The economy grew by only 3.3%, and by 1998, it was actually contracting at 0.3%. Instead of creating 200,000 jobs, in the first 18 months of GEAR's existence,

¹Kathorus is an agglomeration of three geographically-adjacent black townships on the southern edge of the East Rand conurbation: Katlehong, Thokoza and Vosloorus.

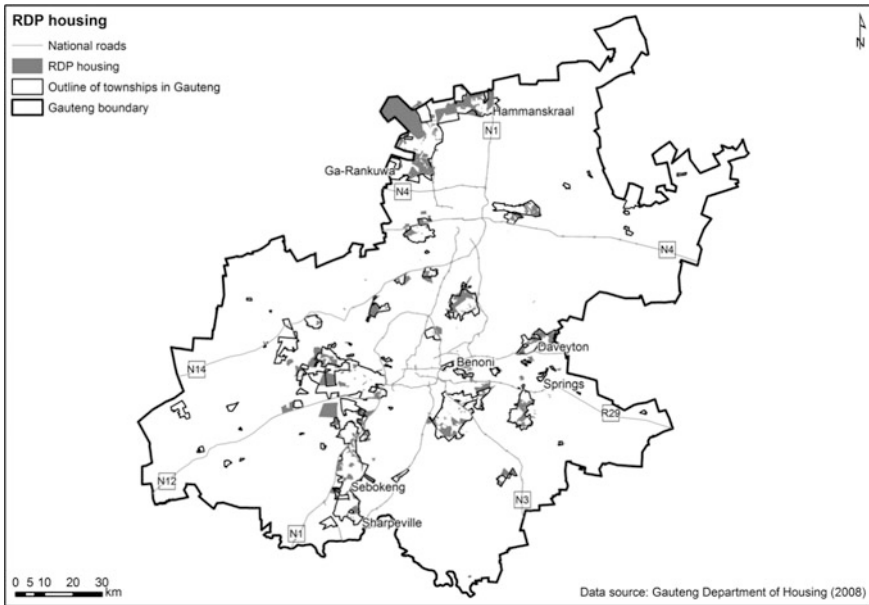


Fig. 2.2 The distribution of RDP housing in the GCR. Source GDH (2008)

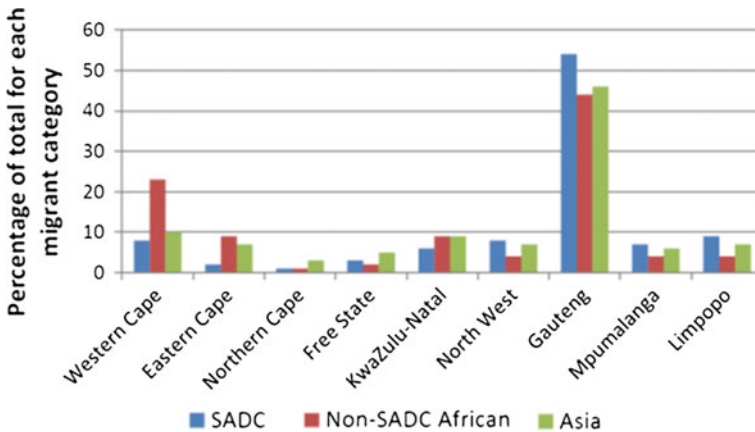


Fig. 2.3 Number of people in Gauteng born in other provinces by municipality, 2001. Note SADC Southern African Development Community. Source StatsSA (2012)

80,000 jobs were in fact lost. It was estimated that the economy actually shed 350,000 jobs after the inauguration of GEAR in 1996, and a total of 500,000 jobs in the period 1994–1999 (ibid). The general economic conditions in the country affected the growth of the province and the objectives of GEAR, as did external events such as the East Asian crisis in 1998 (Hanival and Maia 2008). From 1996 to



Fig. 2.4 The Blue IQ projects in the Gauteng region. Source GGDA (2012)

2001, the average annual growth rate was 4.3%, and although this was an improvement from 1994 (Harrison 2013), the gap between the poor and the rich was growing faster in this region than in the other large cities, both in absolute and in relative terms.

The lack of delivery from GEAR, especially in Gauteng, was attributed to the shift from manufacturing jobs to the service-oriented sector in the second half of the 1990s. Mining’s share of GDP was 11% in 1994, but this declined steadily over the next 20 years to about 5% in 2012 (Ncube et al. 2012). The manufacturing sector also declined. Constituting 19% of total output in 1994, it was only 17% in real GDP by 2012 (Haroon et al. 2014) because the mining and manufacturing sector (as a major employers) faced major adjustments from the rapid trade liberalisation of the South African economy and (Hanival and Maia 2008). In addition, the rise of banking, unit trusts, and hedge funds, etc. in the services sector was promoting speculative investment, which contributed to the growth of joblessness in the region’s economy.

According to the population census of 2001, “employment in the manufacturing sector fell from about 200,000 in 1980 to 110,000 in 2001. By contrast, employment over the same period in the community, personal and social services sector grew from about 255,000 to about 267,000. Similarly, employment in the commercial sector grew from about 169,000 to 178,000 over the same period” (Crankshaw 2008 p. 1696). There were therefore fewer jobs for the unskilled and

low-skilled labour force in Gauteng, while growth in the economy was located largely in the services sector. Since the majority of job seekers were low-skilled, very few could readily be absorbed into the area's economy. Jobs in the old industrial zones were declining, and in suburban centres jobs were largely in the areas of knowledge, information and image production, as well as banking, retail, and food and restaurant services.

The population of the GCR is not distributed evenly across the region. Rather, "it is concentrated in three of the six municipalities: City of Johannesburg (37%), Ekurhuleni (26%) and City of Tshwane (22%). Sedibeng, West Rand, and Metsweding together host only 14% of the Gauteng population" (Landau and Gindrey 2008, p. 5). Old small towns, such as Benoni, Brakpan, Cullinan, and Springs, along with the industrial sites of bigger cities, declined as more jobs were located in *post-industrial* centres (for example, shopping complexes, office parks, and science parks, among others). Invariably, there is a disconnection between the creativity-intensive occupational sectors located in the new centres of consumption in suburban areas and the large low-skilled labour force living in black townships and informal settlements. The region's economy, therefore, has the challenge of dealing with the negative consequences of industrial and occupational clustering, which is leaving a substantial part of the workforce behind.

2.4 The Mbeki Administration: Modernising the Economy

In line with GEAR, President Thabo Mbeki introduced the concept of an 'African renaissance' to the South African development scene in 1999. The emphasis was "on the need to advance developmental agendas that would bring Africa to a position of competitor in the global world economy" (Mbeki 2000, p. 77). Mbeki identified the African renaissance with "a new 'unionised proletariat class' that is ... involved in ownership and enterprise management" and with ... "the emergence of a large urban professional and entrepreneurial middle class that is property-owning and is an active participant in the development of small and medium enterprises" (Mbeki 2000, p. 77). Local public sector entrepreneurship was promulgated as the facilitator for cities seeking to undertake economic and political restructuring. In the City of Johannesburg, in 2000, the neoliberal accentuations were galvanised through the development a long-term plan known as *iGoli 2010*. This plan aimed at transforming the city into a globally-competitive "World Class African City" (Allan et al. 2001, p. 147). In pursuit of this vision, the city also launched an *iGoli 2030* plan, which had strong neo-liberal overtones, as part of a globally competitive quest (Tomlinson et al. 2003; Murray 2008).

Urban development continued to be promoted through the establishment of precincts—City Improvement Districts (CIDs) and Urban Development Zones (UDZ)—as well as through the creation of themed spaces that influenced the revitalisation of inner city Johannesburg. The establishment of the Urban Development Zone tax incentive [as found in section 13*quat* of the Income Tax Act

58 of 1962 (the Act)], brought leveraging influence to inner city redevelopment and attracted investment to the inner city. The Johannesburg Development Agency (JDA) facilitated the revitalising of Constitution Hill, Newtown, and Faraday Station, upgraded Main Street to make it more pedestrian-friendly, reconstructed and renovated the Drill Hall, and developed the Fashion District. It has also supported regeneration in Jeppestown and Braamfontein. Public spaces received a ‘face-lift’, and the improvements created a liveable city where children play and adults mingle.

Overall, the region experienced urban growth, especially in the main metropolitan centres. Mubiwa and Annegarn (2013) point out that between 1991 and 2001, the greatest urban development took place in Johannesburg where the proportion of urban land cover/use to total municipal area increased by 8.5%. Urban land cover/use in Tshwane increased by 7.5%, followed by Ekurhuleni with a 5.7% increase. Emfuleni also saw significant growth with a 5% increase. Urban development was less than 3% in the remaining municipalities of Gauteng. Between 2001 and 2009, the highest level of urban development was 6.4% in Ekurhuleni, followed by 6.2% in Johannesburg. Urban development was also significant in Tshwane at 4.7%. However, Johannesburg remained the most urbanised municipality with 56% built-up area in 2009, followed by Ekurhuleni and Tshwane with built-up areas of 44 and 35%, respectively. A 20% of the land in Emfuleni was urbanised by 2009, while approximately 12% of land use in Mogale was urban (OECD 2011).

The 2007 StatsSA Community Survey showed that 70% of households lived in formal dwellings, compared to 65% in 1996 and 68% in 2001. The percentage of households with access to piped water grew from 84% in 2001 to 88% in 2007. The use of electricity as the main energy source for lighting increased from 57% in 1996 to 80% in 2007. There were also considerable improvements in access to refuse removal and sanitation services (StatsSA 2007). The population increased from 44.8 million in 2001 (StatsSA 2003) to 48.5 million in 2007 (StatsSA 2007). The highest rates of population increase were recorded in the Western Cape and Gauteng provinces (StatsSA 2007). Krugell et al. (2010, p. 1) observed that, at the time they were writing, “access to basic services had improved across the board: approximately 80% of households used electricity for lighting, 88% of the population enjoyed access to piped water, and 60% of households had access to a flush toilet.” Typically, the urban provinces of Gauteng and the Western Cape were above the national average in all these aspects.

The Gauteng region has attracted far larger numbers of migrants than other areas of South Africa. These migrants are from various parts of the world, but most are from elsewhere on the African continent, particularly Somalia and the DRC. Gauteng is “the economic gateway for transnational migrants with approximately half of all foreign-born individuals in South Africa living in this province” (Van der Byl 2014, p. 15). The “net migration gain, (i.e. the difference between arrivals and departures from the province) was 418,000 between October 2001 and February 2007. This translates into an annual gain of approximately 78,000 migrants” (Landau and Gindrey 2008, p. 7).

Simkins (2010) notes that net migration into Gauteng accounted for 31% of the population increase between 1991 and 1996, and 20% between 1996 and 2001. Between 2001 and 2007, 40% of the population increase in the region was made up of net migration. A total of 781,701 immigrants came into the region: 42,385 to Sedibeng; 18,073 to Motsweding; 43,246 to the West Rand; 177,107 to Ekurhuleni; 275,027 to Johannesburg; and 225,863 to Tshwane (Simkins 2010).

Across the region, there has been a burst of afro-style, afro-beat, afro-chic, afro-deli aesthetics and other examples of African hybrid modernities across the urban commercial scene. These include radio stations (such as Kaya FM which is oriented towards the black middle class), African cultural villages in the peri-urban areas of Gauteng, African restaurants (e.g. Moyo, Lekgotla, Shisanyama, among others), and African medicine crossing over into the commercial healthcare space. A number of African style and design icons have emerged, such as Sun Goddess, Strangelove, Stoned Cherrie, Mzansi, and Loxion Kulca which present a nuanced range of African and cosmopolitan aesthetics: “the garments and styles they design and produce comprise a range of modern day hybridized identity options in which African and cosmopolitan aesthetics are fused” (Farber 2010, p. 129). Nuttall observed how the Y-generation at the Rosebank Mall engaged in “innovative stylization involving a remix or blend of different cultures” (2004, p. 431). There is a sense that the main urban centres are becoming increasingly cosmopolitan.

The commercial strategy of Chinese entrepreneurs shifted from single isolated shops, or shops in small groups scattered throughout the region, towards bigger agglomerations, particularly following renewed immigration from China after the dawn of the democratic era in South Africa in 1994, and the establishment of diplomatic relations between South Africa and China in 1998. These migrants create close networks that assert Chinese economic and cultural presence in the region, and which are an adaptive tactic characterised by mutual support, based on family and village origins. Chinese culture, traditions and history influence the way business is done. More than twenty large new Chinese-owned commercial centres have developed across Johannesburg, invariably bearing names such as China City, China Town, China Mart, China Mall, China Plaza, Dragon City and China Cash & Carry (Dittgen 2015).

‘Chinatowns’ are commonly viewed as ethnic settlements or communities within a larger society. Some scholars have used the terms ‘enclave’ or ‘enclosure’ to describe this form of settlement (see Lee 2009; Park 2010; Dittgen and Large 2012; and Mohan 2013). Rose Hum Lee’s (1949) early study viewed Chinatowns in the US as ‘ghettos’ of Chinese communities within non-Chinese communities, having no independent economic structure since they were attached symbiotically to a larger economic, political, and social base. Chinatowns are now viewed through a much more nuanced lens. Dittgen argues that “Chinese activities are closely related to their respective domestic economy to which they are linked by flows of various kinds” (2015, p. 47). Consequently, “they oscillate between an isolated enclave and a connected economic ‘graft’” (2015, p. 47). Some scholars take a broader approach towards the way that Chinese associations in South Africa strengthen connections to the homeland (Huynh 2015). Cheung draws attention to China’s strategic

approach to advancing the “Made in China” agenda, in which the state acts as a “transnational actor and culture ... representing the state’s new role as the factory of the world and [advancing] national political interests” (2009, p. 2). He claims that the soft power approach is a unique and particular brand of Chinese capitalism and a unique form of diasporic diplomacy within the global capitalistic system in which China is a major global power.

These commercial centres have been highly empowering for local low-income earners. Shops in these developments sell a wide range of cheap, bulk-priced household products, imported directly from China. Many offer a tempting variety of state of the art merchandise, services and entertainment. The centres are usually located in areas convenient for warehousing and distribution, but these frequently also have easy access to transport networks, for example, China Mart, close to central Johannesburg, is situated near the M2 highway and so is conveniently accessible for low-income customers. The influx of people stimulates business for taxi owners and other transport services. The malls have become a major source of commodities and materials for trading in the region and beyond. China Mall in Crown Mines is a hub where many Chinese small business owners come to purchase goods in bulk for stores in other areas of Johannesburg, and many of these malls are the source of goods for cross-border traders with businesses in other parts of SADC region. These centres provide employment for hundreds of job seekers who might previously have looked for jobs as farm or domestic workers, but who are now finding work as shop assistants.

2.4.1 Government Interventions During the Mbeki Era

President Thabo Mbeki promoted Johannesburg as ‘an African city’, and at the launch of the inner city Urban Renewal Strategy in 1997, the city was positioned as the “Golden Heartbeat of Africa” in 1997 (Amirtahmasebi et al. 2016, p. 7). However, the increase in foreign immigrants to the region, combined with low economic growth, raised xenophobic sentiments among South Africans feeling marginalised because of lack of skills and joblessness. In order to foster economic inclusion, the government developed the Accelerated and Shared Growth Initiative for South Africa (AsgiSA) in 2006, which grew out of the 2003 Growth and Development Summit, and the 2004 Micro-economic Reform Strategy (MERS), which had been mandated to halve poverty and unemployment by 2014. AsgiSA was a broad framework designed to accelerate economic growth to an average of 4.5% between 2005 and 2009, and to raise this to a sustainable 6% average annual rate between 2010 and 2014 (O’Malley 2006). Skills shortages across numerous professional categories were identified as key factors constraining economic growth, and consequently, a skills empowerment arm of AsgiSA, the Joint Initiative for Priority Skills Acquisition (JIPSA), was launched in 2006. The JIPSA strategy aimed to broaden the training pipeline, train people more effectively and to higher standards and retain people in skilled employment.

The notion of a developmental state began to find its way into policy discourse. The government launched the Black Economic Empowerment (BEE) programme in order to address the huge racial economic inequality inherited from the apartheid past. According to Sartorius and Botha (2008), BEE contributed to a gradual increase in the black middle class, and ownership of capital on the Johannesburg Stock Exchange (JSE) had grown to 4% by 2008 as a result of direct intervention through BEE industry charters and legislative measures. The black middle class had numbered 3,616,504 in 2000 (Garcia-Rivero et al. 2003, p. 17), and Southall observed that “the middle class as a whole increased considerably in size, from 8.8% of the population (around 3,571,350) in 1994 to 11.9% (around 5,333,550)” in 2004 (2004, p. 527). The emergence of the black middle class, often signified by the neologism ‘afropolitanism’, boosted private sector development in the province considerably (Mbembe 2005).

In his state of the nation address in 2001, President Mbeki announced the Alexandra Renewal Project (ARP), worth 1.2 billion Rand, to empower the poor and alleviate poverty in the township (Sinwell 2005). The ARP was to commence the following year under the leadership of the Department of Housing, with resources drawn from all three spheres of government (Roefs et al. 2003).

Also in 2001, the Gauteng Provincial Government (GPG) officially launched the Blue IQ initiative and embarked on an energetic drive to get an initial group of eleven mega projects off the ground. These included the development of City Deep Transport Logistics Hub, Constitution Hill, Cradle of Humankind, Dinokeng, the Gautrain, Johannesburg International Airport, the Innovation Hub, Newtown Regeneration, Wadeville–Alrode Industrial Corridor, Kliptown Regeneration, and Gauteng Automotive Quarter. Blue IQ sought to “develop world-class infrastructure, implement marketing and investment strategies, reduce bureaucratic red tape for investors and suppliers, and encourage skills training and resource building in the areas of technology” (Maharaj 2001). Blue IQ was intended to boost job creation and enhance the competitive potential of Gauteng in the global economy (Rogerson 2004). In May 2002, the GPG announced an increased budgetary allocation for the Blue IQ initiative of R3.5 billion over a period of five years.

The Expanded Public Works Programme (EPWP), launched in May 2004, was to be central to creating employment opportunities for the poor. Integrated and co-ordinated labour-intensive methods for delivery of public sector infrastructure projects and service provision was emphasized. The Business Trust of South Africa committed R100 million for management support at all levels of government over the period 2005–2010 (Hanival and Maia 2008). The EPWP was relatively successful, creating more than 301,000 job opportunities by June 2006, and surpassing its employment creation targets in at least four sectors (Hanival and Maia 2008). A series of support systems were put in place by the Department of Trade and Industrial, mainly for SMEs. Nationally, the number of employed people grew from 2.7 million in 1995 to 4.88 million people in 2014 (Thulo 2015). There was also a sharp rise in the ratio of household to disposable income, from approximately 54% in 2004 to almost 80% in 2007 (Hanival and Maia 2008). However, a large portion of household spending was financed by credit.

2.4.2 *Suburban Growth Through Retail Malls*

Retail space in Gauteng, which was already greater than the retail area of the rest of the country, increased from 3,062,929 m² in 2002 to 8,545,522 m² in 2010 (GPT 2012). The number of retail centres increased from 111 to 634 during this period, and by 2012, 45% of the country's shopping centres were to be found in Gauteng (GPT 2012). "Of the eight 'super' regional shopping centres in the country, four are located in Gauteng: Sandton City, Menlyn, Eastgate and Westgate. These centres house a range of retailers, from large retail chains like Pick'n Pay to small, specialised fashion stores" (Ibid, p. 29). Gauteng has therefore become a 'shopping magnet': the province's high quality retail centres have played a significant role in attracting large numbers of people from other provinces and the SADC region to Gauteng, and they are now a focus for urban tourism. In addition to providing shopping opportunities, they are sites for various kinds of social activity and 'consumer socialisation'—"the process by which people acquire skills, knowledge and attitudes relevant to their functioning as consumers in the market place" (Ward 1974, p. 2).

2.4.3 *Township Economies*

New private investments have been largely occurring in and around the northern suburbs, avoiding poorer areas in the south of the region. There has been some limited retail development and niche tourism in the popular townships,² but the formal office and industrial development has hardly occurred. This arises from the fact that industrial development in or near townships is still perceived as high-risk by investors (Turok 2012). In 2009, an economic analysis of Johannesburg reported that Soweto contributed only 4% of Johannesburg's GVA, despite having around 40% of the population, and between 2006 and 2010, only 3% of the rezoning applications in Johannesburg were for Soweto (City of Johannesburg 2009).

Turok (2012) argues that the townships have not attracted much private investment from domestic (South African) capital because they start from a very low economic base. Financiers, developers, investors, market researchers, property managers and leasing companies are strong players in the economy, but they tend to focus on affluent consumers and highly-skilled workers (Turok 2012). There is a huge challenge attracting, nurturing and developing more value-added activities in townships. He points out that electricity and water supply are occasionally less reliable than elsewhere because network capacity is limited and unauthorised

²These include the Chris Hani Baragwanath node; Cooling Towers, Orlando; Walter Sisulu Freedom Square, Kliptown; Regina Mundi Church, Rockville; Credo Mutwa Cultural Village, Oppenheimer Tower, and Morris Isaacson School, Jabavu; Hector Pieterse Museum, Orlando West; and Vilakazi Street, Orlando West.

connections make them more vulnerable to failure (Turok 2012). Also, places such as Soweto, Katlehong, and Alexandra are perceived to have higher levels of crime and violence, and this stigmatisation has contributed to the difficulty of attracting business into townships and worsened their socio-economic isolation and distress.

In the 2000s, the realization that the purchasing power of upwardly-mobile, black, middle-class households was increasing, stimulated mall development in the townships. The City of Johannesburg developed the Soweto Retail Strategy in 2007 to support the expansion of the retail sector, and as a result of the surge in mall developments such as Protea Glen, Jabulani, Maponya, and Dobsonville, there were over 50 township malls in Soweto and further afield in Gauteng by 2009, including in Alexandra, Tembisa, Daveyton, Kagiso and Temba townships (City of Johannesburg 2009).

The effect that these malls have on small formal and informal township retailers is debatable. Some studies suggest they have a strong negative impact (Ligthelm 2010). Small local businesses are disconnected from the value chain represented by the malls, and the skills transfer is narrow and occupation-specific rather than business oriented. However, this must be balanced against the advantages these malls bring to township consumers, including a wider choice in terms of price and range of products. In many townships there is evidence of novel forms of investment, ranging from branches of Chinese and American multinational retailers inside or adjacent to malls (Turok 2012), and networked Somali, Ethiopian and Pakistani micro-enterprises. A growing number of Asian immigrants are entering the informal *spaza* sector, which tends “to provide good service (long opening hours, a fairly good supply of products), but they undercut the local traders who are being driven out” by low investment and limited skills (Atkinson 2008, p. 17).

Some townships benefited from the Neighbourhood Development Partnership Grant (NDPG) established in 2006 by the Department of Trade and Industry to support community infrastructure and services in townships. The NDPG provides a conditional grant to municipalities, through the Division of Revenue Act (DoRA), 2007, administered by the Neighbourhood Development Programme (NDP) Unit. A total of 12 hubs have been initiated in Gauteng townships, out of a total 26 countrywide, as shown below in Table 2.1.

Many of these areas were selected as a result of spatial targeting, because they were considered to be lagging behind more favoured areas. The development of these hubs has been one of the main urban strategies adopted to drive township economies towards success in the global market. These strategies are essentially dominated by a growth-first ethos that gives primacy to the accumulation of capital within the townships. The development of these hubs is therefore subject to the logics of capital as manifest under the neoliberal imperatives. As a result, the development of service industries in the hubs has focused on high-skilled jobs and neglected job creation for unskilled and low-skilled people in the townships. Some of the hubs remain essentially theoretical and methodological schemes of township economic development, without a connection to the cultural milieu of local entrepreneurs. They are narrowly concentrated and only create new points of growth in specific focal areas, preventing marginalized populations in other areas

Table 2.1 Hubs in Gauteng townships funded by the neighbourhood development partnership grant

Municipality	Township	Hub
City of Johannesburg	Diepsloot	Diepsloot (future hub)
City of Johannesburg	Soweto/Meadowlands	Jabulani Mall area
City of Tshwane	Atteridgeville	Saulsville Station
City of Tshwane	Ga-Rankuwa	Ga-Rankuwa Hospital
City of Tshwane	Hammanskraal	Hammanskraal Station
City of Tshwane	Mabopane	Mabopane/Soshanguve Station
City of Tshwane	Mamelodi	Denneboom Station
Ekurhuleni	Daveyton	Daveyton/Etwatwa
Ekurhuleni	Kwa-Thema	Kwa-Thema/Tsakane/Duduza
Ekurhuleni	Tembisa	Intersection of 2nd October/Andrew Mapheto Drive
Ekurhuleni	Vosloorus	Katlehong/Thokoza/Vosloorus
Emfuleni	Evaton	Sebokeng (Intersection of K53/Moshoeshoe and K178 (Boy Louw))

Source Urban Hubs (2014)

from engaging meaningfully with and within these spaces. Inevitably, these strategies reinforce and reproduce the socio-spatial exclusion of poor township residents, and create new forms of socio-economic inequality.

2.4.4 Small Towns in the Region

Many of the smaller towns in the region—for example, Westonaria, Randfontein, Mogale City, Bronkhorstspuit, Brakpan, Kempton Park, Heidelberg, Meyerton, Vereeniging, Everton, and Fochville—have suffered economic decline as a result of the loss of industrial jobs. Many of these towns with populations of between 100,000 and 600,000 (Atkinson 2004) were previously dominated by one type of industry, one large company, or one single manufacturing plant. The economic ups and downs of these companies therefore reflected in the urban development of the towns that were dependent on them: when the companies slumped in response to local or global challenges in mining and manufacturing, for example, in steel production, population declines were clearly discernible in the affected towns. Atkinson (2004) observed that, in many small towns, white people, who could

usually rely on formal employment in the past, are increasing turning to unregistered survivalist and informal businesses such as *spaza* shops (the phenomenon of ‘white *spazas*’), which were previously only owned and operated by black and coloured people.

Atkinson (2004) observes that many informal entrepreneurs are operating in the agricultural sector, on municipal land or commonage, and an increasing number are in the legal or illegal alcohol trade. Some of the informal businesses are in the taxi sector, operating long-distance routes to nearby larger towns or cities (Atkinson 2004). She points out that the local retail market in many small towns is limited and often dominated by one or more established (often white-owned) enterprises, so shoppers use public or private transport to shop in larger towns, causing a leakage of purchasing power, which is very damaging to the small towns (Ibid.).

Nevertheless, retail opportunities in small and peripheral towns continue to exist, as a function of lower rents and land prices. The choice of location is motivated by the availability of cheaper labour, transport access to cities, and limited skills sets of local business owners. The growing prevalence of immigrant shop owners and Somalia, Ethiopian, Pakistani and Chinese businesses and micro-enterprises, derives from the relatively more open economy and the strengthened multilateral and bilateral agreements, motivated not only by economic considerations, but also by greater political cultural, and traditional links with other countries. These businesses frequently focus on the sale of clothing, agricultural products, and food, or the production of petty commodities. Pawn shops are another choice for owners in small towns. These businesses compete intensely with each other and therefore susceptible to the vagaries of price and transport costs, and vulnerable to availability and market condition of goods.

2.4.5 Development in Peri-Urban Areas

Peri-urban areas benefit from the middle class’s desire to experience the countryside ideal. Entrepreneurs have responded to this over the past two decades by commodifying the culture of the countryside and its associated rural heritage, through the creation of hotels, resorts, bed and breakfast establishments, cultural leisure destinations and shopping villages in places such as the Magaliesberg, Hartbeespoort Dam, Vaal Dam, Rietvlei Dam and Dinokeng. These areas and others on the periphery of the province have developed notable clusters of economic tourism industries, representing significant investment. Touristic activities offer adventure, in the form of trails, thrills and safaris, as well as leisure and relaxation far from congestion, noise and the other ills associated with overcrowding in the city. Businesses in country areas often specialize in providing handcrafted products from the local or regional heritage. These economic activities sometimes overlap the tourism and agriculture sectors, for example, safari lodges and game farms, and thereby benefit both.

These clusters tend to draw related retail and industrial activities such as petrol stations, regional shopping complexes, and arts and craft industries, to their proximity, for example, ‘ultra city’ developments, that provide filling stations along major highways, become zones of economic opportunity that also attract food and other commercial services.

The attraction of these areas derives from landscape, place and locality, premised on the perceived pleasant, but often intangible characteristics that serve psychological rather than physical needs. They are accessible mostly only to a relatively affluent population. The racialized entrepreneurship of this industry remains disconcertingly problematic. Acutely concerning is that these tourism enterprises are almost exclusively “owned by white individuals or white-owned corporates” (Atkinson 2004, p. 30) While the high investment levels often generate significant financial benefits for the entrepreneurs involved in this commodification of landscape, they are mainly white—“it is very difficult for black entrepreneurs to break into this sophisticated market” (Ibid.). Travel and other costs to larger centres are prohibitive for many small-scale black entrepreneurs and they can seldom access the necessary business support. Most up-market lodges use urban-based intermediary purchasers, for the sake of convenience, quality and reliability (Rogerson 2012). Such investments sometimes contribute to the irrevocable change, and even destruction, of the amenity environment previously created by the local community. The participation of local black residents in the ‘commodification dynamic’ is not always positive, since in many cases there is no skills transfer, little share-holding and a lack of advancement of community entrepreneurship in general.

2.4.6 Transport Development in the Region

The pattern of spatial development in the province has tended, overall, to create areas of separate rather than mixed land use, with a noticeable tendency toward urban sprawl. The population is concentrated in the urban areas along the M1, M2, N1, N3, N4, and N17 road arterials in the central part of the province. There are areas of intense economic activities, such as in Johannesburg, Pretoria and the Vaal region, but there is a misalignment between economic intensity and population density—the population is concentrated in black townships such as Soweto, Alexandra, Tembisa, Mamelodi, Saulsville, Chris Hani, Thokoza, and Vosloorus, a fair distance away from centres of work.

The RDP model delivered housing to communities far from commercial centres where work opportunities could be found, and sometimes also far away from the existing major townships, so these locations produced inflexible and unsustainable environments, rather than vibrant places where people can access the opportunities and amenities they require to thrive. These spatial patterns have perpetuated, or at worst, increased, the large distances for most people between work and home. The costs of mobility for the low-income people are extremely high and transport

constitutes a major component of the budget for them—and the levels of congestion associated with public transport are growing, as are its consequent damaging environmental impacts.

There has been a compelling case, therefore, for promoting efficient public transport connections between the large low-income settlements, and the areas of employment and private investment. In 2002, the Rapid Rail Link to connect Pretoria, Johannesburg, and Johannesburg International Airport (JIA, now OR Tambo International Airport) was announced as one of eleven Spatial Development Initiatives (SDIs) (GDPTRW 2002, p. 1–1). The purpose of the ‘Gautrain’, as it soon became known, was to develop a public transportation system that would optimize land use and minimise traffic congestion, pollution, and the danger to commuters of traffic accidents. Two spines were built: the west–east spine has a commuter service linking Sandton to the East Rand (through Rhodesfield, in Kempton Park) as well as an airline passenger service between Sandton and the city’s international airport. The south–north spine links the Johannesburg and Pretoria CBDs.

In 2007, the province launched the Gauteng Freeway Improvement Project (GFIP), the country’s largest road scheme, which aimed “to upgrade and expand the provincial road network through freeway widening, building new roads, upgrading interchanges, installing traffic-management systems (cameras and electronic signs) and an automated toll system” (Turok 2012, p. 35). A joint proposal by national and provincial departments of transport, Gauteng municipalities, and the parastatal SANRAL, indicated that initial construction costs for 359 km of freeway would be R6.3 billion, excluding VAT, together with a new freeway construction costs of R60 million per kilometre, and the widening of existing roads of R20 million per kilometre, both figures excluding VAT (The Star 2012).

In the same year, the National Cabinet approved the Bus Rapid Transit (BRT) scheme as a road-based component of the Public Transport Strategy (SACN 2011). This was to be funded by national government, but delivered by the metros. It was designed to be more transformative and scale-able. It had modern buses running on dedicated lanes along the middle of main roads (Van Ryneveld 2010). The City of Johannesburg’s BRT system, named Rea Vaya, was operational from October 2013. The buses provide residents of Soweto and the southern parts of Johannesburg with direct access to the inner city and surrounding areas. The routes run from Soweto through Noordgesig, New Canada, Pennyville, Bosmont, Coronationville, Newclare, Westbury, Westdene, Melville, Auckland Park and Parktown, to the CBD. The Tshwane BRT system, named A Re Yeng, started operating in 2014 (SA Yearbook 2014). The R2.6-billion project, part of the city’s revitalisation project, consists of 80 km of bus lines and about 340 buses, some of which are powered by gas, serving 62 bus stops. It runs from Mabopane through Pretoria CBD, past Menlyn, and on to Mamelodi (City of Tshwane 2014).

Turok (2012) considers new forms of public transport to offer the prospect of restructuring the city according to transit-oriented development (TOD) strategies. He noted that there were strong investment interests in the development of the

Gautrain precincts, but it is not clear what impact the BRT systems are having on investment decisions in the property market.

Turok (2012) argues that while the new road, bus and train routes have opened up extraordinary possibilities for new centralities, changed perceptions of space, and other prospects for profitable property development in zones that would otherwise have been remote, the transport responses to urban sprawl have been piecemeal and perhaps even counterproductive. While these systems reduce the cost of travel in a highly fragmented urban system, and, in the long run, shopping centres, office parks and other developments spring from the reshaping of space by transport systems, these systems ultimately maintain unsustainable land-use and settlement patterns (Ibid). Addressing the huge inequalities in the region, and creating employment through stimulation of growth in the economy, requires new strategies for the building of inclusive cities and society.

2.5 The Zuma Era: Focusing on Transformation, Modernisation and Re-Industrialisation (TMR)

The Zuma administration largely continued the Mbeki era's economic policies. Although there was a significant sustained average annual growth rate of 5% after 2004 (Hanival and Maia 2008), the Zuma government made a decision to deal with the needs of disadvantaged groups through social safety nets such as improved public service delivery of low-cost housing, water and electricity. Towards the end of 2010, a New Growth Path (NGP) was introduced. This signalled greater commitment to tackling unemployment, poverty and inequality, promising a more active, interventionist approach to economic policy, and much greater investment in economic and social infrastructure (Turok 2012). The priority in the NGP was the identification of 'job drivers' for the creation of 'decent' jobs. Public investments were directed at infrastructure development, improving value chains in agriculture and mining, investing in a green economy, and encouraging light manufacturing sectors, tourism and other high level services. The government planned to expand employment to the tune of five million jobs by 2020 through high GDP growth rates, and improve the employment intensity of growth, which had decline significantly over the preceding decade from 0.8 to 0.67 (Republic of South Africa 2010).

The planning of this administration has been more structured than its predecessors, with greater strategic emphasis being placed on particularly crucial sectors of the economy such as education, health, rural development, and the ocean economy. President Zuma called for a genuine paradigm shift from housing to human settlements at a meeting of the coordinating council of the three spheres of government (DoH 2004). He asserted that the "concept of human settlements is not just about building houses. We have to change apartheid spatial patterns and ensure that low income households in rural or urban areas have easy access to economic

centres. They must also have access to social amenities and key services such as water, electricity, recreational facilities, schools, clinics and a host of others” (Zuma 2010).

For the first time, particular emphasis was placed on rural development. Since 2007, the Department of Rural Development and Land Reform has worked on policies, plans and programmes aimed at improving rural communities’ access to the land reform and restitution grants that have traditionally assisted them. Recently, the rural development programme introduced Agri-parks in all of South Africa’s 44 District Municipalities, intended to kick-start economic transformation for these rural regions (DRDLR, n.d.). An Agri-park is a networked innovation system of agro-production, processing, logistics, marketing, training and extension services. In Gauteng (as at 2016), Agri-parks have been established in Rietkuil (Sedibeng) and Brandvlei (Randfontein, on the West Rand) (Ibid.).

2.5.1 Urban Growth Under the Zuma Administration

The development of the Maboneng and Braamfontein precincts in Johannesburg are some of the notable recent achievements in the inner city. With the addition of these urban economic instruments, Johannesburg’s inner city, a vibrant district with a unique character, can legitimately claim to be the cultural capital of the country. It has an array of cultural venues and a wide range of creative and cultural industries. In the northern suburbs, Rosebank, Sandton and Midrand have significant residential investments and are the fastest-growing employment centres. They have buzzing suburbs with restaurant and shop-lined avenues that cater for the dining and homeware needs of the fashionable.

The townships in the south, and pockets in the northern parts of the province, are still marginal spaces, economically. Townships such as Boipatong, Diepsloot, Winnie Mandela, and Tembisa, have large populations and little or no industrial activity. Bekkersdal, Daveyton, Mohlakeng, Orange Farm, Refilwe, and Zithobeni are isolated and burdened with informal settlements. Braamfischerville, Lufhereng (Doomkop) and Protea Glen in Johannesburg, and Atteridgeville, Ekangala, Mamelodi, Mabopane, and Ga-Rankuwa, in Pretoria, continue to grow and expand the township footprint away from the core areas of the city. Ekurhuleni lacks a dominant centre because of the many townships—Daveyton, Etwatwa, Tsakane, and Wattville—that sprawl across the municipality. Tshwane takes on a “squashed ‘S’-shaped built-up area due to the major displaced townships of Soshanguve and Mamelodi located far away from the main economic centre of Pretoria” (Turok 2012, p. 27). These patterns of growth have huge implications for the region.

According to Mubiwa and Annegarn (2013), Gauteng urban areas, increased from 12.6% in 1991, to 15.96% in 2001, and 18.35% in 2009 when expressed as a percentage of the total Gauteng land area. Between 2001 and 2009, the highest growth was strong ribbon development along the N1–Midrand corridor and in Temba, Kekana, Diepsloot, Tembisa, Randburg, Fourways, Thokoza, and

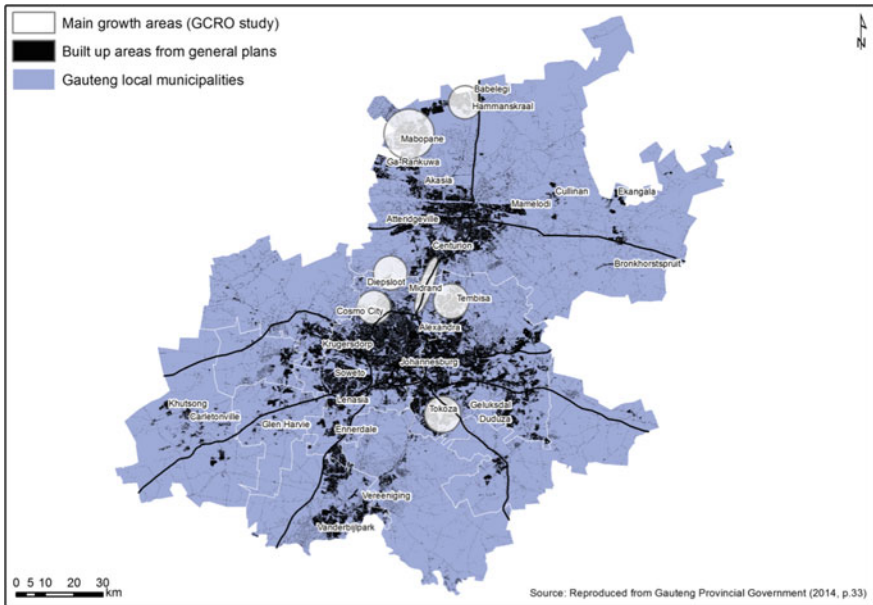


Fig. 2.5 Growth areas in the Gauteng region between 2001 and 2009

Katlehong as well as in Brits, Ga-Rankuwa, Soshanguve, and Mabopane in the north-west of Tshwane (see Fig. 2.5). The percentage of cultivated land remained relatively constant during this time, but a great loss of woodland areas was experienced (GPG 2014).

Distortions of the urban footprint have been exacerbated by poor state-led housing projects and weak strategic spatial planning of the public-sector that has allowed the private development of space in unsustainable forms on the urban periphery. A fragmented public transport system and the shift of jobs away from mining and industry to tertiary activities have also been significant. The urban built-up area has increased in the region, but as an unsustainable, inequitable and inefficient spatial development trend. The Gauteng City-Region Observatory (GCRO) developed a map that shows the urban footprint from 1991 to 2009 (Fig. 2.6).

As of 2015, 0.42% of economic activity in Gauteng was in agriculture, forestry and fishing; 2.72% in mining and quarrying; 15.89% in manufacturing; 2.15% in electricity, gas and water; 3.72% in construction; 13.74% in wholesale, retail and motor trade, catering and accommodation; 10.14% in transport, storage and communication; 26.71% in finance, real estate and business services; 19.24% in personal service; and 5.26% in general government services (Bouwer 2011).

The population of Gauteng grew from 7.6 million people in 1996 to 9.2 million in 2001, and is currently estimated at 12.2 million people (GPG 2014). This significant increase can be attributed primarily to labour migration. The population of

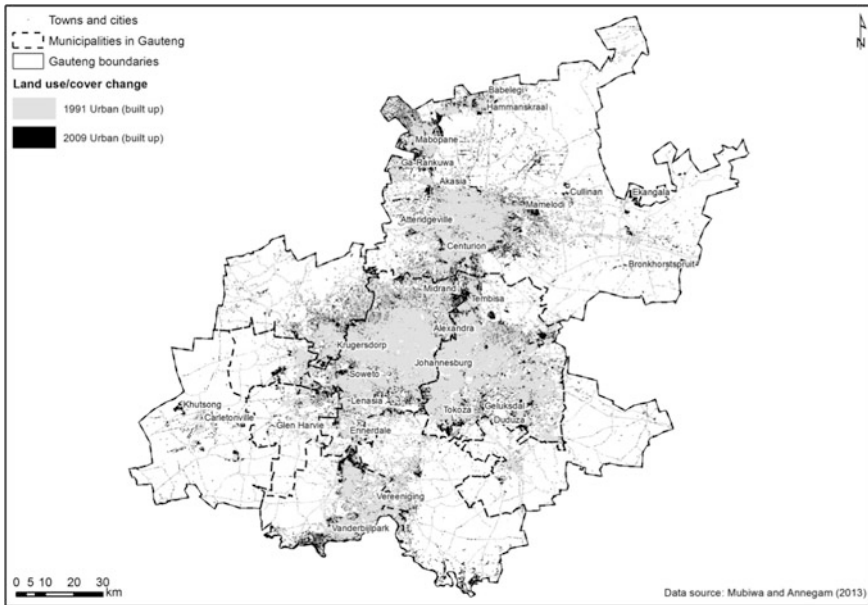


Fig. 2.6 Urban land use/cover growth change in the GCR, 1991–2009

the region is projected to grow as follows: to 15,271,429 in 2021; 18,328,571 in 2031; 21,385,714 in 2041; 24,442,857 in 2051; and 25,665,714 in 2051 (GPG 2014).

2.5.2 *The Gauteng Global City-Region*

The growth of the region has led to it becoming a global city-region. A global city region is a city region, generally considered to be an important node in the global economic system, where the linkages that bind the city have a direct and tangible effect on global affairs through socio-economic means (Sassen 2003). The Gauteng City-Region is “an integrated cluster of cities, towns and urban nodes that together make up the economic heartland of South Africa” (GCRO, n.d.). The GCR concept is aimed at enhancing the global competitiveness of the provincial economy. It includes the cities of Johannesburg, South Africa’s financial capital, and Pretoria, the country’s administrative capital. “It also includes commercial, industrial and mining centres such as Germiston, Springs, Alberton, Boksburg, Benoni, Vereeniging, Vanderbijlpark, Krugersdorp, Randfontein and Westonaria. Beyond the boundaries of the Gauteng province is a wider urban region of smaller centres and population concentrations”. (GCRO 2014). Gauteng is the country’s centre for trade within southern Africa and beyond, and it is recognised as the “international

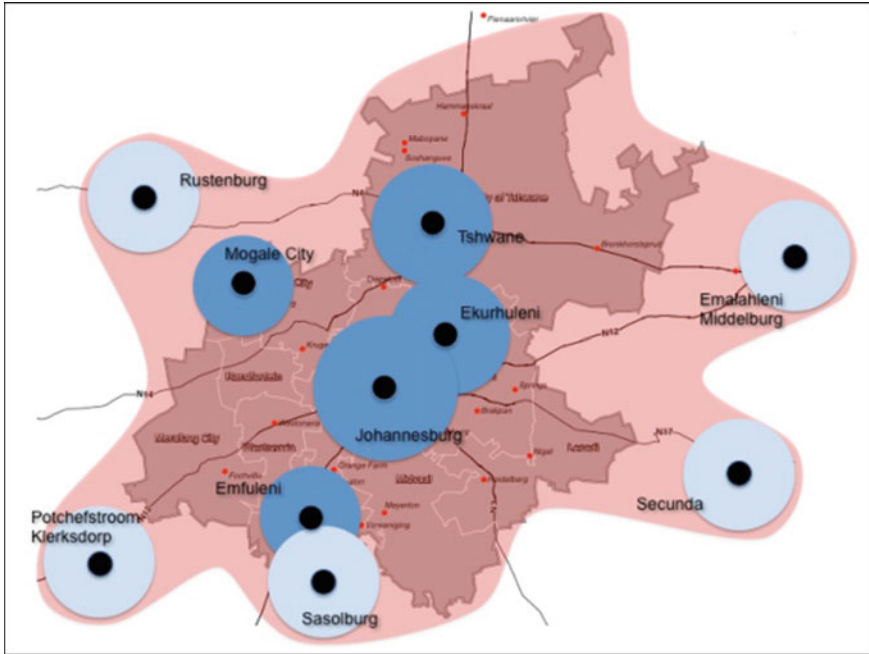


Fig. 2.7 The Gauteng global city-region. *Source* GPG (2014)

migrant gateway to South Africa”, with international migrants making up an estimated 13% of the population (GPG 2014) (Fig. 2.7).

Allen and Cochrane consider regions to be the “product of networked flows and relations fixed in a more or less provisional manner” (2007, p. 1163). They are a political construction but emerge as coherent and collaborative entities that have to compete, cooperate and learn. The Gauteng provincial government used area-based measures and introduced a range of geographically-focused policies and programmes that, in many instances, utilised area-based initiatives (ABIs) to tackle the problems of deprived and disadvantaged communities. Governments frequently adopt area-based approaches as an indirect way of reaching the individuals that the initiatives are intended to support (Todes 2013). Urban mega-projects linked to the new emphasis on reindustrialisation, urban competitiveness and urban entrepreneurialism, have been used in this way by the Gauteng provincial administration as a means of spatial targeting. Mega-projects are adopted to support urban regeneration initiatives to reposition declining economies to capture new or growing economic niches. They are being developed *de novo* both as prestige projects, but also to lay the basis for new forms of economic development (UN-Habitat 2009).

In Gauteng, developments such as sports stadia (e.g., FNB stadium); high-tech industries (e.g. Innovation hub); new satellite cities (e.g. Modderfontein City, Vaal River City, and Rietfontein); major enclave developments (e.g. Steyn City);

shopping malls (e.g. Greenstone Mall) and enterprise zones (e.g. at O.R. Tambo International Airport) are being promoted. Some of these projects, such as the R84-billion-smart-city developed in Modderfontein by Chinese firm Shanghai Zendai, demonstrate China's substantial economic investment in South Africa. Mega-projects are critical to the building and maintenance of infrastructure, although such large projects too often develop problems with regard to either budget or time, or both (see, for example the Salvador Metro in Brazil). In one influential study, Flyvbjerg (2014), a well-known expert, has estimated that nine out of ten such projects go over budget. Rail projects, for example, go over budget by an average of 44.7%, and their demand is overestimated by 51.4%.

An interesting development is the mega-projects proposed for targeted corridors around the Gauteng City Region region. The region's space economy will be configured into five development corridors, with distinct industries and different comparative advantages: These are the Central, Eastern, Northern, Western and Southern development corridors (SAnews 2015) (see Fig. 2.8).

The process of corridor development in the city region must take into account that planning and organisation should consider the territory beyond its individual bounds and take into account "spaces of flows" (Castells 1996) that link the city to regional economies. However, spaces of flows in Gauteng are not viewed as a set of connections that go beyond the national boundaries, irrespective of the interconnected of the region to the rest of the SADC sub-region. The cardinal determinants for the location of investments in areas such as the identified corridors are the instantaneous interests of the private sector, rather than public spatial plans. It remains to be seen, therefore whether public interests will be able attract investors into the corridor areas. Considering that the infrastructure required is both physical (electric cables, cell phones and broadband transmitters, roads, buildings, water and sewerage pipes) and social, or what David Harvey calls a "human-resource complex" (2006, p. 399) that includes administration, research, ideological functions,

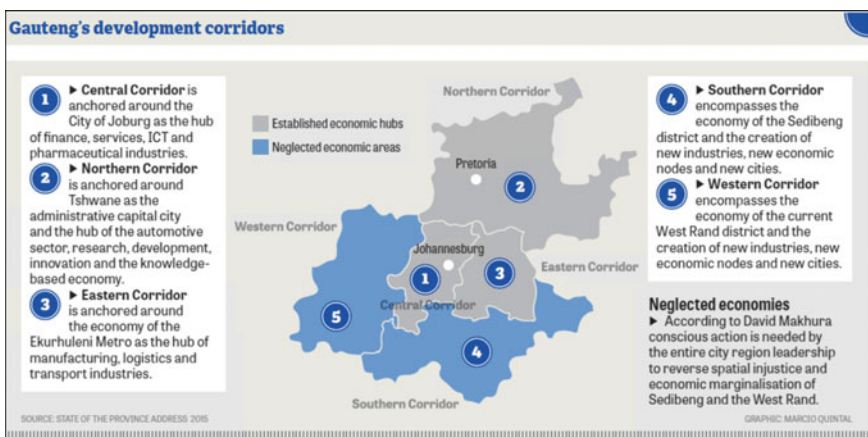


Fig. 2.8 Gauteng's proposed economic development corridors. *Source* Tau (2015)

education and so on, the importance of understanding corridors not merely in terms of their economic aspects, but also in terms their social, political and economic totality is essential to avoid heightening of economic duality and social division.

2.5.3 Policies for Urban Management in the Province

Spatially targeted programs have been developed to emphasise the role of government approaches in policy making and service delivery. Reddel (2002, pp. 51–52) highlights a number of features of recent spatial targeting resulting from increasing social polarisation, regional disparities and the need for integration of social economic and environmental issues. Issues of social capital, social inclusion, community engagement and capacity building, as well as integration are some of the imperatives of the new spatial ‘agenda’ (Reddel 2002). In supporting targeted programmes, a number of policy documents have been produced for managing growth in the region since 2004, as shown on the Table 2.2.

Such an impressive relay of policies has provided the region with a clear sense of direction and purpose in various sectors. However, these policies, both individually and as a whole, can be criticised for looking inward too much. They make too few connections to the external environment, given the region’s links to the continental sub-region. This silo mentality flies in the face of solutions for issues such as crime, pollution, disease, access to technology, and xenophobia that need to be coordinated between various regional stakeholders beyond the national boundary, in order to make the region a success. Some of these challenges are bound to surpass the mandate of the existing regional institutions set up to deal with them.

Nevertheless, the growth management approaches emanating from the policies listed above promoted ‘smart growth’ in the province as part of a spatial transformation plan. “Smart growth provides a framework for informed decisions about how and where cities grow,” and it provides a solution to the impacts deriving from highly dispersed development patterns that many urban areas have to address (GPG 2014, p. 61). The building of a smart province is predicated on the development of smart cities. Smart cities are oriented toward creating urban environments with e-governance, e-products, e-services, wireless city, sensor signalling, and networked communication. In the 2010 study by Harrison et al., a smart city is described as an instrumented, interconnected, and intelligent city. It is a city that connects “the physical infrastructure, the IT infrastructure, the social infrastructure, and the business infrastructure to leverage the collective intelligence of the city” (IT Web 2015).

Various initiatives have been designed by the province and the cities to create ‘smartness’. In 2014, Gauteng took “a step towards implementing its ‘smart province’ strategy with an extensive R1.2 billion broadband project designed to promote greater government efficiency, stimulate innovation and knowledge creation, and lay the foundation for higher levels of economic growth” (Odendaal 2014, 6th June). In 2015, the City of Johannesburg announced it would prioritise smart city

Table 2.2 Gauteng provincial strategies for managing urban growth

Year	Provincial strategies	Main aims
2004	Global City-Region	To develop Gauteng into an integrated and globally competitive region making sure economic activities of different parts complement each other in consolidating the GCR as the economic hub of Africa
2006	Gauteng Global City-Region Perspective	To present a common vision for the province and the integration, alignment and harmonisation of the internal functioning of Gauteng
2006	Gauteng Strategy for Sustainable Development	To provide a strategy to deal with economic (poverty and unemployment; global competitiveness); social (population growth, health issues, socio-economic sustainability); and, ecological concerns (environmental deterioration) in an equitable manner
2007	Gauteng Spatial Development Perspective	To provide a common platform for planning and investment in the province
2009	Gauteng Employment Growth and Development Strategy, 2009–2014	To outline the strategic priorities and programmes for the provincial government for the five year term of office ending in 2014
2011	Gauteng Spatial Development Framework	To steer all spatial development in Gauteng according to the vision and objectives set out for the province
2011	Gauteng 25-Year Integrated Transport Master Plan	To enable the Department of Roads and Transport to regulate, plan and develop an efficient and well integrated transport system
2012	Gauteng Climate Change Response Strategy and Action Plan	To address sustainable energy supply, transportation, industrial and agricultural activities, and urban development and infrastructure
2012	Gauteng Vision 2055	To present the critical steps for developing a prosperous and socially inclusive Gauteng City-Region
2014	Regional Industrial Development Strategy (RIDS)	To enable all regions to build their industrial economies based on local competitive advantages and opportunities
2015	GCR e-Governance Strategy 2015–2020	To support the realisation of the modernisation of the public service in terms of the TMR; to roll out broadband networks to transform and make services available to all the citizenry of GCR

initiatives as it seeks to “bridge the digital divide”, and would rollout free internet and wi-fi access in libraries across the city (City of Johannesburg 2015).

The Gauteng Provincial Government established a new Department of e-Government in 2015, to stimulate the province’s knowledge-based economy,

improve service delivery and modernise the public service (GPG 2015a, b). Free wi-fi is being provided in all core sites and Thusong Service Centres, and the implementation of e-learning, smart schools, and biometric systems is underway. Spatial transformation is one of the pillars of the Gauteng City-Region's ten-pillar programme of transformation, modernisation and reindustrialisation, and the creation of smart cities is part of that initiative. The Provincial Government is aiming for Gauteng "to become a seamlessly integrated, economically inclusive, socially cohesive and locally competitive province" (Kilian 2015, 24th November).

2.6 Concluding Remarks

As described in Sect. 2.2, the GCR has urban landscapes that can be loosely divided into nine historical formations: old small town landscapes, metropolitan landscapes, suburban landscapes, gated community landscapes, black township landscapes, informal settlement landscapes, RDP landscapes, peri-urban landscapes, African village landscapes, and mega-project landscapes. Over the three national administrations, these landscapes have shifted and morphed, generating new forms of mutation, deletion or insertion, within themselves and with other landscapes.

The imminent introduction of *corridor development* will create other landscapes that will affect the region's character. The term corridor is not clearly defined and seems to be viewed only as an object of physical development. While the setting up of the corridors seeks to promote Gauteng's development agenda by mobilising economic development and positioning the province as a globally competitive city-region, the province's logic is not necessarily theoretically coherent or empirically grounded. Sometimes the scheme appears to be a process and at other times a deliberate policy. While the immediate economic and physical aspects of the corridors are well articulated, the various elements—economics, sociology, anthropology, political science—at different geographical scales and in diverse historical contexts, remain obscure. This scheme will potentially create new landscapes where, yet again, people reside only temporarily, without a sense of territorial attachment, a sense of belonging, or active economic citizenship.

Growth in the region is still shaped by the location and form of investments in the original old towns of the region and their transport infrastructure. The spatial targeting by all three post-apartheid administrations with development along corridors, nodes, spines, and transport infrastructure still owing much to apartheid planning, has extended the apartheid spatial form.

Dependence on cars contributes to urban sprawl and the destruction of prime farm land and natural landscapes. Car emissions and other traffic-related impacts such as noise, neighbourhood severance, visual intrusion, and gridlock that grips the city for many hours every day, have negative environmental, human and social impacts (Kenworthy and Laube 1996). Problems, such as isolation, lack of

community, and transport difficulties, especially for the young, old, poor, and disabled, are directly attributable to car-dependent development patterns.

Many of the challenges for transport planning still exist in the post-apartheid era because investment in transit-oriented development in higher-density, mixed-use areas is still largely driven by the profit motive. State power over land-use planning is frequently superseded by private sector interests. Beall and Fox (2009) observe that despite major shifts in development thinking, the menu of proposed policy remedies has done little to stem the ultimately 'laissez-faire' nature of urban growth. Harrison and Oranje argue that "most of the spatial plans/frameworks that have been produced over the past decade have been poorly grounded in a real understanding of development processes and imperatives" and "it is not surprising that there is a growing disjuncture between the spatial patterns of planners as captured in their planning frameworks and patterns of investment in the urban environment" (2002, p. 28).

Part of the challenge stems from the fact that all urban administrations have endeavoured to promote urban growth by focusing largely on issues of land use in relation to urban economic expansion. But such economic expansion is separate from the diverse sociological aspects that shape urban spaces. Therefore, many of the policy proposals advanced by them are antithetical to democratic ideals, both in their design and application. They individualize, objectify, and control people, often through their reliance on economic imperatives. Singly and in combination, they perpetuate social inequalities, obfuscate social contexts through their lack of transparency, and prevent people becoming fully aware of the functioning of their systems, and of their rights. Closed technical designs and management by technical experts or institutional agents, compound the gap between human needs and sheer spatial change. This disjuncture suggests that planners have succeeded in promoting growth in the province to such an extent that state intervention has itself become a means of supporting market rationality for shaping spatial growth. Without a means of countering these tendencies, the factors responsible for creating inequalities are bound to create a region that is perpetually grappling with the problem of building 'inclusive' cities.

Acknowledgements Samy Katumba, Mncedisi Siteleki and Christian Hamann are thanked for the preparation of the figures in this chapter. The useful comments of the two reviewers who read an earlier version of this chapter are acknowledged.

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Chapter 3

Assessing the Gauteng City-Region's Global Presence and Positioning Through Current Global-City Measures

Koeh Cheruiyot, Anisa Desai and Ezekiel Lengaram

3.1 Introduction

Traditionally, cities were considered as localized centres of economic and social organization brought about by agglomeration forces (Mumford 1937; Scott and Storper 2015). From these initial stages of urban inquiry there was already a realization that cities and the forces that shape them are varied, but, of these processes, economic processes are the most prevalent as shaping tools. The role of cities has undoubtedly changed over the past few decades, from an extremely localized and inward-focused dynamic to a more outward emphasis and placement within a broader global network of activities. Today, a city's development trajectory is shaped by dynamics beyond its traditional area of influence. Castells' work, although not explicitly focused on cities and their positioning within networks, discusses the idea of networks that transcend borders, invigorated by global networks and connectivity:

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K. Cheruiyot (ed.), *The Changing Space Economy of City-Regions*, GeoJournal Library, https://doi.org/10.1007/978-3-319-67483-4_3

it [the network society] is pervasive throughout the planet, its logic transforms extends to every country in the planet, as it is diffused by the power embedded in global networks of capital, goods, services, labor, communication, information, science, and technology. (2004, pp. 4–5)

With the rapid expansion of the world economy from the 1960s, and the large-scale adoption of neoliberal economic processes, cities now play crucial roles in global economic and social networks, and in knowledge creation and dissemination. Cities and urban hubs now actively compete against each other in an effort to attract, secure and retain global social, economic, cultural and knowledge capital. Cities rely quite heavily on their positioning in various rankings produced by corporations, universities, consulting firms and various other entities measuring a diverse set of criteria. Consequently, the rankings ‘industry’ has ascended in prominence and use.

This chapter aims to determine the positioning of the Gauteng City-Region (GCR) within global (mainly economic) rankings, ratings, hierarchies, benchmarks, and linkages.¹ The GCR is understood to be “an integrated cluster of cities, towns and urban nodes that together make up the economic heartland of South Africa” (GCRO 2016). The GCR is anchored by three metros, Johannesburg, Tshwane (Pretoria), and Ekurhuleni, with Johannesburg being its key economic/financial node. Johannesburg is also the most widely measured and represented South African city in global city-based rankings, hierarchies and benchmarks.

The chapter is structured as follows: After the Introduction (Sect. 3.1), Sect. 3.2 explores the meaning of global city-regions and how they have become important in the present-day geography of the world economy. Section 3.3 focuses on exploring how the GCR is represented in some of the global city-based rankings, ratings, hierarchies and benchmarks, with specific emphasis on how the GCR is represented primarily by Johannesburg (with a few mentions of Pretoria). Section 3.4 provides a summary of the city-based literature on ranking and benchmarking and some insights and concluding remarks.

3.2 Understanding Global City-Regions

Global city-regions differ from global cities in many respects: global city-regions usually extend beyond multiple administrative units (Scott 2001a, b), incorporating multiple nodes or centres, with shared resources and markets, all connected by

¹The JLL (Jones Lang LaSalle) report (2015, p. 4) uses the following definitions: A city **index** is a tool that measures performance over time, a city **benchmark** serves as a standard by which other cities are measured or judged, a city **ranking** is a straightforward list that does not seek to utilize a replicable methodology, and a city **rating** is the use of a point scale to assess city performance.

transportation links. The GCR is an illustration of this. According to Robinson, global cities/world cities² are cities that:

articulate regional, national and international economies into a global economy. They serve as the organizing nodes of a global economic system... [and] can be arranged hierarchically, roughly in accord with the economic power they command... [C]ompetition between world cities and the impact of external shocks shape the fortunes of world cities and their position in the hierarchy. Cities can rise and fall through the hierarchy, and their position is determined by the relative balance of global, national and regional influence. (Robinson 2002, p. 534)

A regional networks of cities, the GCR is comprised of three metropolitan municipalities (City of Johannesburg, City of Tshwane, and City of Ekurhuleni) and two district municipalities (West Rand and Sedibeng). Johannesburg is the economic/financial capital of the country, and Pretoria (in Tshwane) is the political administrative capital. Ekurhuleni, as home to OR Tambo International Airport, is the air transportation capital. Each of these cities plays a particular role within the regional, national and global realm, with some degree of overlap across activities.

But why are city-regions important? Scott (2001b) recognizes that, as key players in the geography of the world economy, city-regions increase efficiency in global networks, and enhance higher innovation, specialization and clustering of similar and/or complementary activities. As engines of economic production and exchange, city-regions have become “closely tied in with clustered flexible networks of firms that compete on increasingly extended markets” (Scott et al. 2001, p. 18). City-regions also demonstrate a distinctive experimentation of new forms of regionalism and governance systems. Available data indicate that these ever-growing large urban agglomerations are found around the world. A United Nations report (United Nations 2014) shows that in 1990 there were only 10 megacities (with 10 million or more inhabitants). In 2014, there were 28 megacities, and these are projected to be 41 by 2030. According to the UN report, there were 21 large cities (with 5–10 million inhabitants) in 1990, 43 in 2014, and these are expected to be 63 by 2030. There were 239 medium-sized cities (with 1–5 million inhabitants) in 1990, 417 in 2014, and there are expected to be 558 in 2030 (United Nations 2014).

Although this chapter aims to gauge how the GCR is positioned in global rankings, hierarchies and benchmarks, this is not a simple feat. Most credible and temporal global rankings, hierarchies and benchmarking studies consider the cities alone, with very limited or no mention of city-regions. Faced with the fact that global city-regions have attracted much attention in academia of late, there is undoubtedly a rationale for focusing on city-regions even if, at best, we use their cores as proxies for what goes on in those regions. The cores do, after all, exert

²Urban scholars remain divided on whether the terms global city and world city are interchangeable, or whether there is a distinct difference. Saskia Sassen (1991) believes that there is a difference. To her, all cities are world cities, but only a few are global, depending on their function and positioning in the global economy. John Friedmann (1986) does not make any such distinction – he refers to cities with increased global function as world cities. For the purposes of this study, the terms global city and world city will be used interchangeably, drawing no difference between the two.

more influence on the city-regions than the non-core areas do. As a result, in this chapter the meaning and positioning of the GCR in global rankings, hierarchies and benchmarks will be inferred through city-based rankings, which consider Johannesburg primarily, and Pretoria and Ekurhuleni only peripherally, if at all. Johannesburg, specifically, will be employed as the proxy for the city-region in most instances. The reason for Johannesburg's prominence and dominance in city-based rankings, hierarchies and benchmarks compared to the other two cities has much to do with the history and functioning of the city within the broader context of the city-region.

Johannesburg was established as a temporary mining camp soon after the discovery of gold in 1886 (see Sect. 2.2 in Chap. 2 of this volume). The Witwatersrand gold mining industry laid the foundation for present-day Johannesburg and all subsequent economic activity in the area. Large-scale gold mining in the region resulted in the Boer Republic, which governed the area at the time, experiencing a spectacular overhaul in function as well as national, regional and international importance. As this unfolded, mining firms with strong links to Europe and North America (e.g., Anglo American Corporation, Johannesburg Consolidated Investment Company and General Mining and Finance Corporation) set up offices and established large-scale production facilities. With the establishment of these large mining firms, complementary functions such as banking and financial services, which were needed to support the burgeoning mining activity, developed as well. This laid the foundation for the financial services industry that currently still dominates the economy of the city, and established Johannesburg as the economic centre of the country, the broader SADC³ region, and the African continent as a whole.

Given that the large majority of global city-based rankings, hierarchies and benchmarks consider (mainly) economic activity, Johannesburg is continually well represented in comparison to Pretoria (in Tshwane) and Ekurhuleni. Pretoria, although prominent in its own right, being the country's administrative capital and hosting a large number of foreign embassies and consulates, does not have a large amount of globally influential economic activity, as the head offices of large banking, accountancy and insurance firms are typically located in Johannesburg. The situation is similar for Ekurhuleni, which functions as an industrial hub and a major air transportation hub with the OR Tambo International Airport and the smaller Rand Airport being located within its environs. Although each city demonstrates a level of speciality, these specializations are all complementary and contribute to the overall functioning of the GCR. There are many examples of successful, high functioning city-regions across the world (e.g., Randstad in the Netherlands) that have recognized and harnessed the potential of agglomerated production systems in an increasingly competitive global economic order (Scott 2001a). The GCR, in contrast, is still developing in many regards. Unlike its more

³Fifteen southern African countries make up the Southern African Development Community (SADC). These are; Angola, Botswana, Democratic Republic of Congo, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, United Republic of Tanzania, Zambia, and Zimbabwe (<http://www.sadc.int/member-states/>).

developed counterparts, the GCR is functioning sub-optimally with much room for expansion and improvement. Consequently, there is significant motivation for understanding the city-region's viability and performance as an actor within the global capital and financial flows and networks.

3.3 How the GCR Is Faring in the Global City-Regions or Global Cities Measures

Within the broad and densely-populated ambit of city-based literature, this chapter focuses particularly on global city-based rankings, ratings, hierarchies and benchmarks, with specific emphasis on how the GCR is represented, primarily by Johannesburg, with a few mentions of Pretoria. Some rankings incontrovertibly employ rigorous and sound methodologies whereas others rely on a set of pseudo methodologies that cannot hold up when scrutinized closely. In its 2013 research report, the Jones Lang LaSalle (JLL) Cities Research Centre generated a compendium of all noteworthy city-based hierarchies, indices, rankings and benchmarkings, covering global, regional and national geographical scales. It examined a total of 150 reports, in the process categorizing rankings under broad themes as follows: Comprehensive Studies (a grouping of multiple sectors—social, economic, and political); Finance, Investment and Business Environment Indices; Macroeconomic Performance Indices; Quality of Life Indices; Knowledge Economy, Human Capital and Technology Indices; Infrastructure and Real Estate Indices; Environment and Sustainability Indices; Image, Brand and Destination Power Indices; Culture and Diversity Indices; and Cost of Living and Affordability Indices.⁴

This chapter has, however, selected and focused on a few of the indices, which were scaled down by considering: whether the focus area was global and comprehensive (as defined by the JLL 2013 report), whether the index covered economic attributes, and most importantly, if the index focused on Johannesburg, a proxy for the GCR. As space does not allow for a review of all indices, even after scaling down, Table 3.1 documents the full list of all other indices that have a global focus, with respect to the most recent year the JLL 2013 report was published. It records the number of cities surveyed, and Johannesburg's global and regional rank.

3.3.1 Global and World Cities Studies, and Related Work

At the outset, it is important to note that many scholars have contributed to the theoretical and empirical work done on the extensive global or world city system.

⁴For a review of the detailed compendium of 150 city-based measures, see JLL 2013, pp. 8–17.

Table 3.1 Johannesburg's rank across several studies with a global scope

Index name	Year (latest)	No. of cities surveyed	Johannesburg's rank (globally)	Johannesburg's rank (regionally)	Website
Finance, investment, and business environment indices					
Tholons top 100 outsourcing destinations (Tholons 2016)	2016	100	20	1 (7)	www.tholons.com
Foreign direct investments (FDI)					
UN-Habitat City Propensity Index (UN-Habitat 2017b)	2017	100+	104	7 (30)	http://unhabitat.org
IBM: Global Location Trends (IBM 2014)	2014				https://docs.google.com
Macroeconomic performance indices					
Global Metropolitan Monitor (Brookings Institution 2016)	2014	300	173	5(7)	www.brookings.edu
GDP and household income forecast					
McKinsey Urban World Top 25 Hot Spots by 2025 (McKinsey 2011)	2011	24	14	3(4)	http://www.mckinsey.com
Quality of life indices					
Global liveability ranking (EIU 2016)	2016	88	140	1(13)	http://www.eiu.com
IBM: Commuter pain survey (IBM 2011)	2011	16	20	2(3)	http://www-03.ibm.com
Mercer consulting human resources: Quality of living survey (Mercer Consulting 2016b)	2016	440	92	2(3)	https://www.mercer.com
Knowledge economy, human capital and technology indices					
2thinknow consulting: innovation cities (2thinknow Consulting 2015)	2015	441	347	2(14)	http://www.innovation-cities.com
Infrastructure and real estate indices					
Cushman and wakefield: Main street across the world(Cushman & Wakefield 2016)	2016	71	38	1(8)	http://www.cushmanwakefield.com/en

(continued)

Table 3.1 (continued)

Index name	Year (latest)	No. of cities surveyed	Johannesburg's rank (globally)	Johannesburg's rank (regionally)	Website
Mercer consulting: infrastructure survey (Mercer Consulting 2016a)	2016	230	95	4(43)	https://www.mercer.com
Environment and sustainability indices					
EIU best cities spatially adjusted liveability index (EIU 2012a)	2012	70	40	1(8)	http://pages.eiu.com
Image, brand and destination power indices					
Euromonitor international's top city destination (Euromonitor International 2015)	2015	37	100	1(5)	www.euromonitor.com
HRG (Hogg robinson group) hotel survey (HRG 2016)	2016	42	55	3(4)	http://www.hrgworldwide.com
Anholt/GfK roper brands index (Anholt/GfK Roper 2016)	2016	50	5	5(5)	http://www.gfk.com
MasterCard global destination cities index (Mastercard 2016)	2016	132	10	3(10)	https://newsroom.mastercard.com
Cost of living and affordability indices					
UBS: Prices and earnings (UBS 2016)	2016	71	3	2(3)	https://www.ubs.com

Note The numbers in brackets behind Johannesburg's rank in column 5 indicate the number of African cities that were investigated in each index

Earlier academic work by Hall (1966); Bhagwati 1972); Cohen (1981), and Hymer (1982), among others, centred upon the decision-making corporate activities and power of multinational companies (MNCs), in the context of the new international division of labour identified in the late 1970s (Fröbel et al. 1980). See also Friedmann and Wolff (1982), Friedmann (1986), Glickman (1987), Feagin and Smith (1987), Knox (1995), Knox and Taylor (1995), Thrift (1989), and more recently Sassen (1991, 1994).

The Globalization and World Cities Research Network (GaWC), housed at Loughborough University, United Kingdom, has been defining, categorizing, and ranking global cities using ‘relational’ data since 1998. GaWC views the world as a city-centred world of flows in terms of advanced producer services (APS). Taylor (2001) argues that, through cities, these APS firms operate as the prime actors in world city network formation and hence create an interlocking network through their global location strategies of placing offices. The APS selected by GaWC are: Accountancy, Advertising, Banking/Finance, and Law. In related work, GaWC researchers included a fifth category, Management Consultancy (Taylor et al. 2011). A firm qualifies as a global firm when it has offices in at least 15 different cities around the world. Indirect measures of flows between global firms are derived and used to compute a city’s network connectivity, which provides the measure of a city’s integration into the world city network.

GaWC developed a roster of world cities using three levels of global cities, each with several sub-ranks, namely *Alpha* world cities (with four sub-categories), *Beta* world cities (three sub-categories), and *Gamma* world cities (three sub-categories). Other cities were ranked according to *High Sufficiency* or *Sufficiency* world city presence (GaWC 2016). The various grades of cities are discussed in more detail below:

- *Alpha++ cities* are cities such as New York and London, which exhibit high levels of integration with other global cities.
- *Alpha+ cities* are cities which complement London and New York in activity and connectivity, mostly providing advanced producer services needs for areas in Pacific Asia.
- *Alpha* and *Alpha-* cities are extremely important world cities that link major economic regions and states to the world economy.
- *Beta cities* (*Beta+* , *Beta* and *Beta-*) are important world cities that are instrumental in linking their region or state to the world economy.
- *Gamma cities* (*Gamma+* , *Gamma* and *Gamma-*) are world cities linking smaller regions or states to the world economy, or important world cities whose major global capacity is not in advanced producer services.
- Cities with *Sufficiency* of services are cities that are not world cities as defined here, but they have sufficient services that they are not overly dependent on world cities. Two specialised categories of city are common at this level of integration: smaller capital cities, and traditional centres of manufacturing regions.

Johannesburg features quite prominently in the GaWC rankings, in relation to the presence of APS firms. In 2000, 2004, and 2008, the city was rated as a *Beta+* city, the only city in Africa to have a rank that high on the GaWC roster of world cities. The position of the city improved considerably over time. At *Beta+* level,

Table 3.2 Johannesburg's position in the GaWC rankings, in relation to other cities, 2000–2012

	2000	2004	2008	2010	2012
<i>Alpha++</i>	New York London	New York London	New York London	New York London	New York London
<i>Alpha+</i>	Tokyo Singapore	Tokyo Paris Singapore	Paris Tokyo Milan Beijing Singapore	Tokyo Singapore	Paris Tokyo Singapore Beijing
<i>Alpha</i>	Milan Madrid Amsterdam Brussels	Madrid Milan Brussels	Madrid Moscow Brussels Bueno Aires	Moscow Madrid Beijing Jakarta Bueno Aires Mexico City	Milan Moscow Madrid Mexico City Brussels Kuala Lumpur
<i>Alpha–</i>	Zurich Barcelona Prague Buenos Aires	Bueno Aires Beijing Seoul	Warsaw Taipei Rome Lisbon Istanbul Prague Vienna	Johannesburg Taipei Lisbon Warsaw Barcelona	Johannesburg Seoul Bueno Aires Jakarta Taipei Barcelona
<i>Beta+</i>	Johannesburg Manila Vienna	Johannesburg Moscow Berlin Prague	Johannesburg Barcelona Manila Bogota New Delhi	Cairo Rome Manila Bogota Berlin Athens	Cairo Cape Town Kiev Beirut Manila Athens
<i>Beta</i>	Cairo New Delhi Caracas	Cairo Rome Bogota Athens	Oslo Cairo Helsinki Riyadh Geneva	Beirut Oslo Kiev Cape Town Karachi Riyadh	Bogota Caracas Oslo Helsinki Karachi Casablanca
<i>Beta–</i>	Beirut Oslo Luxembourg	Caracas New Delhi Geneva	Kiev Karachi Sofia	Geneva Casablanca Sofia Helsinki Lagos	Tunis Nairobi Lagos Sofia Amman
<i>Gamma+</i>	Karachi Bucharest Helsinki	Manila Beirut Helsinki Bucharest	Nairobi Cape Town Casablanca	Nairobi Tunis Belgrade Edinburgh	Durban San Salvador
<i>Gamma</i>	Nairobi Cape Town Riyadh	Cape Town Karachi	Lagos Amman Calcutta	San Salvador	Ankara Colombo, Muscat
<i>Gamma–</i>	Casablanca Sofia Kiev	Riyadh Edinburgh	Edinburgh Wellington	Ottawa Colombo Durban	Accra, Algiers, Dar es Salaam

(continued)

Table 3.2 (continued)

	2000	2004	2008	2010	2012
				Accra	
<i>High Sufficiency</i>	Lagos Tunis Harare Abidjan Accra Lusaka, Durban	Tunis Lagos Brasilia Casablanca Belgrade	Colombo Tunis Accra Ottawa	Pretoria Brasilia	Gaborone Lusaka Kampala Abidjan Dakar Ottawa
<i>Sufficiency</i>	Windhoek Kampala Dar es Salaam Maputo Dakar Gaborone	Dar es Salaam Nairobi Durban Harare Accra Kampala Luanda Pretoria	Lusaka Harare Gaborone Durban Dar es Salaam	Dar es Salaam Dakar Gaborone Luanda Kampala Abidjan Windhoek Harare	Pretoria Luanda Maputo Harare Abuja Windhoek

Source GaWC (2016)

Johannesburg was on a par with some European cities (e.g., Vienna, Moscow and Berlin) and several cities in developing countries (e.g., Manila, Bogota and New Delhi). The next closest African cities were Cairo (*Beta* status), Nairobi and Cape Town (*Beta-* status) in 2000 and 2004, and Lagos, which was ranked as a *Gamma* city in 2008. In 2010 and 2012 (the most recent GaWC ranking), Johannesburg joined the ranks of *Alpha-* cities, albeit at the lowest level of the *Alpha* city category, the only African city to hold such a high position. At this higher status, it joined the likes of world cities such as Taipei, Buenos Aires, Seoul, and Barcelona. Table 3.2 shows that most African cities qualifying as world cities occupy the lower ranks, *High Sufficiency* and *Sufficiency*.

For their part, Alderson and Beckfield (2004) use relational data (which focuses on MNCs in all industrial sectors) between multinational enterprises (MNEs) and their subsidiaries to (1) assess the power and prestige of world cities in light of three measures of point centrality (i.e., Outdegree, Closeness, and Betweenness) and (2) generalize about ties between *positions* and the *roles* played by different sets (blocks) of cities within the world city system. At the top of their global city hierarchy, where New York, London, and Tokyo appear, their results were similar (notwithstanding a few surprises) to other studies such those by Friedmann (1986, 1995) and Sassen (1991, 1994). The prominence of Paris in the three measures of point centrality is notable here, unlike in other studies. At the lower levels of the hierarchy, however, Alderson and Beckfield's (2004) results show greater discrepancies with past studies. For instance, cities such as Miami, Singapore, Mexico

City, Sao Paulo, and Sydney, did not appear among the 50 high level cities in Alderson and Beckfield's (2004) hierarchy, unlike in the work of Friedmann's (1995) and Beaverstock et al. (1999). Neither did Johannesburg, which by multiple other measures (such as the GaWC study mentioned above) is considered as a powerful world city.

Wall and Van der Knaap (2011) combined GaWC's and Alderson and Beckfield's (2004) approaches (i.e., the focus on APS and multinational corporations in all industrial sectors, respectively) to explore firms' global and regional interdependencies. Wall and Van der Knaap's (2011) analysis of the top 100 global multinationals in 2005 and their ownership linkages with thousands of subsidiaries in 2,259 cities worldwide revealed: (1) nodal centralities and linkage structures within the "all industrial sector" network and the "producer service sector" network, (2) a strong correlation between these two networks, specifically toward the apex of the economic systems, and (3) evidence of the coexistence of hierarchical and heterarchical city network structures. Their results further confirmed the East–West triad (Friedmann 1986; Carroll 2007) of North America, Europe, and Pacific Asia. Wall and Van der Knaap, like Alderson and Beckfield (2004, p. 835), show that southern hemisphere linkages are mainly to Commonwealth countries and South America, and state that "Africa is primarily bound through Johannesburg, Abidjan, Lagos, and Cairo, but the relative share of connectivity to this continent is sparse (1% of the total)" (2011, p. 287).

3.3.2 *Foreign Direct Investments*

Foreign direct investment (FDI) linkages are used as a primary indicator of economic globalization as well as a city's integration into the global economy (Wall 2011; Burger et al. 2013; Wall and Stavropoulos 2016; UN-Habitat 2017b). Wall (2011) argues that Johannesburg is the most globally connected city in Africa and is considered a world player in the global city network. In fact, Johannesburg has gradually caught up with Cairo, and, since 2007, overtaken it to lead in terms of FDI projects on the African continent. In his discussion of the UN-Habitat commissioned study, *The State of African Cities*, Wall (2016) uses inbound and outbound FDI flows to measure African cities' overall globality. He measures Johannesburg's positioning specifically within global, regional and local economic networks, based on both inbound and outbound FDI. Noting that a city's development is not only determined by local urban characteristics, but increasingly by its position within regional and global flows of investment, Wall and Stavropoulos (2016) demonstrate the prominent role of Johannesburg in global financial flows.

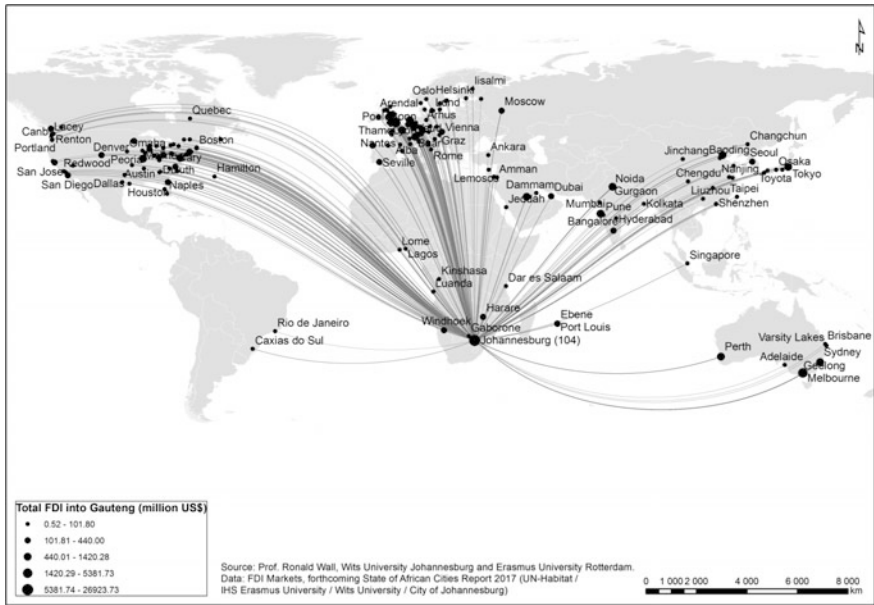


Fig. 3.1 Total FDI into Gauteng (million US\$)

This broad understanding of the interdependence of the three scales—local, regional and global—is crucially needed for effective urban policy development (UN-Habitat 2017a).

Based on an aggregate of global FDI investment from 2003 to 2014, Fig. 3.1 shows that Johannesburg was placed in position 104 globally, attracting US \$8,126 million FDI, excluding resource FDI, and US\$26,924 million FDI, including resource FDI. Comparatively, the total FDI (including resource FDI) attracted by its regional counterparts was as follows: Windhoek (US\$165 million), Luanda (US\$22 million), Lome (US\$11 million), Kinshasa (US\$7 million), Dar es Salaam (US\$6 million), and Lagos (US\$1 million).

In terms of total FDI from Gauteng, Fig. 3.2 shows that Johannesburg’s ability to invest in other cities is significant—the city is in position 71 globally and in the top rank in Africa, with a total of US\$12,640 million out-bound investments excluding resource FDI, increasing to US\$38,029 million when resource FDI is included. Broadly, more than half of Johannesburg’s investments go to North America and slightly more than one-fifth to the rest of Africa. The rest is distributed across the Asian and Pacific realm, the Middle East, Western Europe, Latin America, and the rest of Europe. In terms of services FDI inflows over the period 2003–2014, Gauteng attracted US\$7,113 million. It attracted in-bound investments from several African cities—Windhoek, Harare, Lome, Kinshasa, Dar es Salaam, and Lagos—of US\$165.3, 136.2, 11, 6.8, 5.8, and 1.1 million respectively (see Fig. 3.3). With respect to manufacturing, FDI into Gauteng, Fig. 3.4 shows that the

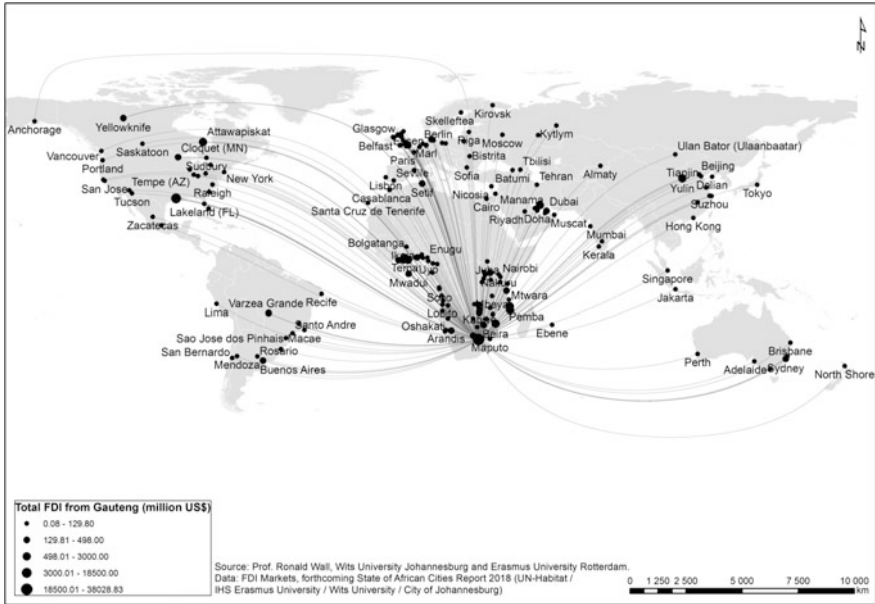


Fig. 3.2 Total FDI from Gauteng (2003–2014)

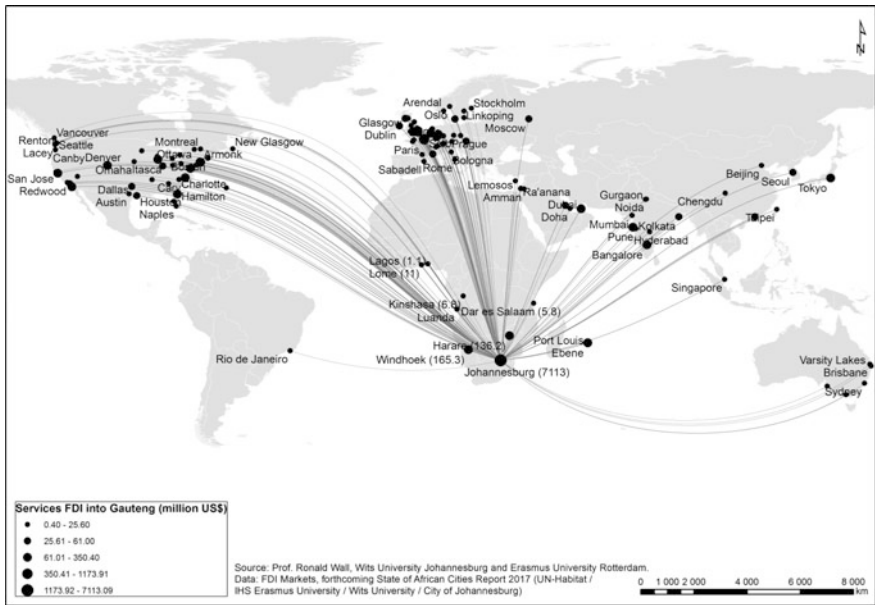


Fig. 3.3 Services FDI into Gauteng (2003–2014)

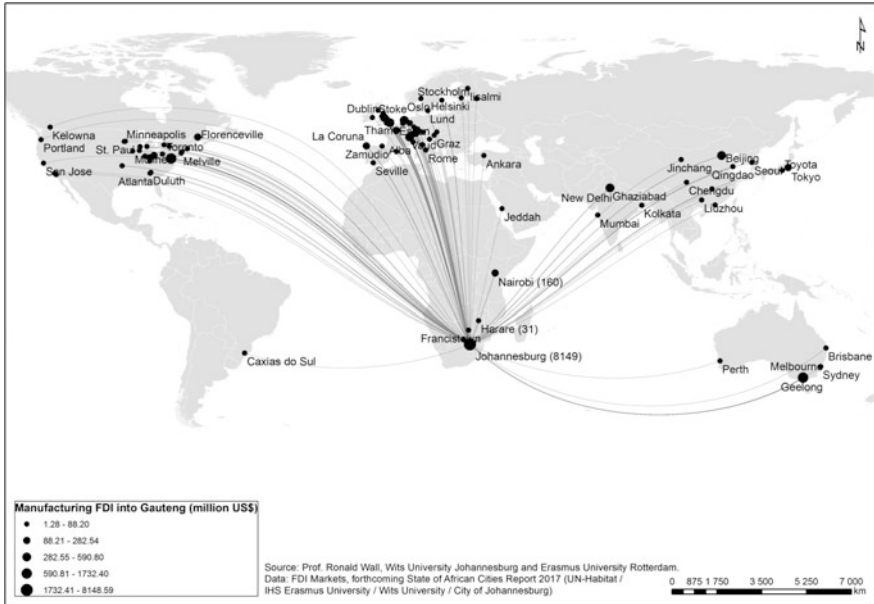


Fig. 3.4 Manufacturing FDI from Gauteng (2003–2014)

city-region attracted a total of US\$8,149 million. This amount includes in-bound investments from Nairobi (US\$160 million), Gaborone (US\$33 million), and Harare (US\$31 million).

Table 3.3 details Johannesburg’s aggregate performance in relation to growth of FDI (excluding resource FDI) from 2003 to 2014. Johannesburg was ranked 16 among 30 African cities cited. Other South African cities and their positions (in brackets) are Cape Town (15), Port Elizabeth (27), and Pretoria (29).

3.3.3 AT Kearney’s Global Cities Index and Global Cities Outlook

The first AT Kearney report, commissioned in 2008, assessed 60 cities’ indices. Since then, it has continuously improved its measurements by including more cities. The total number of cities assessed currently stands at 125. AT Kearney’s measurement indicators are unique because, unlike other global index measurements, they consider the global engagement of cities across five crucial dimensions: Business Activity, Human Capital, Information Exchange, Cultural Experience, and Political Engagement. AT Kearney’s global cities measurements consist of two parts: the Global Cities Index (GCI) and the Global Cities Outlook (GCO). The GCI is intended to provide a view of current performance, while GCO looks at the future

Table 3.3 African city ranking by exponential growth of FDI (Destination 2003–2014)

Rank	City	Country	Exponential growth
1	Harare	Zimbabwe	192
2	Abidjan	Ivory Coast	180
3	Kigali	Rwanda	135
4	Freetown	Sierra Leone	104
5	Ouagadougou	Burkina Faso	96
6	Nairobi	Kenya	93
7	Addis Ababa	Ethiopia	89
8	Mombasa	Kenya	84
9	Kampala	Uganda	66
10	Port Harcourt	Nigeria	43
11	Cairo	Egypt	42
12	Giza	Egypt	41
13	Lusaka	Zambia	40
14	Brazzaville	Congo (DRC)	38
15	Cape Town	South Africa	27
16	Johannesburg	South Africa	25
17	Dakar	Senegal	25
18	Dar es Salaam	Tanzania	23
19	Accra	Ghana	22
20	Kinshasa	Congo (DRC)	18
21	Windhoek	Namibia	17
22	Tangier	Morocco	16
23	Djibouti	Djibouti	16
24	Casablanca	Morocco	12
25	Juba	South Sudan	12
26	Maputo	Mozambique	11
27	Port Elizabeth	South Africa	5
28	Alexandria	Egypt	4
29	Pretoria	South Africa	-7
30	Luanda	Angola	-9

Source UN-Habitat (2017b)

Table 3.4 Johannesburg's Global Cities Index and Global Cities Outlook Index ranking

Year	2008	2010	2012	2014	2015	2016
Johannesburg's GCI rank	50	52	52	56	55	60
Johannesburg's GCO rank					99	102
Total number of cities surveyed	60	65	66	84	125	125

Source AT Kearney global cities index website

potential of the world's 125 largest and most influential cities. The GCI is an all-inclusive index which factors in many elements that are looked at separately in other global measures. It ranks 125 cities according to 27 metrics across five dimensions, hence is useful in comparing various world cities in terms of global reach, performance, and level of development. In contrast, the GCO examines 125 cities and ranks 13 leading indicators across four dimensions: Personal Well-being, Economics, Innovation, and Governance. These indicators are designed to project the likelihood that a city will improve its global standing over the next 10–20 years in terms of long-term success in areas such as environmental performance, safety, and innovation capacity (AT Kearney 2016).

In 2016, the GCI ranked Johannesburg 60 out of 125 of the world's largest and most influential cities. Previously, in the years 2008, 2010, 2012, 2014, 2015, it was ranked 50, 52, 52, 56, and 55, respectively. According to the GCO results, out of the world's 125 largest and most influential cities, Johannesburg was ranked number 99 in 2015 and 102 in 2016 (see Table 3.4).

3.3.4 Economist Intelligence Unit Hotspots

The Economist Intelligence Unit (EIU), a research and analysis division of the Economist Group and the world leader in global business intelligence since 1946, is been a significant source of information on business developments, economic and political trends, government regulations and corporate practice worldwide. The 2010 report states that with over half the world's population now living in cities, cities are crucial sites in terms of global capital flows (EIU 2010). Around 80% of global GDP is generated by cities. The EIU asserts that global businesses now consider cities, rather than countries, as points of actual business exchanges—thus the competition between and among cities for a piece of the global capital pie. In measuring city competitiveness, the EIU has a unique approach, particularly in its understanding of competitiveness not being primarily economically based—other equally important, non-economic factors, are taken into consideration.

The EIU's compiled scores are weighted (as per percentages in brackets in Table 3.5) between 1 and 100, where 1 implies intolerable and 100 is considered ideal. According to the EIU 2012 report (see Table 3.5), Johannesburg ranked 67 out of 120 cities, with a cumulative score of 47.1, the highest of the seven African cities present in the ranking. The other African cities in the EIU 2012 report were

Table 3.5 EIU hotspots showing Johannesburg's rank and score, 2012

Rank	Overall	Economic strength (30%)	Physical capital (10%)	Financial maturity (10%)	Institutional effectiveness (15%)	Social and cultural capital (5%)	Human capital (15%)	Environment and natural hazards (5%)	Global appeal (10%)
1	71.4	54	92	100	85.8	95	76.5	66.7	35.7
2	70.4	41.9	90.2	100	83.8	92.5	75.6	75	65.1
67	47.1	28.7	66.1	50	70.8	61.7	64.3	54.2	8.5
119	27.6	29.6	39.3	16.7	23.2	22.5	44.2	33.3	2.8
120	27.2	25.7	42.9	16.7	21.2	15.8	40.6	66.7	1.3

Source EIU (2012b)

(scores in brackets): Cape Town (45.9), Durban (41.2), Cairo (35), Nairobi (34.6), Alexandria (31.8), and Lagos (27.6). In Table 3.4, New York and London are in first and second places, while Lagos and Tehran were ranked at 119 and 120, respectively.

What further sets the EIU ranking apart from others is the incorporation of a 2025 forecast report for the same 120 cities ranked in 2012. The EIU argues that the need for 2025 projections is necessitated by the fact that as cities rise in prominence, competitiveness between them grows. In the forecast 2025 scores, Johannesburg is ranked 66, with an average weighted score of 50.5.

3.3.5 PricewaterhouseCoopers's 'Cities of Opportunity'

PricewaterhouseCoopers (PwC)—in partnership with the City of New York—collects and analyzes publicly available data⁵ from various sources to produce *City of Opportunity* (CoO) reports, which are among the most comprehensive examinations of cities in the world. Beginning in 2007, PwC has so far produced seven editions of these reports. With a methodology that is continuously evolving, the CoO reports capture current trends in urban reality and devise ways to support and sustain urban development.

Unlike other studies, which consider all major world cities in their rankings, CoO reports currently examine 30 (up from 11 in 2007, 21 in 2010, and 27 in 2012) of the leading world cities—business, finance and culture hubs. Moreover, the CoO reports have continuously widened their analytical infrastructure to incorporate what are now 67 variables in the 2016 edition (up from 59 variables in 2014). Once the data is collected, it is ranked and scored in terms of 10 indicator groups: Intellectual Capital and Innovation; Technology Readiness; How accessible a city is to the rest of the world; Transportation and Infrastructure; Health, Safety, and Security; Sustainability and the Natural Environment; Demographics and Liveability; Economic Clout; Ease of doing business; and Costs (PwC 2014, 2015b). The latest CoO (2016) report ranks Johannesburg at 7 out of 30 cities, with 30 being the best performing city, and 1 being the worst performing city. This position is an improvement from its rank of 3 out of 27 cities in 2012, attributable to Johannesburg outperforming all cities in cost competitiveness.

Importantly, in 2015 PwC published a CoO edition entitled *Into Africa: The Continent's Cities of Opportunity Report, 2015*, which focused on Africa alone. This report was designed to highlight Africa's growth and universal importance in the global economy. The *Into Africa* report assessed the relative merits of 20 African cities across 29 variables grouped under four indicator headings:

⁵PwC collects data from three main sources: global multilateral development organizations (e.g. the World Bank and the International Monetary Fund); national statistics organizations (e.g., UK National Statistics and the US Census Bureau); and various commercial data providers (PwC 2015b).

Infrastructure; Human Capital; Economics; and Society and Demographics. For each variable, the 20 cities are ranked from 20 (best performing) to 1 (worst performing). In this indicator, Johannesburg was ranked 4, with Cairo, Tunis and Addis Ababa at 1, 2, and 3, respectively, and Casablanca at 5. This is attributable to its municipal organisation and infrastructural, and social and cultural bases that are likely to ensure it thrives and prospers into the future (PwC 2015a).

3.3.6 *Z/Yen Global Financial Centres Index*

The Z/Yen group—sponsored by the Qatar Financial Centre Authority—calculates its Global Financial Centres Index (GFCI) as an indicator of the competitiveness of 87 major financial centres (a third of them in emerging economies), recognizing the changing priorities and concerns of finance professionals. According to Goldberg et al. (1988, p. 83), global financial centres are “major urban concentrations of financial services with a large portion of those services directed towards international financial transactions, as well as leading domestic centres for financial services in their own countries”. Global financial centres have become another key feature in the study of world cities.

Reed (1981) was the first to refer to the presence of international financial centres as a key component of global cities. He identified and ranked so called world cities on the strength of their financial centres. However, Reed's interpretation of global financial centres failed to unpack how international financial centres came into being. Sassen (1999) attempts to identify the factors that differentiate global financial centres from other so called ordinary cities (Faulconbridge 2004). She indicates that there are two key factors responsible for turning an ordinary city into a global financial centre: the first factor is the shift of scattered equity holdings from various areas to a highly consolidated regional centre. Major institutional banks and investment houses, establishments with significant equity holdings, are typically located within the consolidated regional centre. The second factor is emerging markets, which start receiving new financial investments, and take the first steps towards becoming global financial centres. Sassen (1999) suggests that as these global financial centres emerge, they will connect with other international financial centres to take advantage of various business synergies.

The GFCI, produced biannually since its inception in 2007, incorporates data from online questionnaires of over 26,000 financial centre assessments, together with over 80 indices from organizations such as the World Bank, the Organization for Economic Co-operation and Development (OECD) and the Economist Intelligence Unit. These data include elements such as people, business, environment, infrastructure, market access and general competitiveness. Table 3.6 shows that Johannesburg's rank has fluctuated, perhaps partly because of the number of cities surveyed. The latest report, GFCI 2015b, ranks Johannesburg at 33 out of 84 cities surveyed—the only African city on the list of global financial centres.

Table 3.6 Johannesburg's ranking according to Z/Yen Group

Year	Johannesburg's ranking	No. of cities surveyed	Year	Johannesburg's ranking	No. of cities surveyed
2007a	–	46	2011b	52	75
2007b	43	50	2012a	55	77
2008a	41	50	2012b	54	77
2008b	44	59	2013a	62	79
2009a	48	62	2013b	61	80
2009b	50	75	2014a	50	83
2010a	54	75	2014b	38	83
2010b	54	75	2015a	32	82
2011a	54	75	2015b	33	84

Source Z/Yen Group (various years)

Note a and b refer to midyear (June) and year end (December) reports for the respective years

Table 3.7 Function-specific and actor-specific ranking of Johannesburg

Function	Rank (out of 42)	Actor	Rank (out of 42)
Economy	39	Manager	42
Research and development	41	Researcher	42
Cultural interaction	39	Artist	39
Liveability	42	Visitor	42
Environment	37	Resident	42
Accessibility	42		

Source The Mori Memorial Foundation (2016)

3.3.7 *The Mori Memorial Foundation's Global Power City Index*

The Global Power City Index (GPCI) is calculated by the Mori Memorial Foundation's (MMF) Institute for Urban Strategies. According to its website, since the release of its first GPCI report in 2008, MMF has continued to update its rankings every year, based on new research and data (Mori Memorial Foundation 2016). Currently, it is considered to be one of the leading city indices strategies not only by analysts in Tokyo and Japan, it's 'home' terrain, but also by analysts in many other cities and countries worldwide. It is also considered a good reference for urban policies and business strategies. Methodologically, MMF evaluates and ranks major world cities according to their 'magnetism' or comprehensive power to attract creative people and business enterprises from around the world. The level of magnetism is based on six main functions representing city strength (Economy; Research and Development; Cultural Interaction; Liveability; Environment; and Accessibility), and five global actors leading urban activities (Manager; Researcher; Artist; Visitor; and Resident). This is designed to provide an all-encompassing view

of a city. In this way, the GPCI points to the strengths and weaknesses of each city and uncovers problems that need to be overcome.

From 2008 to 2015, 40 world cities were selected and evaluated, with Cairo as the only African city listed during this period. In 2016, however, 42 cities were selected and Johannesburg, which the index considered to be one of Africa's rapidly developing cities, is one of the new additions to the ranking. It was ranked 42 overall. Table 3.7 shows that Johannesburg's performance in the 2016 GPCI assessment was dismal—it was ranked last or close to last in all given functions, suggesting that the city has many challenges to overcome if it is to compete with the world's leading urban centres.

3.3.8 *The Arcadis Sustainability City Index*

Arcadis has a long and rich history dating back to 1888.⁶ It has grown through various mergers and acquisitions to be the leading design and consultancy firm for natural and built assets (Arcadis 2015, 2016). Its Sustainability City Index (SCI), first launched in 2015, considers the world's 50 most prominent cities, in 31 countries, and examines their viability as places to live, their environmental impact, their financial stability and how these elements complement one another (Ibid.). Its 2016 SCI provides an even more comprehensive indication of sustainability and has a wider coverage of 100 cities around the world, both in developed and emerging economies (Ibid).

The Arcadis SCI ranks cities based on three indices: People, Planet and Profit, with a city receiving a score of sustainability for each of the three indices and an overall score equal to the average of the three sub-indices. The *People* sub-index measures social performance and the quality of life in cities in terms of health (life expectancy and obesity); education (literacy and universities); income inequality; work–life balance; dependency ratio; crime and housing; and living costs. The *Planet* sub-index measures 'green' factors such as energy consumption and renewable energy share; green space within cities; recycling and composting rates; greenhouse gas emissions; natural catastrophe risk; drinking water; sanitation; and air pollution. The *Profit* sub-index assesses business environment and economic health by examining performance, and combines measures of transport infrastructure (rail, air and traffic congestion); ease of doing business; tourism; GDP per capita; the city's importance in global economic networks; connectivity in terms of mobile and broadband access; and employment rates (Arcadis 2016).

In the two comprehensive 2015 and 2016 reports, Johannesburg is ranked among the world's cities at 37 (out of 50) and 90 (out of 100), respectively. With respect to the sub-indices People, Planet and Profit, Johannesburg ranked 41, 35

⁶Arcadis was founded in the Netherlands as the Association for Wasteland Redevelopment, promoting agricultural development of Dutch heather lands (www.arcadis.com).

and 32 respectively, in 2015, and 99, 72 and 73 respectively, in 2016. However, exactly how Arcadis identifies and assigns scores to these cities based on these metrics is not transparent. Its emphasis on specific metrics (i.e. by assessing cities through the narrower lenses of sustainability, resilience, and reputation) has a tendency to expose a global city's weaknesses, while negating some of its strengths (Leff and Petersen 2015).

3.4 Summary and Conclusion

The chapter has shown that Johannesburg is a global city and, by extension, a gateway to Africa, especially sub-Saharan Africa. However, its rank fluctuates across many of the variables used by the various organizations and academics that participate in global city ranking and benchmarking. From a synthesis of the myriad city-based literatures on ranking and benchmarking, the next sections will draw several insights and conclusions.

3.4.1 *Academic Rankings Versus Non-academic Rankings*

At the risk of oversimplifying, it is worth noting that city-based rankings are undertaken by both academics and non-academic institutions, for various reasons and to serve different purposes. Academic rankings are observation-based with the aim, in most instances, of understanding why things or phenomena happen, whereas non-academic rankings are far more concerned with outcomes and projections, considering the value to be derived from the product. The variety of non-academic rankings is testament to this, serving largely niche audiences and using an assorted set of gauges. Academic rankings vary in focus and methodologies, the most popular form being economically based, and consider an array of economic functions as a way to determine globality. According to Beaverstock et al. (1999, p. 446), the first phase of global city studies sought to identify the strategic domination of certain world cities in the world system by analyzing and ranking the locational preferences and roles of multinational corporation (MNC) headquarters in the developed world (see also Hall 1966; Heenan 1977; and Hymer 1982).

Later academic work focused on decision-making corporate activities and power of MNCs in the context of the new international division of labour first mentioned by Fröbel and others in the 1970s (Fröbel et al. 1980; Cohen 1981). Authors such as Friedmann and Wolff (1982), Friedmann (1986), Glickman (1987), Feagin and Smith (1987), Knox (1995) and Thrift (1989) enriched the 'theoretical' approach taken by world city studies. This work also acted as a major catalyst for work in the 1990s, principally by Sassen (Beaverstock et al. 1999). Later, academics started to examine cities within a global urban hierarchy as part of internationalization

observed in the concentration and intensity of producer services in the world economy (Beaverstock et al. 1999; Alderson and Beckfield 2004; Wall and Van der Knaap 2011). Sassen (1991, 1994) is prominent here, among others, especially within the GaWC Group and Network. Other less popular academic rankings include the approach of measuring the level of international migration into cities and transportation and telecommunication network infrastructures.

Benton-Short et al. (2005) confirm that most global city ranking mechanisms are economically based and, concurring with those who advocate for a broader conceptualization of globalization beyond just the internationalization of capital and finance, or over reliance on economic indicators (see for example, Sassen 1999; Samers 2002), maintain that immigration is also a very important tool to measure global city-ness. They challenge us to contemplate the fact that cities that do not feature strongly in global economic rankings, for example, Dubai, Miami, Muscat and Medina, appear on the lists when immigration (percent foreign-born) to cities is explored. Curiously, in this instance, economic powerhouses such as New York and London are ranked only 15 and 24, respectively.

Elsewhere, those advocating for solely infrastructural measures of the global city argue that “what flows in and out of cities [is] just as important as what is fixed within” (Allen 1999; Castells 2001). These aspects have been covered in some form in the previous sections (e.g., considering inflows and outflows of FDI investments). Nevertheless, infrastructural measures of the global city cannot be wished away. Many scholars have applied infrastructural measures, such as air transport statistics (Smith and Timberlake 1995, 2001, 2002; Derudder and Witlox 2005; Derudder 2008), freight networks in the form of sea-land and airfreights (Rimmer 1991, 1996), and transfer of telecommunications data (Moss 1987, 1991) to measure global city-ness, albeit with varying results. For instance, Rimmer (1996) cautions that while cities such as Kaohsiung (Taiwan) and Pusan (South Korea) appeared alongside better known world cities such as Singapore, Hong Kong, New York and Tokyo, they cannot be regarded as world cities per se (see also Derudder (2008) and Rutherford (2004) who caution about drawing conclusions).

Work by Otiso et al. (2011) is worth mentioning as it relates to an examination of African cities globally and among themselves. They focus explicitly on airline connectivity of African cities as a measure of globalisation, considering firstly, the position of African cities in global transnational urban networks, and secondly, the inter-urban relationships of major African cities. Using data from the MIDT database, which has airline booking, transit stops and final destinations data, Otiso et al. (2011) established that whilst African cities generally have poor airline connectivity internationally and between themselves, certain cities such as Johannesburg (Ekurhuleni), Cape Town, Durban, Cairo, Casablanca and Nairobi have steadily increased their global connectivity and are experiencing heightened levels of integration. This is most true of Johannesburg (Ekurhuleni) which has increased its air connectivity dramatically post-1994. Otiso et al. (2011) note that all Africa's air transportation hubs increased their number of origin/destination passengers from 2001 to 2009. In 2009, Johannesburg increased its number of O/D passengers to

11,689,885 million, doubling its 2001 total. Johannesburg was followed by Cairo, Cape Town, Durban, Casablanca, Nairobi, and Tunis.

Extending the work by Otiso et al. (2011), Bassens et al. (2012) used the Computer Reservation System (CRS), which holds information from 2003 onwards and details all travel bookings made, including transit stops, to examine changes in airline connectivity for 61 major African centres to 464 major non-African cities across the globe, in the period 2003–2009. With change in connectivity represented as a percentage (still a crude measure), Bassens et al. (2012) concurred with Otiso et al. (2011) that Africa has seen an increase in the number of air travel passengers.

Outside of academic investigations, the measures of a global city are varied with respect to focus and outcomes. The first ever global study producing a city-based hierarchy was commissioned by the Swiss Bank UBS in 1970. Its *Prices and Earnings Survey*, as a typical comparative study, looked at the purchasing power of citizens in 72 countries worldwide. It was followed by other large global firms compiling similar reports gauging, for example, the cost of doing business and comparative salary scales in different locales, in an effort to guide investment decisions (Leff and Petersen 2015). In JLL (2013), a rich list of the non-academic reports is highlighted. It is important to appreciate that these non-academic rankings are usually commissioned with specific intent, utilising distinct methodologies, and are churned out more regularly, that is, yearly or bi-annually. Usually, non-academic rankings focus on economic aspects of a city (as most non-academic rankings are used as business decision-making tools), while a few collate economic and some of the other variables, including proxies for political environments, social elements, physical infrastructure and the natural environment.

3.4.2 The Relativeness Inherent in Global-City Measures

Although a few of the global city research indices recognized Johannesburg as a city with global promise, a general survey of other global city research has not shown the city in an overly favourable light. Although it is an African city typically well represented in global indices, it is undeniably correct to note that its ranking fluctuates depending on the rankings used. Dangschat (2001) cautions that because rankings operate at different scales and employ a variety of methodologies, it is difficult to gauge whether rankings are useful instruments for cities at all. More often than not, they highlight inconsistencies and contradictions between different studies, depict quite complex, confusing and differing pictures of cities, and frequently negate local dynamics, which influence a city and its distinctive growth trajectory.

In the case of Johannesburg (Gauteng city-region) its position is dependent on the ranking utilized—the city fluctuates in terms of performance based on what

variables are measured. However, rankings still attract attention. Leff and Petersen (2015) emphasize that “regardless of completeness, any methodology that offers sources, date of collection, and/or reasoning behind their selections, is more useful to cities that seek to understand the scoring system”. Leff and Petersen stress that in order:

[t]o draw value from these indices, cities must understand their history, differences, and continuing evolution. Most importantly, they must look beyond the scorecard to understand that these reports can paint a more nuanced portrait of a city and what it needs to do to improve its global reach and its quality of life at home. (2015, p. 1)

For a multitude of reasons, cities and regions across the globe continue to utilize and depend on rankings as a means of improving competitiveness and overall positioning in comparison to other global cities (Begg 1999). Within the current global economy characterized by increased integration and fluidity of capital, for example, Johannesburg has established itself as an emerging global city, and, just like other cities, it has utilized rankings as a way to highlight competitive advantage in a bid to attract global economic and social capital, tourism and so forth.

While cities themselves use global rankings as marketing tools, MNCs commission rankings to determine the best possible locations for investment as a precursor to maximizing profit (Giffinger et al. 2010). The use of rankings is not a new phenomenon, as stressed earlier, and regardless of their use, the rise and proliferation of commissioned rankings is of particular interest. Questions to contemplate going forward are: What are the overall benefits of city-based rankings? Why have they become so popular in the last few decades? Should we accept what rankings say about cities and city-regions without question?

Rankings needs to be carefully scrutinized, and understood within the larger context of their purpose and target audience. In an internal newsletter, the then Executive Mayor of Johannesburg, Mpho Parks Tau wrote that according to the Good City Index conducted by US-based *Good* magazine:

Johannesburg has emerged as the second most inspiring city in the world, the most visited city in Africa, and a city that is relatively peaceful.... [T]hese global rankings confirm Johannesburg's status as a world-class African City, an economic powerhouse and the heartland of trade and economic activity on the continent. (City of Johannesburg (CoJ) 2014, p. 2)

It is necessary to question the overall benefit of such city-based rankings, hierarchies and benchmarks and whether they can be taken seriously. The Good City Index (GCI) gives little detail regarding its methods, and does not justify how cities were chosen or why they occupy the positions they do in the rankings.⁷

⁷The various sub-indices used by the Good City Index are: Hub for progress (improvements to civic life); Civic engagement (engaging with citizens); Street life (support and creation of vibrant street life); Defining moments (reaction in times of crisis); Connectivity (connections between people in the city); Green life (promoted in urban environments); Diversity (encouraging multiculturalism); and Work/Life balance (optimum balance between the two). No weighting is provided for understanding the contributions of the various sub-indices to the overall index.

According to the GCI, the following event contributed to Johannesburg's high ranking:

After the public outcry that followed rats eating three of the fingers and parts of the nose of a one-month-old baby in Alexandria, the city implemented a radical solution: barn owls. In September, owl boxes were placed around schools in Alexandria (sic) and Marlboro with the intent of ridding townships of rat infestations. Only a few minor hiccups ensued: some superstitious local residents thought the owls were evil, and thus rejected the plan, while the NSPCA responded to several incidents of these misinformed residents attacking owls. Despite this, the plan moves forward—a positive example of city government trying a creative solution to mitigate a quality of life issue. (Good Magazine 2014)

Although such a narrative shows the overall dedication of the city to improving its citizens' quality of life using non-conventional methods, it is not the right sort of example to justify the city's placement in the GCI and validate a high ranking—it is possibly not a 'virtue' to be ranked at all. It is a 'feel good' episode that is not quantifiable, yet the City of Johannesburg latched on to this index and used it as a marketing tool to promote its image as a 'world-class city'. In the broader scope of world cities, do rankings such as these bring a city and region the right sort of attention on a global scale? City-based rankings should always be considered in light of the methods that are employed and the politics and motivations that drive their design and formulation as well as their use. Rankings are not innately valuable, or dangerous, but they need to be carefully considered.

In the final analysis, it must be stressed that rankings can be effective or ineffective, depending on what it is that corporates and city governments choose to focus on. Leff and Petersen (2015, p. 3) rightly argue that when "read correctly, they can be an important tool for cities wanting to strengthen their ability to compete globally. Read incorrectly, they are little more than fodder for civic bragging rights".

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Chapter 4

Importance of Industrial Clusters and Inter-industry Linkages for Regional Policy in the Gauteng City-Region

Rainer vom Hofe and Koech Cheruiyot

4.1 Introduction

Economic clusters are groups of strongly interdependent firms and/or organizations that are spatially concentrated, are somehow related, and impact one another as a result of their complementarities or similarities. Due to the nature of their interdependent relationships within their respective clusters, growth (or decline) in one firm creates a better (or worse) business environment for the others in the group, meaning that, the whole is greater than the sum of its parts (Porter 2000; Economics Center 2004). Cortright, notes that clusters encompass:

linked industries and other entities, such as suppliers of specialized inputs, machinery services, and specialized infrastructure; distribution channels and customers, manufacturers of complementary products, and companies related to skills, technologies, or common inputs; and related institutions such as research organizations, universities, standard-setting organizations, training entities, and others. (2006, p. 3, citing Porter (1998), a leading mind in global cluster phenomena. See also Rosenfeld 1997; Martin and Sunley 2003)

The spatial interdependence and proximity of firms and/or organizations ensures the achievement of agglomeration economies. Firms benefit from agglomeration economies by being able to depend on shared knowledge of technology and other strategies ‘in the air’; a certain type of economic infrastructure or environment with information and knowledge; accessible technology; adequate financing; or an acceptable business climate (Marshall 1890; Economics Center 2004). With

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K. Cheruiyot (ed.), *The Changing Space Economy of City-Regions*,
GeoJournal Library, https://doi.org/10.1007/978-3-319-67483-4_4

inherent critical mass, clusters of firms create economic efficiencies (such as costs reduction, and creation of better products) and reduce the risk for startups. In turn, this enhances growth and expertise in the cluster, ultimately leading to higher rates of technological change and innovation (Porter 2000; Pisa et al. 2015).

The wider Gauteng City-Region (GCR) is South Africa's largest economic agglomeration and its economic footprint extends beyond the borders of Gauteng into the neighbouring provinces of Free State, Mpumalanga and North West. Its core, Gauteng province, which consists of three metropolitan and seven local municipalities (see Fig. 1.2), alone contributes 34.73% of national gross value added (GVA), while the wider GCR accounts for 43.25% of national GVA (EasyData 2016). With a specialized economy that is focused on the manufacturing (contributing 16% to regional GVA) and services sectors (contributing 75% to regional GVA) (EasyData 2016), identifying the clusters that are the building blocks of the regional economy is crucial. Understanding the prevailing structure of the regional economy, through the identification of forward and backward linkages inherent in the different clusters, is important for several reasons including the need to diversify economic activity, sustainably enhance competitiveness in the city-region (Pisa et al. 2015), and provide a background to regional economic growth discussions and/or theorizing (Robinson 2002; Economics Center 2004).

After this Introduction (Sect. 4.1), Sect. 4.2 of this chapter explores the industrial cluster phenomenon, specifically its antecedents and its role in development policy. Section 4.3 reviews government industrial cluster policies that are relevant to Gauteng province, and Sect. 4.4 focuses on methodology and data frameworks. Section 4.5 focuses on the identification and structural path analysis of the key industrial clusters in Gauteng, and Sect. 4.6 draws conclusions and suggests policy options.

4.2 The Industrial Cluster Phenomenon

4.2.1 *The Antecedents of the Industrial Cluster Phenomenon*

The study of the industrial cluster phenomenon can be traced back to Marshall's (1890) work relating to industrial districts in nineteenth-century England. Vom Hofe and Chen (2006) provide a comprehensive review of the cluster phenomenon in terms of theory, concepts, analytical methods, and empirical cluster studies. While acknowledging the prominence of the industrial cluster phenomenon, Vom Hofe and Chen decry, however, the lack of consensus "among ED practitioners and academicians alike on proper cluster definitions, appropriate cluster identification methodologies, and their translation into cluster-based economic development policies" (2006, p. 3). They cite Doeringer and Terkla (1995), Rosenfeld (1997) and others to show that prevailing methods are insufficient individually or in combination to help in the actual identification of clusters.

From his extensive work in the industrial districts of England during the 1890s, Marshall (1890) identified three agglomeration economies: knowledge spillovers among firms; labour market pooling; and sharing of industry-specific non-traded inputs. Later, Hoover (1948) introduced three types of agglomeration economies: economies of localization, economies of urbanization, and internal returns to scale. Economies of localization, that is, benefits accruing to a firm from the presence of other firms in the same industry, in the same area, are synonymous with Marshall's three external sources of agglomeration. Economies of urbanization accrue to a firm from its mere geographical proximity to several other industries, often in a large, diverse metropolitan economy. Unlike the two previous agglomeration economies that are external to firms, the third type, internal returns to scale, are internal, location-specific and accrue to a firm from the existence of large and specialized factors of production (Vom Hofe and Chen 2006; Jofre-Monseny et al. 2012, 2014; Glaeser et al. 1991; Hoover 1948; Krugman 1991).

From the theoretical foundations described above, Vom Hofe and Chen (2006) observe that economic development theories that focused on the spatial co-location of firms mushroomed in the 1950s and 1960s. The full list of such theories is too long to review here, but some of the most important are: Perroux's (1950) growth pole/development pole theory, which focused on innovations and investments that are the driving forces behind industrial development; Myrdal's (1957) core-periphery model, which addressed spatial concentrations of economic activities, and how sustained economic growth may lead to geographic dualism in economic activities; and Vernon's (1966) product-cycle theory, which argued that the location of firms is influenced by a combination of market demand, technology change, and labour costs. Also worth mentioning is the work of Isard et al. (1956), who fused locational analysis with input-output analysis and showed the possibility of "quantifying the cost advantage of combining a region's industrial activities characterized by intensive forward and backward input-output linkages" (Vom Hofe and Chen 2006, pp. 6–7). Overall, there are distinguishable cluster concepts/definitions that are used in development discourse (Vom Hofe and Chen 2006, pp. 8–9):

- Industrial clusters, following the theoretical principles of localization economies based on Marshall's (1890) work (related to the work of Rosenfeld 1995; Swann and Prevezer 1996; Schmitz and Nadvi 1999).
- Industrial cluster definitions, derived mainly from inter-industry relationships found in input-output tables (related to the work of Czamanski (1974); Czamanski and Ablas (1979), Roepke et al. (1974), O'Huallachain (1984), Redman (1994), Bergman and Feser (1999), Feser and Bergman 2000).
- Industrial cluster concepts, encompassing the widest spectrum of arguments explaining why establishments group in geographic proximity, including economies of localization and urbanization, internal returns to scale, value chain linkage, and technology innovation, among others (related mainly to the work of Porter 1990, 1998).

More recently, the mid-1980s saw a resurgence of the phenomenon following several studies of networks of globally competitive small businesses in Italy, and studies of the industrial structure of developed nations and the world's leading industries, with the latter being published in Porter's (1990) *Competitive Advantage of Nations*. This was followed by an avalanche of other cluster studies (see Cortright 2006; Vom Hofe and Chen 2006).

4.2.2 *Industrial Clusters in Development Policy*

Despite the confusion prevailing in the cluster concepts and methods discourses, it is widely agreed in policy-making that the role of industrial cluster analysis in economic development strategies is indispensable. Cluster analysis is useful for guiding economic growth and development as it helps economic development specialists monitor and understand structural economic change and take appropriate new approaches and actions for the benefit of their communities, with competitive advantage in mind (Porter 1990). In market-oriented economies, where clusters are supposedly expected to grow organically, empirical analysis of local/regional economies through cluster analysis is still helpful to development specialists in providing proactive, appropriate actions, such as in identifying targets where there is a need for workforce development (e.g., recruitment and retention) and for investment in business supportive strategies (such as infrastructures, etc.). Cluster analysis also provides a background to regional economic growth discussions and/or theorizing (Robinson 2002; Economics Center 2004).

With evident disagreement about the definition of what a cluster is and how that translates to policy prescription (see, for example, Martin and Sunley 2003), Feser states that specific "policies differ based on varying definitions of clusters, possible levels of analysis, and degree to which clustering constitutes the central focus" (1998, p. 2). He uses the definitional typologies of Boekholt (1997) and Roelandt et al. (1997), and his own adaptation of the work of DeBresson and Hu (1997) and Kirkpatrick and Gavaghan (1996) on environmental technologies, to show that different definitions of clusters imply different development strategies. Feser (1998, p. 3) notes that Boekholt's (1997) typology of clusters is based on how such policies define:

- 1) the types of collaborative links among cluster firms (e.g., simple buyer–supplier relations versus knowledge/technology transfer); 2) the types of constituent firms and actors included in the cluster (e.g., firms only or firms and supporting institutions); 3) the appropriate level of aggregation (e.g., micro versus macro); 4) the position of firms in the value chain (i.e., horizontal, vertical, or lateral); 5) the appropriate spatial level of intervention (local, regional, national, international); and 6) the specific policy mechanisms employed (general business assistance, network brokering, technology transfer, information provision, and so on).

The typology of Roelandt et al. (1997), according to Feser (1998), is a value-chain approach based on the level of analysis. Depending on whether it is

national (macro), branch or industry (meso), or firm (micro), the cluster concept and focus of analysis differs accordingly. Feser (1998) also notes that, beyond the typologies of Boekholt (1997) and Roelandt, et al. (1997), industrial cluster-related policy applications can be seen in terms of cluster-specific strategies and cluster-informed strategies. He differentiates between the two types of strategies, stating that under a cluster-specific policy approach, the objective is to encourage the emergence or development of a distinct, identified cluster, while the main policy objective of cluster-informed strategies is the improved implementation of individual (or isolated) development initiatives.

An important conclusion is that cluster initiatives aim for the improvement of the business environment as a pre-requisite for collective benefits by all cluster-related industries, whereas industrial policy initiatives, often sectoral, posit that some industries are more beneficial, thus the role of the government should be in fostering these industries through subsidies and other policies that, by design, distort competition in their favour (Porter 2001).

4.3 Government Industrial Cluster Policy in Gauteng

On its website, the national Department of Trade and Industry (DTI) indicates several policies that aim to enhance industrial development in South Africa. These incentives focus on specific sectors and programmes (SMME development, trade export and investment, industrial development across several sectors) as well as specific population groups (i.e., women empowerment and black entrepreneurs) (DTI 2017).

A few policies focus specifically on cluster development: the Clothing and Textile Competitiveness Programme (CTCP) and the Cluster Development Programme (CDP). The CTCIP (divided into the Improvement Programme (CTCIP) and the Production Incentive (PI)—administered by the Industrial Development Corporation (IDC) on behalf of the DTI—aims to “improve the global competitiveness of South African-based clothing, textile, footwear, leather and leather goods manufacturers and designers in the related sectors” (DTI 2013). In the process, South African clothing and related sectors build capacity to compete and afford access to both local and international value chains.

The CTCIP provides 65% grants to individual companies and 75% grants to company clusters. The PI provides grants pegged at 7.5% of individual company manufacturing value addition. The CTCP identifies four elements necessary for ensuring cluster development:

- A network of different types of member companies and/or organisations. These member companies and/or organisations should preferably include private companies, public organisations and academic/research institutions.
- An independent cluster organisation (CO) with a separate office and identity, cluster administrator/facilitator/manager, a website, etc.

- Governance of the initiative (e.g., the formation of a cluster board/management committee).
- Financing of the initiative (international/national/regional/local public funding, member fees, consulting fees) (DTI 2013, p. 7).

The CDP is intended to promote industrialization, sustainable economic growth and job creation in South Africa through cluster development and industrial parks. The DTI (2017) notes that an eligible cluster should have five or more businesses that are registered tax-paying entities or non-profit organizations. In addition, in the first year (i.e., the pilot stage), at least 20% of the membership of the cluster should be entities with 51% black-ownership. In the case of industrial parks, the majority of tenants must be supply-based firms or involved in manufacturing. Such industrial parks should be located in areas where there are high levels of unemployment (e.g., townships or rural areas). The CDP's incentives include a shared-infrastructure grant, business development grant, and cluster management organization funding.

Table 4.1 gives a summary of most of the other policies and/or programmes in terms of sector or population group covered, kinds of conditional incentives, and implementing agency. Apart from the CTCP and CDP discussed above, the end game of many of these policies is to improve productivity, to create and/or sustain employment, encourage spatial development, and broaden participation of all population groups, among other objectives, rather than cluster development per se. The review focuses mainly on industrial development incentives. However, it is worth noting that most of these policies serve broader purposes, for example, some policies that are primarily industrial development incentives, also focus on black and women empowerment.¹

Since Gauteng is the economic heartland of the country, most of these policies apply to this region. It is worth mentioning, though, that these policies are insufficient in fostering any meaningful cluster-related competitiveness. As is evident below, the clusters (see Sect. 4.5) that are the key building blocks of the regional economy have no cluster policies specifically targeting them. Industrial development in Gauteng is the responsibility of the Gauteng Department of Economic Development (GDED), which, in its 2014–2019 strategic plan, stated its intention to radically transform, modernize, and re-industrialize the economy of Gauteng (Gauteng Province 2015; see Chap. 5 in this volume). Under the GDED, the Gauteng Growth and Development Agency (GGDA) and the Gauteng Enterprise Propeller (GEP) are among the key agencies mandated to foster the economic development potential and competitiveness of Gauteng. The GGDA expects to “create an enabling environment for growth-targeted investment facilitation, strategic infrastructure development and social transformation, thus positioning Gauteng as a leading Global City Region” (GGDA, n.d.). The GEP provides “financial and non-financial support to Small, Medium and Micro-Enterprises (SMMEs) and Co-operatives” (GEP, n.d.).

¹For a complete review of current DTI financial incentives, see https://www.thedti.gov.za/financial_assistance/financial_assistance.

Table 4.1 Summary of cluster-related policies and/or programmes in Gauteng

Policy/program type	Objectives and sectors/population group	Year started	Kind of incentive/s	Implementing agency
Aquaculture Development and Enhancement Programme (ADEP)	To stimulate investments, increase production, and broaden participation, etc. in the aquaculture development as classified under SIC code 132, 301, and 3012	2013	Reimbursable cost-sharing grant of up to a maximum of Rs 40 million on qualifying costs, including machinery and equipment and bulk infrastructure	National DTI
Business Process Services (BPS)	To support business process services firms to widen their activities beyond South African borders	2011	A two-tier incentive, based on fully-loaded cost of an offshore job created, is paid for a maximum 60 months as estimated from the day the job is created	National DTI
Manufacturing Competitiveness Enhancement Programme (MCEP)	To provide financial assistance to clusters and partnerships of companies, engineering services and conformity assessment services in the manufacturing industry	2014	Incentive amounting to 80% of the costs of the cluster up to a maximum grant of Rs 50 million per cluster. The relevant costs include <i>inter alia</i> product development costs, local and international marketing and advertising costs	National DTI/IDC
Seda Technology Programme (STP)	To provide technology transfer services to small enterprises and women-owned enterprises		Financial assistance in the form of a non-repayable grant up to a maximum of Rs 600, 000 per project	DTI

(continued)

Table 4.1 (continued)

Policy/program type	Objectives and sectors/population group	Year started	Kind of incentive/s	Implementing agency
Sector Specific Assistance Scheme (SSAS)	To support export councils, joint action groups, industry associations, etc. through reimbursable cost-sharing incentive scheme		A reimbursable cost-sharing (80:20) scheme	DTI
People-carrier Automotive Incentive Scheme (P-AIS), part of AIS	To stimulate growth of people-carrier vehicle assemblers		Non-taxable cash grant of between 20% and 35% of the value of qualifying investment in productive assets	DTI
Medium and Heavy Commercial Vehicles Automotive Investment Scheme (MHCV-AIS), part of AIS	To provide grants to medium and heavy commercial vehicle manufactures		Non-taxable cash grants of 20–25% of the value of qualifying investment in productive assets, component, and tooling by MHCV manufactures	DTI
Critical Infrastructure Programme (CIP)	To leverage investment by supporting infrastructure that is deemed to be critical, thus lowering the cost of doing business		Cost-sharing incentive (grants of 10–30%) upon completion of infrastructures deemed critical	DTI
Capital Projects Feasibility Programme (CPFP)	To support feasibility studies that are likely to lead to high-impact projects that will stimulate value-adding economic activities		Grants capped at Rs 8 million, with maximum 50 and 55% of total costs of projects done, domestic and internationally, respectively	DTI

(continued)

Table 4.1 (continued)

Policy/program type	Objectives and sectors/population group	Year started	Kind of incentive/s	Implementing agency
Support Programme for Industrial Innovation (SPII)	To provide financial assistance for the development of innovative products and/or processes		Limited to Rs 2 million, funds qualifying costs incurred depending on level of BEE ownership: 0–25% gets 50%, 25.1–50% gets 75%, and >50% gets 85% of qualifying costs	DTI

Source https://www.thedti.gov.za/financial_assistance/financial_incentives

4.4 Methodology and Data Framework

4.4.1 *The Social Accounting Framework*

The approach we propose in this chapter involves identifying inter-industry linkages, based on the work of Pyatt and Round (1979), Defourny and Thorbecke (1984), and Stone (1985). Building a multiplicative decomposition model from a social accounting matrix (SAM) for the Gauteng region allows evaluation of the strength of inter-industry linkages, which is then the basis for grouping those industries that have strong buying and selling relationships together. The Gauteng SAM maps all economic transactions for the Gauteng region for a specific period of time. It is well suited for our purposes as it represents a snapshot of the Gauteng economy for one year. Like an input–output table, the rows in a SAM depict inflows of money (i.e., income) and the columns depict outflows of money (i.e., expenditure). The major advantage of SAMs over input–output tables is the inclusion of socio-economic transactions, making them a more complete circular process of economic interdependencies. A simplified schematic of the organization of the Gauteng SAM used for this study is shown below in Table 4.2 (see Keuning and Ruuter 1988; See also Annexure 4.5 for a more detailed conceptualized SAM).

The conceptual SAM shown in Table 4.2 is a comprehensive and complete dataset including all actors and markets within a socio-economic system. It is a square balanced regional accounting framework, meaning that the corresponding row and column totals are equal, a feature similar to double-entry bookkeeping systems (Adelman and Robinson 1986). Reading down the columns identifies the outlays being made by various accounts (i.e., purchases), while reading across the rows follows the flow of receipts being generated (i.e., sales). For all transactions occurring within a region, for one specific year, we can thus see which account pays what to whom. The SAM provides a complete picture of a regional economy as it

Table 4.2 Conceptual algebraic schematic of the Gauteng social accounting matrix SAM)

	Endogenous account			Exogenous account			Totals
	Production	Factors	Private institutions	Government	Capital	Rest of the world	
<i>Endogenous</i>							
Production	T_{11}	0	T_{13}	X_{14}	X_{15}	X_{16}	Y_1
Factors	T_{21}	0	0	X_{24}	X_{25}	X_{26}	Y_2
Private institution	0	T_{32}	T_{33}	X_{34}	X_{35}	X_{36}	Y_3
<i>Exogenous</i>							
Government	L_{41}	L_{42}	L_{43}	t_{44}	t_{45}	t_{46}	Y_4
Capital	L_{51}	L_{52}	L_{53}	t_{54}	t_{55}	t_{56}	Y_5
Rest of the world	L_{61}	L_{62}	L_{63}	t_{64}	t_{65}	t_{66}	Y_6
Totals	Y_1	Y_2	Y_3	Y_4	Y_5	Y_6	

Notes T_{ij} refers to a matrix, while t_{ij} refers to single, highly aggregated exogenous accounts, that is, government, capital, and Rest of world

includes inter-industry transactions (T_{11}), the core of every input–output table. The endogenous accounts further map the accrument of value added by the production accounts (T_{21}), and the distribution of these value added payments among the private institutions (T_{32}), namely households and enterprises, the owners of the factors of production. Following the flow of income and expenditures through the system, the SAM also maps how private institutions spend their received income buying goods and services (T_{13}), and the private inter-institutional transfers (T_{33}) (Thorbecke and Jung 1996).² A simplified graph of the main interrelationships among the principal SAM accounts is shown in Fig. 4.1.

Traditional input–output analysis focus mainly on production activities (T_{11}) (Fig. 4.1). Accordingly, the input–output multiplier analysis evaluates direct and indirect changes in the economic system stemming from exogenous injections originating in the final demand sector. Usually, the exogenous final demand sector in input–output analysis consists of institutions, including households, governments, and enterprises, as well as capital and trade accounts. Alternatively, some input–output analyses also treat households endogenously, which is sometimes labelled a Type II multiplier framework, where the additional impact resulting from the inclusion of households is termed ‘induced effects’ (Wang and Vom Hofe 2007). One important consideration when working with social accounting frameworks is defining which individual accounts are treated endogenously and as such are included in the derivation of social accounting matrix multipliers. Here, Thorbecke and Jung (2000) recommends treating the producing sectors, the factors

²Adjusted to reflect the organization of the 2006 Gauteng Social Accounting Matrix. Source: Thorbecke and Jung (1996).

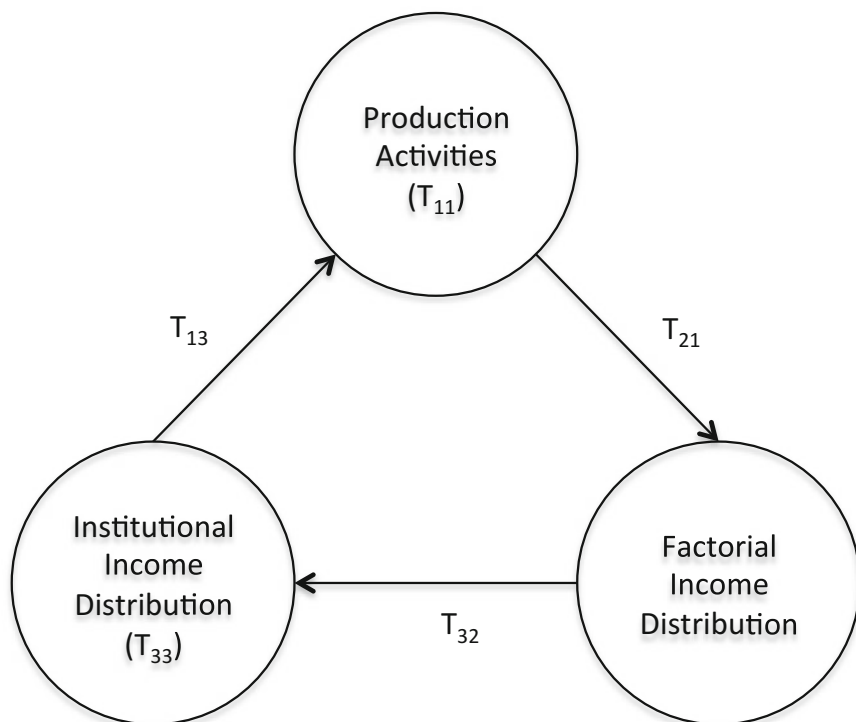


Fig. 4.1 Simplified interrelationships among SAM accounts

of production (land, labour, and capital), as well as all private institutions (household and enterprises) as endogenous, as is shown in Table 4.2. It is a common practice in SAM-based multiplier analysis to treat the government, the capital account, and the rest of the world, exogenously.

In Table 4.2, transactions within the endogenous accounts are labelled T_{11} to T_{33} . The policy variables, X_{14} to X_{36} are the exogenous injections from government, capital, and exports account, into production, factors of production, and households respectively. These exogenous injections through final demand constitute the potential policies that can be evaluated in a SAM-based multiplier framework, such as government spending and transfer (welfare and poverty alleviation) policies, industrial policies, and others. Leakages, and moneys leaving the region, from industries, factors, and private institutions, are accordingly denoted by L_{41} to L_{63} . Inter-institutional transactions among the exogenous accounts are labelled t_{44} to t_{66} , and finally, Y_1 to Y_6 refer to both total expenditures (the column totals) and total incomes (the row totals). As with any economic model, its strengths and weaknesses are embedded in its main assumptions, which are: (1) the economy is totally demand-driven and there exist no supply constraints for firms and businesses, meaning that each industry has enough excess production capacity to meet

any increase in final demand; (2) prices are constant, not subject to change, making the SAM-based multiplier model a ‘fixed price’ model; and (3) the underlying production function is linear, based on fixed input coefficients, and exhibits constant returns to scale. The direct implication of fixed input coefficients is the absence of substitutability between inputs of production, implying that an industry’s input requirements always change proportionally with an increase in output (Wang and Vom Hofe 2007).

4.4.2 The 2006 Gauteng Social Accounting Framework

We must emphasize that, given their heavy data requirements, social accounting matrices are not produced on a regular basis. This study uses the 2006 SAM for Gauteng province, the most recent version available, although we recognize that it is more than 10 years old. Importantly, the structure of the provincial Gauteng economy has remained relatively unchanged since 2006. The 2006 Gauteng SAM (Conningarth Economists 2006) provides a detailed socioeconomic picture of the province. It includes 37 activities (read industries) as well as an equal number of commodities. The factor payments account distinguishes between 44 different types of labour payments (i.e. 11 Africans, 11 Coloureds, 11 Asians/Indians, and 11 Whites) and 4 different capital payments. The private institutions account is subdivided into 4 enterprise sectors and 48 separate household groups. The exogenous account in the Gauteng SAM has 7 government sectors, 2 capital sectors, 4 sectors for Gauteng’s trade with the rest of South Africa and another 4 for its trade activities with the rest of the world. It is worth noting that the production account distinguishes explicitly between activities and commodities. Originally introduced by the United Nations in its 1968 *System of National Accounts* (United Nations 1968), the so-called make–use framework provides a better description of real-world economies as one industry can produce more than one commodity.³ Regardless, for analytical purposes, the symmetric Leontief model, in which each industry only produces one homogenous commodity, is preferred for analyzing structural changes or industrial linkages (Guo et al. 2002).

4.4.3 The Social Accounting Multipliers

As in Leontief input–output analysis, the social accounting framework lends itself to economic impact analysis aimed at examining exogenous stimuli to the regional economic system. It is one way of measuring economy-wide changes in selected

³The ‘use’ matrix represents intermediate parts—commodity inputs by industries. The ‘make’ matrix maps industries producing commodities—industries by commodities.

endogenous variables, such as output, and household income, following an exogenous impulse in a selected sector. It can be the case that final demand for a sector's products increases as a result of increases in government spending or exports. An advantage of the SAM framework is that it includes the factorial income distribution and its translation to the distribution of incomes across the endogenous institutions, namely households and enterprises. Accordingly, following an exogenous injection, as mentioned, SAM multipliers are well suited for mapping detailed changes in factorial income and institutional incomes. More specifically, exogenous changes (the x_i 's in Table 4.3) determine, through their interaction with the endogenous accounts in the SAM matrix, the incomes of the production activities (vector y_1), the factor incomes (y_2), and the household and enterprise incomes (y_3) (Thorbecke and Jung 2000).

Based on the aforementioned logic, we prepared the SAM by aggregating all exogenous accounts (i.e., government, capital, and rest of the world) into one aggregated exogenous account. In the next step, we follow Thorbecke and Jung (2000) and define the total receipts of all endogenous accounts as a set of linear equations:

$$y_1 = T_{11} + T_{13} + x_1 \tag{4.1}$$

$$y_2 = T_{21} + x_2 \tag{4.2}$$

$$y_3 = T_{32} + T_{33} + x_3 \tag{4.3}$$

Replacing the endogenous transactions T_{ij} by their corresponding average expenditure propensities, where $A_{ij} = T_{ij}(y_j)^{-1}$, we rewrite the linear system as:

$$y_1 = A_{11}y_1 + A_{13}y_3 + x_1 \tag{4.4}$$

$$y_2 = A_{21}y_1 + x_2 \tag{4.5}$$

$$y_3 = A_{32}y_2 + A_{33}y_3 + x_3 \tag{4.6}$$

Table 4.3 Simplified conceptual algebraic schematic of the Gauteng SAM

	Endogenous account			Exogenous account	Totals
	Production	Factors	Private institutions		
Endogenous account					
Production	T_{11}	0	T_{13}	X_1	Y_1
Factors	T_{21}	0	0	X_2	Y_2
Private institutions	0	T_{32}	T_{33}	X_3	Y_3
Exogenous account	I'_1	I'_2	I'_3	X_4	Y_4
Totals	Y'_1	Y'_2	Y'_3	Y'_4	

In the last step, solving the linear system for y , we obtain:

$$y_1 = (I - A_{11})^{-1}x_1 + (I - A_{11})^{-1}A_{13}y_3 \quad (4.7)$$

$$y_2 = x_2 + A_{21}y_1 \quad (4.8)$$

$$y_3 = (I - A_{33})^{-1}x_3 + (I - A_{33})^{-1}A_{32}y_2 \quad (4.9)$$

Equations 4.7 to 4.9 explain the operation of the multiplier process and the interactions between the production account, the factor incomes, and the endogenous institutional incomes, namely, households and enterprises. Assuming an increase in government, capital, or export demand (x_1) due to an exogenous shock, output of the corresponding production activities change by $(I - A_{11})^{-1}x_1$. In turn, an increase in production activities requires new additional value added, $A_{21}y_1$, constituting new factor income. Potential exogenous factor income received either from the government or from the rest of the world is included in x_2 .

Equation 4.9 maps the distribution of newly generated factorial income (y_2) among the endogenous institutions, $(I - A_{33})^{-1}A_{32}$, according to their resource endowment (A_{32}) and inter-institutional transfers (A_{33}). Newly generated government subsidies and transfer payments and remittances from other regions and abroad, that is, $(I - A_{33})^{-1}x_3$, are the second source of new household and enterprise income. Lastly, we close the loop of interrelated endogenous SAM transactions by mapping how newly generated household and enterprise income (y_3) translates into new production activities, that is, $(I - A_{11})^{-1}A_{13}$.

Modifying Fig. 4.1, the multiplier effects among all endogenous accounts is represented in Fig. 4.2.

Summarizing Eqs. 4.7 to 4.9, the SAM multiplier model can be expressed as:

$$y = (I - A_n)^{-1}x = M_a x \quad (4.10)$$

where $M_a = (I - A_n)^{-1}$ represents the matrix with the SAM multipliers, also referred to as the accounting multiplier matrix. Despite its computational simplicity, Defourny and Thorbecke (1984) emphasize that the accounting multiplier matrix, M_a , implies unitary income elasticities and consequently, the average expenditure propensities apply to any exogenous injection. To address this shortcoming, scholars (Defourny and Thorbecke (1984) and Kahn (1999), among others) propose the use of a matrix of marginal expenditure propensities, C_n , where the C_n matrix is partitioned in the same way as the A_n matrix. Changes in income (dy) resulting from changes in exogenous shocks (dx) are then derived as:

$$dy = (I - C_n)^{-1}dx = M_c dx \quad (4.11)$$

where M_c is now called the fixed price multiplier matrix. The advantage here is that it avoids the somewhat unrealistic assumption of exploring the macro-economic

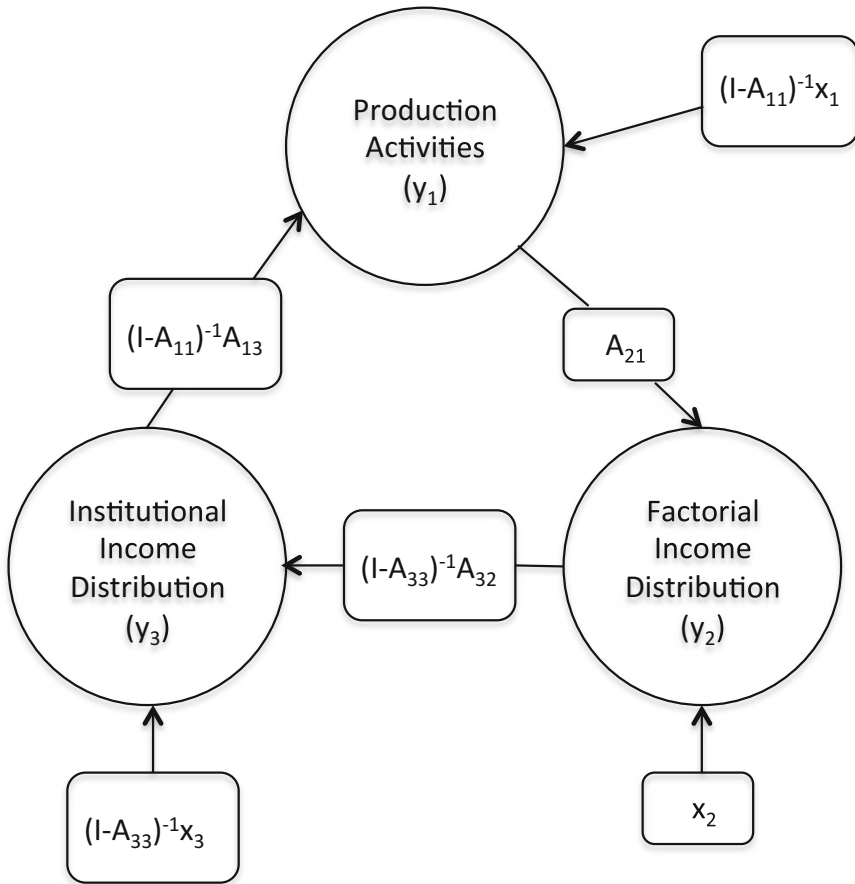


Fig. 4.2 Multiplier process among endogenous SAM accounts. *Source* Modified from Thorbecke and Jung (2000)

effects of exogenous changes when consumers react to any given proportional change in their incomes by increasing expenditure on the different commodities by exactly the same proportion (Kahn 1999). In other words, new consumer spending is not bound by average expenditure propensities (AEP_i), allowing for a wide range of marginal expenditure propensities (MEP_i).

Decomposing the multiplier matrix M_a into three multiplicative components M_1, M_2, M_3 , following Pyatt and Round (1979), Defourny and Thorbecke (1984), and Round(2003a, b), adds some additional and useful insights to the socio-economic linkages on how exogenous shocks are transmitted through national or regional economies. For a better interpretation, this multiplicative decomposition can be expressed as four additive components:

$$M_a = I + (M_1 - I) + (M_2 - I)M_1 + (M_3 - I)M_2M_1 \quad (4.12a)$$

$$M_a = I + T + O + C \quad (4.12b)$$

where:

- I Initial injections
- T Net contribution of the transfer multiplier effects
- O Net contribution of the open-loop or cross-multiplier effects
- C Net contribution of the circular closed-loop multiplier effects.

The transfer multiplier effects, T, result from direct endogenous transfer within the corresponding accounts. In the SAM this includes the multiplier effects of inter-industry transfers, (A_{11}), and inter-institutional transfers among households and enterprises, (A_{33}), where the multiplier effects of inter-industry transfers are the well-known Leontief input–output multipliers. The open-loop effects capture the interactions among and between the endogenous accounts (A_{13}, A_{21}, A_{32}). Accounting for the interconnectivity of the endogenous accounts, it is the part of the global-multiplier effects that shows how an exogenous injection into one sector (i) of one account is transmitted to the other endogenous accounts via the flow of incomes. The closed-loop effects complete the circular flow of income among the endogenous accounts. This accounts for the feedback effect from production activities, to factors, to institutions, and then back to activities, in the form of consumption demand (Defourny and Thorbecke 1984). This represents the consequences of an exogenous injection travelling around the entire triangular system to reinforce the initial injection (Pyatt and Round 2006).

4.4.4 Structural Path Analysis (SPA)—The SAM Multiplier Decomposition Process

To increase the amount of information on how influence is transmitted within an economic system such as a social accounting matrix, Defourny and Thorbecke (1984) propose a more sophisticated approach of breaking down SAM-based multipliers (m_{ij}). The decomposition explained in the previous section is limited to explaining the total effects from exogenous injections within and between accounts. In their seminal work, Defourny and Thorbecke (1984) showed by means of structural path analysis (SPA), how to identify the network of paths along which influence is carried among and between production activities, factors and households. More specifically, they decompose the multiplier matrix (either M_a or M_c) defining three types of ‘influences’: (1) direct influence, I^D ; (2) total influence, I^T ; and (3) global influence, I^G . Multiplier decomposition and the SPA are intended to shed light upon the structural and behavioural mechanism within the economy.

They aim to identify a particular path along which an exogenous shock is transmitted.

The **direct influence** $I_{(i \rightarrow j)}^D$ of i on j along arc (i, j) is measured between the two poles i and j , without considering adjacent circuits. It refers to the change in income (or production activity) in j as a direct result of a unitary change in i , other poles remaining constant. Consequently, the direct influence $I_{(i \rightarrow j)}^D$ is equal to a_{ji} from the matrix of average expenditure propensities, A_n . A second case of direct influence $I_{(i \rightarrow j)}^D$ along an elementary path takes on the form (i, \dots, j) . As shown in the direct influence $I_{(i \rightarrow j)}^D$ transmitted from pole i to pole j can take on the elementary path (i, m, n, j) . The direct influence $I_{(i \rightarrow j)}^D$ along the elementary path (i, m, n, j) is simply the product of its individual intensities:

$$I_{(i \rightarrow j)}^D = a_{mi} a_{nm} a_{jn}, \tag{4.13}$$

the product of three average expenditure propensities constituting the elementary path Fig. 4.3 (i, m, n, j) .

The **total influence** $I_{(i \rightarrow j)}^T$ is made up of the direct influence $I_{(i \rightarrow j)}^D$ amplified by the indirect effects, or the adjacent circuits. Adjacent circuits are formed by linking poles along an elementary path (i, \dots, j) to other poles and other paths, for instance, as shown in the paths (y, x) or (y, z, x) . While the direct influence $I_{(i \rightarrow j)}^D$ (shown in Fig. 4.3) transmits any influence in a direct and one-directional manner, adjacent circuits transmit the influence back, that is, in the opposite direction, which explains the indirect effects (i.e. the multiplier effects). The creation of loops sends the

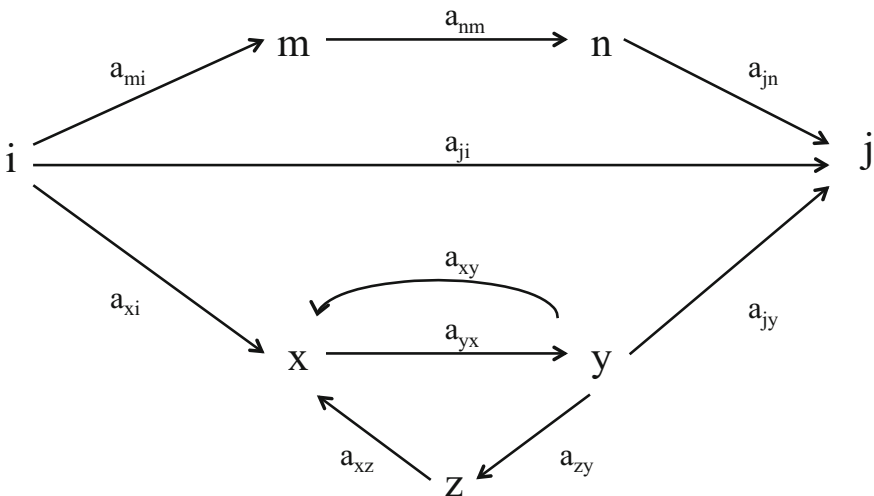


Fig. 4.3 Network of elementary paths and adjacent circuits based on Defourny and Thorbecke (1984)

transmitted influence forward and backward. The more of these loops that exist along the path (i, \dots, j) , the larger the multiplier effect and therefore the larger the **total influence** $I_{(i \rightarrow j)}^T$ will be. Mathematically, the loop between x and y is expressed as $a_{yx}(a_{xy} + a_{zy}a_{xz})$, where $(a_{xy} + a_{zy}a_{xz})$ expresses the influence transmitted back from y to x via the two loops. Allowing for a series of dampened impulses between x and y , the combined multiplier effect of these two loops becomes $[I - (a_{xy} + a_{zy}a_{xz})]^{-1}$. Finally, the total influence $I_{(i \rightarrow j)}^T$ is defined as:

$$I_{(i \rightarrow j)}^T = a_{xi}a_{yx}a_{jy} [I - (a_{xy} + a_{zy}a_{xz})]^{-1} \quad (4.14a)$$

$$I_{(i \rightarrow j)}^T = I_{(i \rightarrow j)}^D \mathbf{M}_p \quad (4.14b)$$

where \mathbf{M}_p resembles the multiplier effect along path p .

The **global influence** $I_{(i \rightarrow j)}^G$ is the sum of all total influences $I_{(i \rightarrow j)}^T$ from pole i to pole j . It measures the full change in income or output of pole j as a result of a unitary change in pole i . The global influence between pole i and pole j is thus equivalent to the $(j, i)^{th}$ element of the matrix of accounting multipliers \mathbf{M}_a , where $\mathbf{M}_a = [I - \mathbf{A}_n]^{-1}$.

Having defined matrix \mathbf{M}_a as the matrix of global influences, we can establish that:

$$I_{(i \rightarrow j)}^G = m_{a_{ji}} \quad (4.15)$$

And bringing everything together, we define the global influence $I_{(i \rightarrow j)}^G$ between pole i and pole j (shown in Fig. 4.3) as:

$$\begin{aligned} I_{(i \rightarrow j)}^G &= m_{a_{ji}} = I_{(i,m,n,j)}^T + I_{(i,j)}^T + I_{(i,x,y,j)}^T \\ &= a_{mi}a_{nm}a_{jn} + a_{ji} + I_{(i \rightarrow j)_3}^D \mathbf{M}_p \\ &= I_{(i \rightarrow j)_1}^D + I_{(i \rightarrow j)_2}^D + I_{(i \rightarrow j)_3}^D \mathbf{M}_p \end{aligned} \quad (4.16)$$

consisting of two direct influences $I_{(i \rightarrow j)_1}^D$ and $I_{(i \rightarrow j)_2}^D$ and one total influence $I_{(i \rightarrow j)_3}^D \mathbf{M}_p$.

We carried out the structural path analysis using SimSIP SAM, a Microsoft Excel-based application with MATLAB running in the background, which facilitates analyzing input-output (I-O) tables and social accounting matrices (SAM). SimSIP SAM was developed by Parra and Wodon (2009) as part of the Development Dialogue on Values and Ethics (DDVE) initiative in the Human Development Network at the World Bank.

4.4.5 *Principal Component Analysis (PCA)—Identifying Potential Industrial Clusters*

The use of principal component factor analysis (PCA) to identify industrial clusters has a long history in the input–output analysis literature (Czamanski 1974; Bergman and Feser 1999; Feser and Bergman 2000). As a data reduction method, PCA reduces the number of correlated variables in the dataset to a smaller number of meaningful dimensions or factors (Tinsley and Tinsley 1987). Applying PCA to an input–output matrix means reducing the number of industries to a smaller number of industrial clusters using the maximum common variance criteria between industries and clusters. Applying PCA to the original inter-industry transaction matrix identifies industrial clusters based on similarities in their buying patterns (R-mode analysis) (Roepke et al. (1974). Analogously, applying PCA to the transposed transaction table, groups industries together that have similar selling patterns (Q-mode analysis). Czamanski and Ablas (1979) introduced a method that focuses on sales and purchase linkages between industry pairs rather than on similarities in sales and purchase patterns. To capture these value-chain linkages, they proposed performing a PCA on a new matrix S that captures the correlations of input–output tables between pairs of industries. To derive this symmetric correlation matrix S , we calculated the following correlations as a first step:

- $Corr(\mathbf{a}_i, \mathbf{a}_j)$ Correlation between industries i and j in terms of purchase patterns
- $Corr(\mathbf{b}_i, \mathbf{b}_j)$ Correlation between industries i and j in terms of sales patterns
- $Corr(\mathbf{a}_i, \mathbf{b}_j)$ Correlation between the purchase pattern of i and sales pattern of j
- $Corr(\mathbf{b}_i, \mathbf{a}_j)$ Correlation between the sales pattern of i and purchase pattern of j .

where:

$$A = [a_{ij}] = \frac{T_{ij}}{\sum_i T_{ij}} \quad \text{The matrix of technical input coefficients: the proportions of total inputs bought by industry } j \text{ from industry } i$$

$$B = [b_{ij}] = \frac{T_{ij}}{\sum_j T_{ij}} \quad \text{The matrix of output ('sales') coefficients: the proportions of industry } i\text{'s sales going to industry } j$$

In the second step, we constructed the symmetric correlation matrix S by selecting the largest of the above four correlation coefficients for each industry pair. Then we performed the PCA with Varimax rotation on this matrix S . We applied the Kaiser criterion to identify the final set of industrial clusters. The Kaiser criterion, which is based on the eigenvalues of each factor, explains how much each factor contributes to the common variance. It is calculated as the sum of all squared factor loadings for a factor. We selected all factors with eigenvalues greater than 1.0 as candidate clusters. If, however, a selected factor with an eigenvalue close to 1.0 is composed of seemingly unrelated industry sectors, then it is dropped from the final pool of clusters. For better interpretability of the PCA solution, without changing the underlying mathematical principles, the initial factors are rotated using

an orthogonal Varimax rotation. Once we had identified the final set of industrial clusters, we identified the individual industry sectors affiliated to each cluster, based on each industry sector's factor loading. The factor loadings represent the correlation of each sector with the cluster it belongs to. For the present study, we used a factor loading value of 0.50 as the cut-off value for identifying cluster affiliation. Strong cluster affiliation is indicated by loadings of 0.7–1.0 and median cluster affiliation by loadings of 0.5–0.7.

We chose principal component analysis on the symmetric matrix S as a suitable method for identifying and ranking/prioritizing industrial clusters over other methods such as Chenery and Watanabe's (1958) linkage measures, Beyers' (1976) key sector identification method, and the Power-of-Pull (PoP) method applied by Pisa et al. (2015), which conceptually all evaluate backwards and/or forwards linkages in the input–output matrix. However, we need to acknowledge some of the shortcomings of our chosen method. First, the received factors may vary slightly with a selected rotation method. Second, using factor loadings as the sole cluster affiliation criteria does not say anything about the importance of cluster members for regional economies. And third, while higher eigenvalues usually correspond to larger numbers of cluster members, this does not imply that clusters with higher eigenvalues are more important to regional economies.

4.5 Gauteng's Industrial Clusters

4.5.1 *Principal Component Analysis (PCA)—Selected Industrial Clusters*

In this section we present results and findings from the principal component analysis (PCA). As an overview, based on the PCA results, we can assign 33 of the 36 initial industry sectors to one of the six distinctive industrial clusters: Service and Trade; Food Products; Metal Products; Chemical Products and Petroleum; Building and Metal Products; and Light Manufacturing Products. Of the 36 initial industry sectors, three sectors cannot be associated with any of the six identified clusters because of factor loadings of less than 0.5. These are Gold Mining; Communication, Medical and other Electronic Equipment; and Water, which have factor loadings of 0.231, 0.266, and 0.412, respectively. A fourth industry sector, Community, Social and Personal Services has a factor loading of 0.724 with the Building and Metal Products Cluster, and a factor loading of 0.488 with the Service and Trade Cluster. Because Community, Social and Personal Services is a service sector, we decided to assign it to the Service and Trade Cluster, instead of assigning it to the Building and Metal Products Cluster.

The 33 industrial sectors that were placed in the six identified clusters (combined) contributed 4,600,900 jobs and 761,305 million Rand of GVA (Table 4.4).⁴ The Service and Trade cluster with its eight industry sectors (i.e. Trade; Transport; Business Services; Real Estate; Communication; Accommodation; Insurance; Community Social and Personal Services) is the predominant industry cluster in the Gauteng region. The cluster's dominance and importance is emphasized by the fact that this cluster alone provides employment to 3,592,475 people, amounting to a total of 68.5% of the employment in the Gauteng region. Of the total employment in the identified clusters, however, 1,113,498 jobs are classified as 'informal employment' and, as such, are jobs without job and social security.⁵ The combined Gross Value Added (GVA) for these eight service industries totals 538,455.7 million Rand, or 55.9% of the Gauteng region's GVA. With respect to employment, the three main industry sectors are Trade; Business Services and Real Estate; and Community, Social, and Personal Services, with 1,142,756 (21.8%), 893,364 (17%), and 846,430 (16.1%) employees respectively.⁶ Note that, as indicated in Table 4.4, employment and GVA for Real Estate is included in Business Services.

Though Trade has the highest employment of any industry sector, the Business Services and Real Estate sectors are major contributors to regional economic development when considering their contribution to regional GVA. While constituting 17% of regional employment, they contribute 16.6% (159,968.1 million Rand) of the region's total GVA. In contrast, the Community, Social, and Personal Services sector, while accounting for as much as 16.1% of the region's employment, only contributes 5.3% (50,728.9 million Rand) to the region's total GVA. This can be explained partly by the fact that 28.4% (240,442) of the jobs in Community, Social, and Personal Services fall into the informal sector, compared to only 16.6% (148,348) of Business Services and Real Estate jobs. The other four service industries (i.e. Transport, Communication, Accommodation, and Insurance) account for 709,925 employees (13.5%), while contributing 202,680 million Rand (21%) annually to the Gauteng region's GVA.

Compared to the Service and Trade cluster, the remaining five industry clusters: Food Products; Metal Products; Chemical Products and Petroleum; Building and Metal Products; and Light Manufacturing Products, only play a minor role individually. Together, they account for the remaining regional employment of 1,008,425 (19.2%) and 222,849.6 of regional GVA (23.1%). Among these five industry clusters, the Building and Metal Products cluster is the second most important cluster in the Gauteng region, contributing 471,960 (9.0%) jobs and 59,522.0 million Rand (6.2%) to the region's economy. Within the Building and

⁴The government sector and the three industrial sectors mentioned above that did not belong to any cluster contributed the difference to the regional employment of 5,248,019 jobs and regional GVA of 964,018 million Rand.

⁵Regional formal and informal employment not placed in any cluster, including in government and the three industrial sectors, is 3,832,611 and 1,415,408 jobs, respectively.

⁶Percentages in parentheses represent employment in percent of total regional employment, including formal and informal employment.

Table 4.4 Gauteng selected industrial clusters

I: Service and trade cluster	Employment (no.)	Formal /informal employment	GVA	Formal /informal compensation
Trade	1,142,756	612,463	125,078.4	61,374.0
Transport	279,646	530,293	57,572.4	4601.0
Business Services	893,364	149,834	159,968.1	22,331.1
Real Estate (incl. in Business Services)	Incl. in Bus. Serv.	129,812		1601.4
Communication	81,302	745,016		74,239.5
Accommodation	118,362	148,348	Incl. in Bus. Serv.	4560.3
Insurance	230,615	52,428	40,208.8	15,427.6
Community, social and personal services	846,430	28,874		812.2
Total	3,592,475	82,633	7332.7	3696.3
II: Food products sluster		35,729		316.6
Other food products	77,056	230,615	97,566.4	60,678.7
Dairy products	Incl. in Oth Food Pdtls	605,988	50,728.9	38,135.2
Grain mill, bakery and animal feed products	Incl. in Oth Food Pdtls	240,442		1216.9
		3,592,475	538,455.7	288,990.8
Other food products	77,056	63,873	16,185.7	13,654.3
Dairy products	Incl. in Oth Food Pdtls	13,183	Part of Other Food Pdtls	844.4
Grain mill, bakery and animal feed products	Incl. in Oth Food Pdtls		Part of Other Food Pdtls	

(continued)

Table 4.4 (continued)

I: Service and trade cluster	Employment (no.)	Formal /informal employment	GVA	Formal /informal compensation
Meat, fish, fruit, vegetables products	Incl. in Oth Food Pdts		Part of Other Food Pdts	
Beverages and tobacco products	Incl. in Oth Food Pdts		10,710.1	
Agriculture	70,498	62,833	3520.9	1979.9
		7665		60.8
Total	147,554	147,554	30,416.7	16,539.4
III: Metal products cluster				
Other fabricated metal products	140,965	123,338	598.4	30,166.4
		17,627		1237.7
Machinery and equipment	Incl. in Oth Met Pdts		10,918.1	
Basic metal products	Incl. in Oth Met Pdts		11,229.5	
Electrical machinery and apparatus	26,710	25,939	5598.2	7254.4
		771		648.1
Other manufacturing and recycling	26,281	14,955	10,364.0	2362.9
		11,326		251.8
Other mining	9554	9467	7224.2	4014.5
		87		376.7

(continued)

Table 4.4 (continued)

I: Service and trade cluster	Employment (no.)	Formal /informal employment	GVA	Formal /informal compensation
Structural metal products	Incl. in Oth Met Pfts		4842.9	
Total	203,510	203,510	50,775.3	46,312.5
IV: Chemical products and petroleum cluster				
Petroleum	63,762	63,304	37,771.3	25,222.9
Chemicals and Chem. Prod. (incl Plastic Prod.)	Incl. in Petroleum	458	17,503.0	364.6
Rubber products	Incl. in Petroleum		980.7	
Total	63,762	63,762	56,255.1	25,587
V: Building and metal products cluster				
Building and other construction	414,870	190,142	35,859.7	18,086.2
Wood and wood products	12,958	224,728	2485.8	1711.6
Non-metallic mineral products	26,794	10,096	5540.9	1255.7
Structural metal products	–	2862	108.1	3372.6
Electricity	17,338	20,721	5540.9	3372.6
	–	6073	249.1	249.1
	–	–	–	–
	17,338	15,876	15,635.7	5300.0
		1462		219.9

(continued)

Table 4.4 (continued)

I: Service and trade cluster	Employment (no.)	Formal /informal employment	GVA	Formal /informal compensation
Total	471,960	471,960	59,522.0	30,303.2
VI: Light manufacturing products cluster				
Paper and paper products	12,089	12,089	3495.9	1739.1
Publishing and printing	22,626	21,592	4881.4	4694.8
Textiles, clothing, leather products	33,254	1034	2712.1	327.6
Furniture	13,560	12,053	1890.0	199.9
Manufacturing of transport equipment	40,110	40,110	12,901.1	13,520.4
Rubber products		–		
Total	121,639	121,639	25,880.5	24,387.9

Source: Authors' calculations based on 2015 data from EasyData (2016)

Note: GVA (at basic prices) and employee compensation are both in Rand millions, and at 2010 constant prices

Metal Products cluster, the Building and Other Construction industry sector stands out as the cluster's driving force with 414,870 jobs (7.9%) and 35,859.7 million Rand of regional GVA (3.7%). The Building and Other Construction industry is also the only industry sector in the region that has a majority of employment (224,728) in the informal sector. Despite its large number of informal jobs, the construction industry is an important contributor to Gauteng's regional economy.

Another regional economic driver is the Metal Products cluster. With a total of 203,510 jobs (4.4%) and 50,775.3 million Rand (6.7%) of GVA, it is the third largest contributor to the Gauteng region's economy. It is important to note that the employment numbers for Machinery and Equipment; Basic Metal Products; and Structural Metal Products; are combined with Other Fabricated Metal Products, adding up to a total of 140,965 (2.7%), while the corresponding GVA numbers are listed individually. In comparison, the combined GVA for these four sectors equals 27,589.0 million Rand (2.8%). We also emphasize that in order to avoid double-counting of Structural Metal Products GVA, this sector's GVA is included in the total GVA of the Metal Products cluster and not in the Building and Metal Products cluster. The same holds for the Rubber Products industry, whose GVA is included in the total GVA of the Chemical Products and Petroleum cluster, and excluded from the total GVA of the Light Manufacturing Products cluster.

The Food Products cluster, including Agriculture, as well as several food- and beverage-producing industries, employs 147,554 people (2.8%), while adding 30,416.7 million Rand (3.2%) to the region's GVA. Though the employment is fairly evenly split between Agriculture and the food- and beverage-producing industries—70,498 versus 77,056 respectively—Agriculture adds very little (i.e., 3,520.9 million Rand or 0.4%) to the region's GVA, which can be explained by the usually lower wages paid in Agriculture.

We derived two manufacturing clusters, the Light Manufacturing Products cluster and the Chemical Products and Petroleum cluster, with employment numbers of 121,639 (2.3%) and 63,762 (1.2%) respectively. Though these two clusters are somewhat smaller in size with respect to employment, and their composition is interesting in that light manufacturing activities—for example, Paper and Paper Products, Publishing and Printing, Textile, Clothing, Leather Products, and Furniture—have very similar requirements for intermediate inputs and outputs. The Chemical Products and Petroleum cluster encompasses the Petroleum industry as well as those industries that rely on petroleum as an input to their production, that is, Chemicals and Chemical Products and Rubber Products.

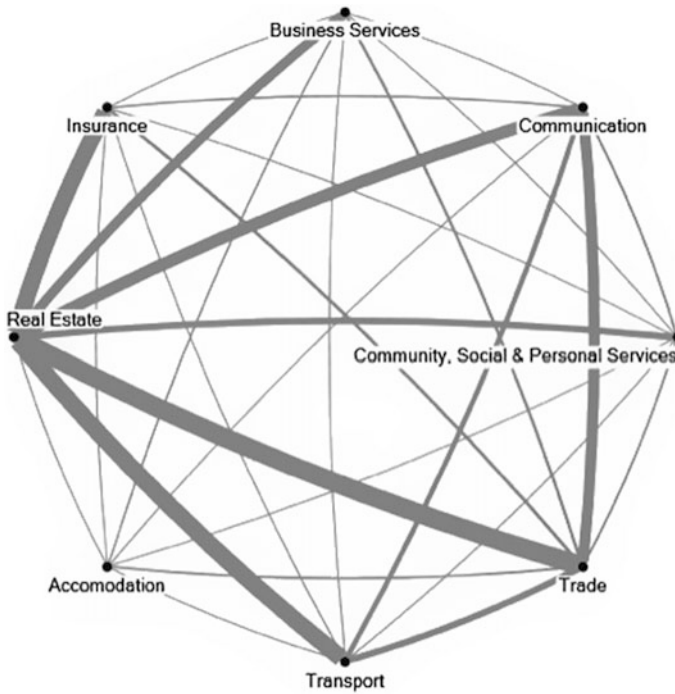


Fig. 4.4 Service cluster—structural paths among all eight service sectors

4.5.2 Gauteng's Service Cluster—A Graphical Presentation of Industry Linkages

Figure 4.4 is a graphical presentation of our findings from the structural path analysis (SPA) for Gauteng's service cluster.⁷ The links shown between any pair of industries are based on the sum of the combined global influences, that is, $I_{(ij)}^G = I_{(i \rightarrow j)}^G + I_{(j \rightarrow i)}^G$, which includes all adjacent circuits and their path multipliers. Using combined influences in this context, we can see how strongly two industry sectors in the service cluster are connected to one another, while ignoring the direction of the influence. The thicker the line in Fig. 4.4, the stronger the influence

⁷Figures 4.4, 4.5, and 4.6 were created with NodeXL (<http://nodexl.codeplex.com>).

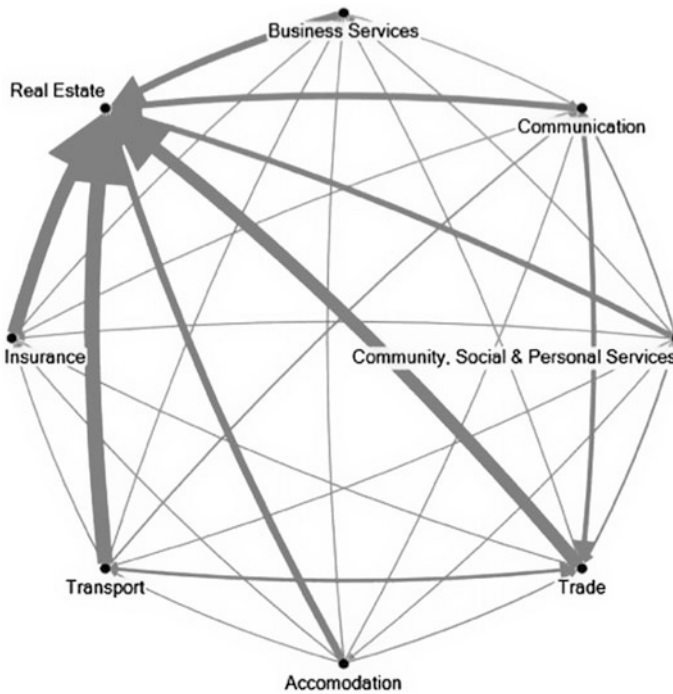


Fig. 4.5 Service cluster—structural paths among all seven service sectors (strongest influences)

is between the two corresponding service sectors. In Fig. 4.4, we categorise three inter-industry connections as *very strong*, three as *strong*, and three as *significant*. The three *very strong* inter-industry influences in the service cluster are between Insurance and Real Estate, Trade and Real Estate, and Transport and Real Estate. The *strong* influences are between Business Services and Real Estate, Communication and Real Estate, and Communication and Trade. It is interesting that of the six strongest influences found in the service cluster, Real Estate is included in five of them. The influences between Communication and Transport, between Community, Social, and Personal Services and Real Estate, and between Trade and Transport are *significant* in that they stand out, but as per the thickness of their lines in the diagram, we do not classify them as *very strong* or *strong*. In addition, we find that Accommodation shows very weak associations with any of the other industries in the service cluster, while Community, Social, and Personal Services only connects *significantly* with Real Estate. Insurance and Business Services at least have a *strong* connection with one other service industry. Trade, Communication, and Transport have three connections each. Real Estate clearly

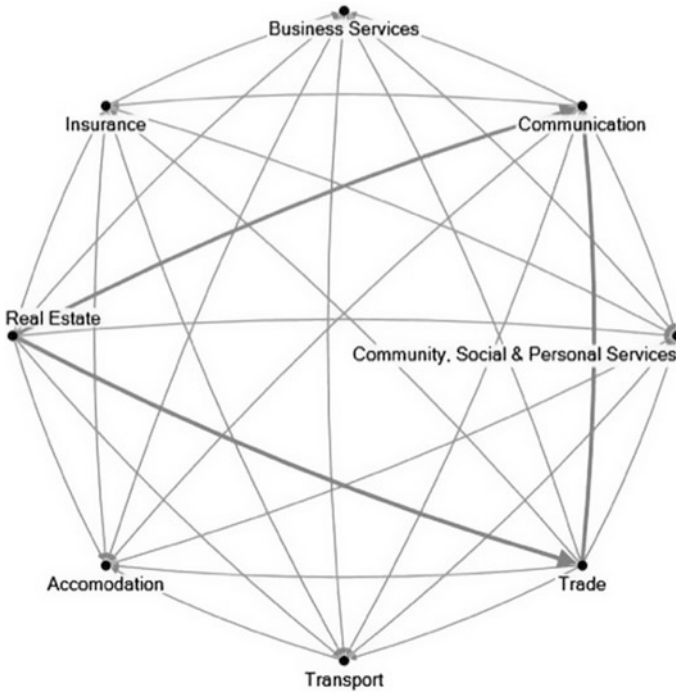


Fig. 4.6 Service cluster—structural paths among all seven service sectors (weakest influences)

stands out as it connects to all other service sectors with the exemption of Accommodation.

So far, we have ignored the direction of the influences between industry sectors in the service cluster. In Figs. 4.5 and 4.6, we distinguish between *strongest* and *weakest* influences. The idea here is that an industry i influences industry j , while at the same time, there is an influence in the opposite direction from industry j to industry i . Breaking down the combined global influences (shown in Fig. 4.4) into two individual directional influences $I_{(i \rightarrow j)}^G$ and $I_{(j \rightarrow i)}^G$ allows us to identify which of the two industry sectors exerts a stronger influence on the other. In Fig. 4.5, we show all the *strongest* influences, while in Fig. 4.6, we display all the *weakest* influences.

While we identified Real Estate as an important service cluster industry in Fig. 4.4, from Fig. 4.5 we see that all the *strongest* influences are being exerted on Real Estate. For policy makers this implies that money spent on Real Estate does not stimulate many other industries in the service cluster. On the other hand, Insurance, Transport, and Trade, for instance, have a strong potential to stimulate the Real Estate industry. Real Estate, however, does influence Communication and

Trade to a lesser extent, as indicated in Fig. 4.6. Somewhat expected is the finding that Transport and Communication have a stronger influence on Trade than vice versa.

4.6 Conclusions

At the beginning of this chapter, we laid out the rationale for industrial cluster theories. This was followed by a discussion of the antecedents of the industrial cluster phenomenon, as well as an overview of industrial cluster policies in the Gauteng region. There is strong evidence that the Gauteng region is embracing industrial cluster policies, as discussed in Sect. 4.3, so a more detailed industrial cluster analysis appears to be an appropriate step for developing further cluster-specific economic development policies.

The basis for all analytical work presented in this chapter is the 2006 Gauteng social accounting matrix (SAM), which has two major shortcomings. First, it is somewhat outdated as it includes data that are over 10 years old. To justify the use of an older accounting framework, we emphasize that all analysis presented in this chapter uses either normalized data and/or multipliers. Consequently, an older data framework is still appropriate as long as the structure of the regional economy—in this case the Gauteng economy—has not changed significantly over the intervening years. There is no evidence that the regional economy has changed structurally in a fundamental way. Second, and more limiting for identifying industrial clusters, the 2006 Gauteng SAM only includes 37 activities (industry sectors). Considering that General Government Services sector does not contain any data, this means that only 36 industry sectors can be assigned to one of the identified industrial clusters. A more detailed Gauteng SAM would thus provide a better framework for identifying individual industrial cluster compositions. Being limited to, in this case, a highly aggregated SAM, prevented us from identifying more detailed industrial clusters as presented, for instance, by Vom Hofe and Bhatta (2007), who used a regional SAM with as many as 223 individual industry sectors.

Section 4.4 provides a detailed and coherent description of the analytical techniques addressed in the chapter. This includes a description of the 2006 Gauteng province social accounting framework, the derivation of social accounting multipliers, and a detailed description on how to conduct a structural path analysis (SPA) as well as a principal component analysis (PCA) to identify industrial clusters. The emphasis on the presented analytical approach is to identify industrial clusters based on inter-industry linkages as shown by Czamanski (1974) and Bergman and Feser (1999). Although these techniques were introduced more than 40 years ago, we preferred the SPA techniques to the widely used linkage measures

(including Power-of-Pull (PoP) method), as shown in the work of Pisa et al. (2015), for instance.

Using a principal component analysis, we identified six distinctive industrial clusters in the Gauteng regional economy. As might have been expected, the Service and Trade cluster, which consists of eight industry sectors, is the predominant cluster with 68.5% of total regional employment and 55.9% of regional GVA. The strong emphasis on services in the Gauteng regional economy is reflected in the composition of the identified industrial clusters. The remaining five clusters are: Food Products; Metal Products; Chemical Products and Petroleum Cluster; Building and Metal Products; and Light Manufacturing Products. Three industry sectors—Gold Mining; Communication, Medical and other Electronic Equipment; and Water—could not be associated with any of the six identified clusters.

As a second step, we conducted a structural path analysis (SPA) to highlight linkages within the predominant Service and Trade cluster. Based on the sum of the combined global influences, we identified three inter-industry connections as *very strong*, three as *strong*, and three as *significant*. Against all expectations, Real Estate emerged as the industry that benefits the most from the Service and Trade cluster, as it is included in five of the six strongest influences shown in the graph. Communication and Trade, and Transport and Trade, are two significant linkages that stand out, confirming expectations (see Fig. 4.4).

A comparison of the discussion in Sect. 4.3, where a review of the existing cluster-related policies was undertaken, with the key clusters that were identified in Sect. 4.4, shows that the existing cluster policies in the regional economy are insufficient for government to claim that there is a serious effort to bolster the competitiveness of the regional economy through cluster development. The need to develop cluster policies that specifically target the identified clusters cannot be overemphasized.

Given the dominance of the Service and Trade cluster in terms of regional employment and regional GVA, policy wise, it is of great concern what the effects for the regional economy would be should the key sectors experience crisis or

decline, such as happened during the 2008 global financial crisis, for instance. In that crisis, of the 102,906 jobs lost in the regional economy, the Service and Trade cluster suffered about half (46%) of those losses. These results suggest the need to strengthen and diversify the regional economy to avoid susceptibility to external shocks. It is also necessary to ensure that the Service cluster remains competitive with respect to other similar clusters in up-and-coming locations such as Nairobi in the East African economic hub, so that the Gauteng City-Region remains a “gateway” or “launching pad” for global financial flows to the rest of the African continent (see Chap. 3 in this volume). This can be achieved by government focusing on cluster initiatives rather than industrial policy per se. Cluster initiatives, including improving education systems, investing in communication infrastructures, implementing anti-trust rules, promoting investment incentives, and protecting intellectual property rights, could improve the business environment, affecting all cluster-related industries. Across the world, there are examples of successful cluster initiatives that have heralded new working relationships between business and government. Industrial policy initiatives, however, posit that some industries are more beneficial, thus the role of the government should be in fostering these industries through subsidies and other policies that, by design, distort competition in their favour (Porter 2001).

It can be argued, with evidence showing that, as expected, the Service cluster provides more formal employment (2,478,977 jobs) than informal employment (1,113,498 jobs), that this cluster is elitist. It is disappointing that informal workers, who represent about a third of the employment in this cluster, earn a paltry 13 billion Rand, compared to the formal workers in the cluster, who earn disproportionately more—275 billion Rand. This means that, on average, a formal worker earns R111,288 per year, while an informal worker earns R3,645 per year. The high ‘informalised’ aspect of the Service cluster, a major regional employer, and its low redistributive character, should be of serious concern to all spheres of government that strive to radically transform, modernize, and re-industrialize national, regional, and local economies. Follow-up research is necessary to examine the redistributive component of potential shocks to the Service and other identified clusters, to ascertain the *real* effects of such shocks on household and other institutional incomes.

Acknowledgements We thank the two anonymous reviewers for their useful comments on the earlier draft of this chapter.

Annexure

Table 4.5 A conceptual Social Accounting Matrix (SAM)

N.	Endogenous Accounts				Exogenous Accounts				Totals
	Production Expenditures	Production Incomes n.	Factors of Production	Households	Governments (3b)	Firms (3c)	Capital Account (3d)	Trade Account (4)	
	(1)	(1)	Labor (2a)	(3a)		(3c)	(3d)	(4)	Receipts
Production (1)	Intermediate Demand			Household Consumption	Government Consumption		Investment	Exports	Production Income
Factors of Production (1)	Payments to Labor (wages)							Labor Incomes from Abroad	Factor Income
Production (1)	Payments to Capital (rent)							Capital Incomes from Abroad	Factor Income
Households (3a)			Allocation of Labor Income to Households	Intrahousehold Transfers	Transfers i.e. Welfare & Unemployment Payments	Dividends		Transfers	Household Income
Government (3b)	Indirect Business Taxes		Social Security Tax	Personal Taxes	Intragovernment Transfers	Dividends, Taxes		Transfers	Government Income
Firms (3c)			Nondistributed Profits		Transfers				Firms Income
Capital Account (3d)			Capital Consumption Allowance	Household Savings	Government Savings	Firm Savings			Total Savings
Trade Account (4)	Imports		Labor Payments Abroad	Commodity Trade, Transfers	Commodity Trade, Transfers		Capital Purchases		Total Imports
Totals	Total Production Outlays		Factor Outlays	Household Expenditures	Government Expenditures	Firm Expenditures	Total Investment	Total Exports	

Source Wang and Vom Hofe (2007)

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Chapter 5

The Evolution of Manufacturing in the Gauteng City-Region: From De-Industrialization to Re-Industrialization?

Sam Ashman and Susan Newman

5.1 Introduction

One of the defining features of recent developments in the world economy is the significant expansion of developing countries' share of manufacturing output. But that expansion has been, and remains, highly uneven (Weiss and Tribe 2016). Africa's performance as a whole has been poor (see Table 5.1), and there are important instances of de-industrialization of developing countries, and of African countries (discussed further below). South Africa remains the most industrialized economy in Africa, and Gauteng (and the wider GCR) is not only the most industrialized province in the country, but also the industrial and economic power house of sub-Saharan Africa, accounting for approximately 11% of Africa's GDP (Gauteng 2015b).

By way of illustration of the importance of Gauteng and the GCR, Fig. 5.1 shows manufacturing output, gross value added, employment and fixed capital stock in Gauteng, relative to other provinces of South Africa. Gauteng dominates across all four variables. While the importance of Gauteng (and the GCR) for manufacturing is certain beyond doubt, the empirical picture that we discuss also points to the relative decline of manufacturing and of de-industrialization across the province and region, which requires urgent policy attention.

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Table 5.1 Estimates of percentage share of developing countries in world manufacturing value added, 1960–2004 (constant 1990 prices)

	Africa	South and East Asia	China	Latin America	Developing countries
1960	0.8	1.8		4.9	7.9
2004a	1.1	10.8		5.3	19.6
2004b	1	10.0	8.5	4.9	26.6

Source Szirmai et al. (2013) Table 1.4

Notes a = excluding China; b = including China

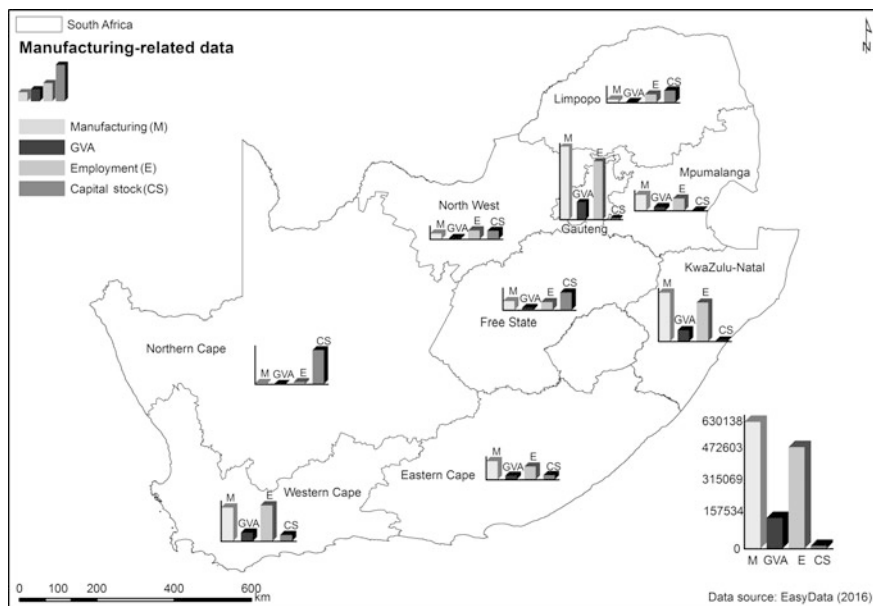


Fig. 5.1 Description of manufacturing-related data per province in South Africa, 2015

This chapter is structured as follows: First, we situate the discussion of manufacturing in the GCR within the literature on industrialization and de-industrialization. We argue that manufacturing has strategic significance relative to other sectors, for example, finance and financial services, and is particularly important for more broad-based and inclusive economic development. If manufacturing has specific properties as an engine of growth, as we argue, then de-industrialization and the contraction of manufacturing has severe implications for economic development and policy. Second, and in this light, we look at recent policy debates within Gauteng, and how Gauteng Provincial Government has recognized the need radically to “Transform, Modernize and Reindustrialize” the economy of Gauteng, and that of the GCR more broadly (Gauteng Province 2015a). Third, we discuss the theoretical framework that we employ—the Minerals-Energy

Complex (Fine and Rustomjee 1996). This analysis provides a particular understanding of the development of industrialization in South Africa, and the implications of the way that the economy has been skewed towards minerals, energy and associated industries with severe consequences for manufacturing outside the minerals–energy core of the economy. Fourth, we provide an empirical overview and discussion of the key trends we see across the GCR. The most important sectors within manufacturing remain those historically-rooted in the minerals–energy core, and consequently, development is both sectorally and spatially highly path-dependent. The worrying development is that of de-industrialization within, if not of, the MEC core itself. Finally, we draw some conclusions from the analysis and reflect upon the policy implications. That re-industrialization is now a strategic priority for the province is to be welcomed. But, we argue, given a range of pressing policy objectives, the strategic significance of manufacturing can easily be lost.

5.2 Why Manufacturing—and De-Industrialization—Matter

Our discussion will point to the relative decline of manufacturing. But why does this matter? Many people have noted the shift towards services within Gauteng, and in South Africa as a whole, as though this were an inevitable or natural evolution, which, as long as service sector employment replaces that of manufacturing, should not be a cause for concern. Others challenge such a view, arguing that manufacturing possesses specific properties that remain important for economic growth and development (Dasgupta and Singh 2006; CSID 2010; Mohammed 2010; Haraguchi and Cheng 2016). In this section we discuss why this is so.

Important theorists of economic development have viewed manufacturing as possessing stronger tendencies to higher productivity and technological dynamism than other sectors (Hirschman 1958; Kaldor 1966, 1967). Increases in labour productivity arise from the application of changes in production technology, from the introduction of new and adapted products, from the application of higher levels of investment to the production process, from changes in the organization of production, and from higher levels of skill embodied in the labour force. At relatively low-income levels, productivity in manufacturing is generally above those in services and considerably above that in agriculture. The greater the shift of labour towards manufacturing, the more there will be a boost in the level of the productivity of an economy. Transferring resources from agriculture to manufacturing therefore produces a structural change bonus (Szirmai 2013).

Hirschman (1958) points specifically to the key role played by backward and forward linkages in stimulating new investment, as well as to manufacturing's capacity to create more linkages than other areas of economic activity. For Kaldor (1966, 1967), manufacturing offers dynamic increasing returns to scale since unit costs decline as output grows over time. Increasing returns can be seen in a static

sense (where output grows as production scale increases) but also in terms of dynamic returns as growth in output is linked to the growth of productivity. This systematic tendency is linked to manufacturing's propensity for learning by doing, technological innovation, adaptation and modification, and the gains made by increased specialization. Crucially dynamic economies of scale are not reversible if output subsequently declines since they have created a higher technological and skill base (Weiss and Jalilian 2016). Moreover, Kaldor (1966, 1967) argues that manufacturing does not only increase productivity within manufacturing, but that through externality and spill-over effects (the knowledge and other innovations that flow between sectors), it also raises overall productivity in the economy as labour is transferred from lower productivity areas to manufacturing, and as manufacturing stimulates further change in the services that it uses (Weiss and Jalilian 2016).¹

Manufacturing is seen as particularly critical at relatively low levels of income per capita since manufacturing can act as a specific 'engine of growth' as a consequence of the properties discussed above. Manufacturing might act as an engine of growth through both output and employment channels (Tregenna 2008). The growth-pulling effects of manufacturing through backward and forward linkages with the rest of the domestic economy relate mostly to the share of manufacturing in GDP and the growth of manufacturing output. Demand multiplier effects, through wages paid, relate to the share of manufacturing in total employment. This approach was reflected in developing countries' drives to 'catch up' through industrialization, especially during the 1950s–1970s.

The specificity of manufacturing relates to an important question in economic theory—is growth regarded as sector specific, or sector (and activity) neutral?² Mainstream approaches tend to see growth as sector neutral, that is, the effects of a unit of value added on growth does not depend on the sector in which that unit of value is added. Classical development economics, especially structuralist approaches, instead regard the manufacturing sector as having special properties as an engine of economic growth, as outlined above.³ If growth is sector (and activity) specific then a change in sectoral structure affects economic growth. In these sector-specific approaches, the dynamic of growth is dependent upon the types of activities being developed (Palma 2014). Technological change, balance of payments sustainability, synergies, and externalities, are all dependent on the

¹Kaldor (1967) proposed three growth 'laws': that the faster the rate of growth in manufacturing, the faster the rate of growth of the economy as a whole; that the growth of labour productivity in manufacturing is endogenous to the growth rate of manufacturing output; that aggregate productivity growth is positively connected to the growth of manufacturing output and employment (and negatively related to non-manufacturing employment).

²Traditional Solow growth models and endogenous growth theory see growth as both sector and activity neutral. New endogenous growth theory sees growth as activity specific and emphasizes human capital development and research and development (Palma 2005; Tregenna 2009).

³Marx arguably falls into this camp given the importance he places on manufacturing for productivity improvements and the creation of relative surplus value, but such a discussion falls outside the scope of this chapter. See Tregenna (2013) for an argument that Marx is an important precursor to non-Marxist heterodox analysis.

development of manufacturing. Both the composition and the size of the manufacturing sector matter for understanding a specific growth path, as we will see in our discussion of South African industrialization in the next section.

The specific properties of the manufacturing sector, then, offer greater potential for technical change and cumulative productivity growth, which arises from the greater scope for specialization, learning by doing, product diversification; strong growth-pulling linkages and spill-over effects with the rest of the domestic economy; and opportunities for the development of dynamic economies of scale (Szirmai 2013; Weiss and Jalilian 2016). In addition, manufacturing can earn important foreign exchange. To these ‘classical’ factors we might also add environmental concerns if there is to be a reduction in the environmental damage caused by the long-distance transportation of manufactured goods. Yet de-industrialization has emerged as an important feature of both developed and developing economies in recent years. De-industrialization is most commonly defined as a fall in the share of manufacturing in total employment. Tregenna (2009) argues that, instead, de-industrialization should be defined in terms of a sustained decline in *both* the share of manufacturing in total employment and the share of manufacturing in GDP. Advanced economies have been undergoing de-industrialization since the 1970s (Rowthorn and Ramaswamy 1997; Palma 2005). Rowthorn and Coutts (2004) identify five explanations for de-industrialization:

- i. The reclassification of jobs from manufacturing to services as a consequence of the outsourcing of activities by firms.⁴
- ii. The decline in share of manufacturing in total consumer expenditure due to a fall in the relative prices of manufactures.
- iii. Slower employment growth in manufacturing relative to services because of higher productivity growth in manufacturing over services.
- iv. The negative effects of international trade (particularly imports from lower-cost producers) on manufacturing employment in developed countries.
- v. The negative effects of lower rates of investment on the share of manufacturing in both GDP and employment, since investments go disproportionately to manufacturing.

In a developed economy, de-industrialization may be seen as a ‘natural’ evolution as economies mature and there is rapid growth in productivity in the manufacturing sector combined with the rapid expansion of service sector employment. But many developing countries such as South Africa (and with the exception of East Asia) have begun to de-industrialize at relatively low levels of industrial development. Palma (2014) argues that de-industrialization in developing countries is a consequence of policy choices to a far greater extent than in the developed world. Specifically, trade and financial liberalization and tight fiscal and

⁴In South Africa, the relatively high rate of growth in service employment in the 2000s was in part the consequence of out-sourcing and of cleaning and security type operations, and their reclassification from manufacturing to services, but this does not explain all South African de-industrialization.

monetary policy have brought about or advanced de-industrialization in the developing world and entailed much ‘uncreative destruction’.⁵ The emergence of China as a major manufacturing centre is an important factor, as developing countries cannot compete with the cost structure of Chinese manufacturing.⁶ Low income countries cannot break into manufacturing markets—even in the traditional ‘entry level’ sectors such as clothing and textiles. Developing countries have thus gained fewer of the advantages of a manufacturing sector when they begin to de-industrialize.

In conditions of such ‘premature’ de-industrialization, the question arises as to whether services can act as dynamic replacement for manufacturing or whether a shift from manufacturing to services amounts to a ‘structural burden’ (Szirmai 2013). In many developing countries, the services that emerge are unlikely to be technologically advanced, but tend to be relatively low-skilled, low-productivity, non-tradeable activities in retail or personal services, which do not have strong properties of (dynamic) increasing returns, or the potential for cumulative productivity increases discussed above. Timmer et al. (2016) point to how there have been changes in the services sector, but that levels of manufacturing productivity remain higher than those in services in all developing regions. Weiss and Jalilian (2016) show that productivity increases in services have been higher in some branches of services than in others, but that shifting resources to manufacturing still offers the greatest growth potential for developing economies.⁷ For many then, de-industrialization means that the agenda of industrial policy needs to shift to re-industrialization, which requires specific energy and activist intervention, and it may be easier in developing country contexts, in principle, where de-industrialization has been policy-induced to a greater degree.

5.3 Gauteng Province: “Transform, Modernize and Re-Industrialize”?

The Gauteng Provincial Government has recognized the need to radically “Transform, Modernize and Reindustrialize” the economy of Gauteng, and that of the GCR more broadly (Gauteng Province 2015a). That re-industrialization is now a strategic priority for the province is to be welcomed in light of the above diagnostic. Provincial documents demonstrate an understanding that economic

⁵This is in contrast to Schumpeter’s concept of “creative destruction” referring to the incessant product and process innovation mechanism by which new production units replace outdated ones. Schumpeter considered it the essential fact about capitalism (Schumpeter 1947).

⁶1¥ (Yuan) was valued at R0.5216 as at April 20, 2017.

⁷They point also to another categorization issue—how relatively high productivity and often knowledge-intensive activities previously done by manufacturers, and which are arguably an integral part of manufacturing, may now be outsourced to specialists and so are recorded under services.

development poses significant challenges, including recognizing “a de-industrialisation trend as a result of declined competitiveness in the productive sectors of the economy; apartheid spatial economy continues to dominate; the vast majority of blacks are excluded from the mainstream economy; and monopoly capital dominates all sectors of the economy through vertical and horizontal ownership of the production value chain” (Gauteng Province 2015b, p. 9). In addition, there is recognition of the dominance of the primary and tertiary sectors, the serious decline in the role of manufacturing and mining, as well as the small size of the domestic market and skewed income distribution, both of which have negative consequences for overall demand (Gauteng Province 2015b, p. 9).

To address these challenges, ten strategic pillars have been adopted by the province including: radical economic transformation; modernization of the economy; the re-industrialization of Gauteng and South Africa; and taking a lead in Africa’s industrial revolution (Gauteng Province 2015a, p. 12). Because of the centrality of industrialization, the province sees its economic development plan as aligned with the National Industrial Policy Framework and successive Industrial Policy Action Plans. However, it also sees its pursuit of socio-economic change in the context of the implementation of the government’s woefully inadequate National Development Plan. Indeed, the ten pillar programme is regarded as the provincial plan to bring the NDP to life. To implement the ten pillars, the province has prioritized 11 sectors:

- Manufacturing: Food and Beverages; Furniture and Timber; Pharmaceuticals, Plastics and Chemicals; Machinery and Equipment; Automotive and Components.
- Services: Finance and Retail; Information and Communication Technology; Tourism and Hospitality; Transportation and Logistics; Business and Professional Services; Business Process Outsourcing.

But why should Finance be a priority sector given its spectacular—and in many ways harmful—expansion over the course of the last twenty years? Likewise, why should Business and Professional Services or Business Process Outsourcing (BPO)? Or Tourism? As we discussed above, in conditions of ‘premature’ de-industrialization, it is questionable whether services can act as a dynamic replacement or as an engine of growth.⁸ This is not to say that services are unimportant. But should services be a focus of policy? If manufacturing is a specific engine of growth, it should be the focus of policy and manufacturing-related services should be integral (engineering, logistics, finance for industry).

In addition to prioritizing these 11 sectors, there is a focus on Cluster and Corridor Development in order to revitalise township economies and integrate them into the mainstream economy. Change is to be driven by government, business and

⁸See CSID (2010) for a critical discussion of which sectors have better potentials as propulsive industrial sectors.

civil society, and labour, which together will drive the sectoral implementation of Transformation, Modernization and Re-industrialization.

Understandably, the province must address a broad range of issues. And often policy documents are conducted in generalities—equitable growth; social inclusivity and cohesion; sustainable development and infrastructure; good governance (Gauteng Province 2012). But, we argue, given a range of pressing policy objectives, the strategic significance of manufacturing, as outlined in the section above, can easily be lost as it is only a part of the 11 prioritized sectors above. The 2016 Gauteng Economic Indaba, for example, discussed manufacturing but also: mining and mineral beneficiation; services (BPO, finance, creative, tourism and hospitality etc.); new industries through science, technology and research (including green economy and alternative energy); infrastructure, construction and real estate; enterprise development and social economy (SMEs, township economy, co-operatives); and ‘economic enablers’ (positioning, branding, market access, ease of doing business, skills etc.). The emphasis was placed on “transformative partnerships” to focus on leveraging stakeholder mandates to drive Transformation, Modernization and Re-industrialization, sector growth and small business development (Gauteng Province 2015a). The reality of de-industrialization, which we outline below, was lost.

5.4 Manufacturing in Gauteng and the Minerals–Energy Complex

5.4.1 *The Historical Evolution of Manufacturing Pre-1994*

The Minerals–Energy Complex (MEC) can be seen as a system of accumulation particular to historical industrial development in South Africa. It was rooted in the minerals revolution, but evolved through apartheid (Fine and Rustomjee 1996). State promotion of key sectors from 1948—particularly through Eskom, Iscor and Sasol—both complemented mining needs and facilitated the development of Afrikaner capital and industrial expansion (Clark 1994). The industrial core was formed in the 1950s and 1960s, but persisted through the 1980s as the apartheid regime entered a crisis of legitimacy. These core MEC sectors are capital-intensive and exhibit strong linkages with each other, and weak linkages with manufacturing sub-sectors outside the core. Hence there is relatively weak pulling power across the rest of the economy, as in the discussion of Hirschman above, and low employment multipliers. One consequence is the structural unemployment that remains such a significant feature of South Africa’s political economy. This MEC-dominated pattern of development remains evident in the manufacturing sector today, both in its structure, discussed in the next section, and in its spatial distribution.

The concept of the GCR fits well with this analytical approach (Greenberg 2010; Gotz and Todes 2014; Harrison et al. 2014). The ‘wider GCR’ expands east of

Gauteng to include Mpumalanga (with its coal fields, power plants and Sasol refineries at Secunda); south into the Free State to include Sasolburg (the town established to house Sasol employees at the first Sasol refinery); north-westwards into the North West province to include Rustenburg (today the centre of platinum mining); and west across the West Rand mining belt to Potchefstroom (with its connections both to Iscor/ArcelorMittal and Sasol) and Klerksdorp (with its gold and uranium mining). The geographical area of the GCR covers the terrain of the MEC core of the economy.

The Pretoria–Witwatersrand–Vereeniging (PWV) region, what is now Gauteng, was at the heart of South Africa’s industrialization, and Johannesburg was the dominant economic centre (Mabin 2013). Mining dominated, and as manufacturing developed primarily to supply inputs into mining, it ‘followed’ mining in its geographical location and was concentrated along the east–west mining reef. Small gold and coal mining settlements established at the end of the nineteenth century grew to be major centres of both mining and manufacturing linked to mining (Nieftagodien 2006; Bonner et al. 2012). The East Rand in particular, now Ekurhuleni, grew to overshadow its West Rand counterpart and became the primary national centre of gold mining and manufacturing, with mines in Brakpan and Springs becoming major national producers (Machaka and Roberts 2006; Nieftagodien 2006).

The development of roads and then the railway reflected this pattern in order to facilitate export of gold and supplies to other areas of the country. A railway line linking the Witwatersrand mining towns was developed in the 1890s and ran from Randfontein on the West Rand to Springs on the East Rand, with another line north to Pretoria and south to Vereeniging (Karam and Sihlongonyane 2006). Germiston became a national railway hub, and in the first decades of the twentieth century, developed into a major centre of metal and engineering production. While the West Rand had essentially the same pattern of development, the East Rand benefited from its proximity to coal supplies, particularly after the opening of the Witbank coal field just east of Springs. Deep-level mining in the east also contributed to greater growth relative to the west, given the impetus this provided to the development of secondary industries, and later the local market acted as a further impetus. Germiston, Benoni, Boksburg and Springs became major centres. Linked to mining, with metal production, processing and engineering industries, “the East Rand evolved as an integral part of the Witwatersrand conurbation” (Karam and Sihlongonyane 2006, p. 142). Further major expansion came in the 1960s, driven by the expansion of industrial manufacturing and the MEC core under the apartheid state.⁹

⁹The rapid increase in African industrial employment, including of skilled and semi-skilled African workers, produced a permanently settled urban working class. Social conditions were poor, and the settled and skilled workforce gave rise to many problems for the apartheid-era state and led to the emergence of state direction and management of urban development (Mabin and Smit 1992). Under the Mentz Committee, all inner city locations were ‘removed’ and all Africans relocated to new townships—particularly KwaTsaDuza (KwaThema, Tsakane, Duduza) and Kathorous (Katlehong, Thokoza and Vosloorus) (see Bonner et al. 2012).

Figure 5.2, which shows capital stock across the different sectors for 1995, 2005 and 2015, demonstrates that, nationally, much South African manufacturing has been connected to the capital-intensive MEC core of the economy, with manufacturing outside the MEC core being relatively weak. Manufacturing in Gauteng is considered to remain highly connected to the MEC core of the economy. Figure 5.3 shows the continuing importance of MEC sectors in manufacturing. Metals, metal products and machinery employed 28.6% of the manufacturing workforce in 2015, while petroleum products, chemicals, rubber and plastics made up another 13.4%. The former sector arose out of the need for inputs into mining, the latter out of Sasol’s development of liquid fuels from coal.

Manufacturing outside the core was hit very hard by trade liberalization after 1994, the clothing and textiles sectors most dramatically. Manufacturing in general fared badly under the tight macroeconomic framework of the Mbeki era and the volatility of the Rand. The privatizations of Sasol and Iscor left important sections of manufacturing vulnerable to the upstream pricing decisions of private monopolies, particularly those in steel and plastics—critical feedstocks for industrial development (Dobрева 2006; Roberts 2006).

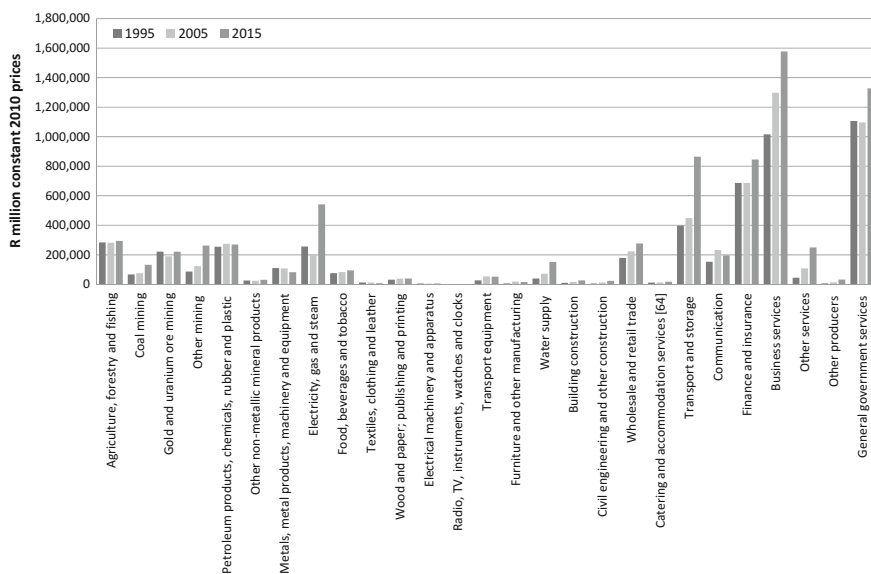


Fig. 5.2 Distribution of capital stock across sectors in South Africa in 1995, 2005 and 2015. *Source* Authors’ calculations from EasyData (2016)

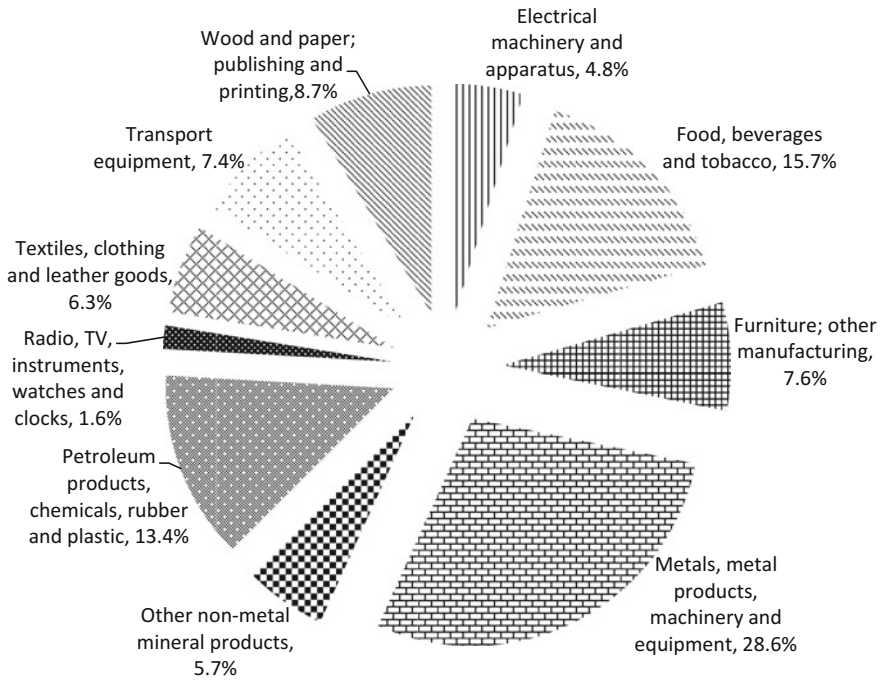


Fig. 5.3 Distribution of employment across manufacturing sub-sectors in the GCR, 2015. *Source* Authors' calculations from EasyData (2016)

5.4.2 The Changing Manufacturing Patterns Since 1994

5.4.2.1 Declining Manufacturing

The period 1996–2001 saw annual declines in total manufacturing employment in the GCR (Fig. 5.4).¹⁰ These declines occurred with a slight increase in manufacturing gross value added that might, on first sight, suggest that falling employment was a consequence of productivity increases and a displacement of workers by capital (Fig. 5.5). But it should be noted that this period was one of major corporate restructuring in South Africa: unbundling, downsizing and increased outsourcing of non-core activities and a numerical shift of employment from manufacturing to services in statistical reporting (Chabane et al. 2006; Tregenna 2009).

Moreover, the modest increase in the contribution of manufacturing to the gross regional product took place alongside year-on-year declines in fixed capital

¹⁰The decline in manufacturing employment had already begun in the 1980s. Rogerson (2000) reports that an estimated 60,000 manufacturing employment opportunities were lost in Gauteng between 1989 and 1994.

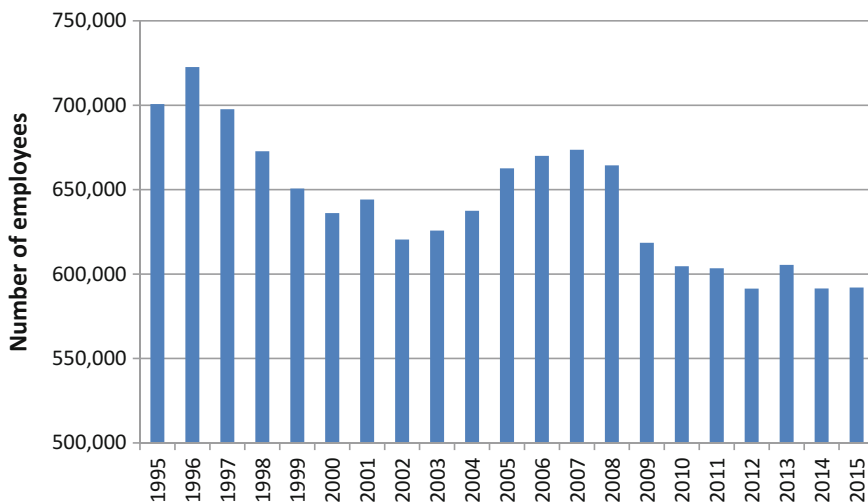


Fig. 5.4 Total manufacturing employment in the GCR, 1995–2015. *Source* Authors' calculations from EasyData (2016)

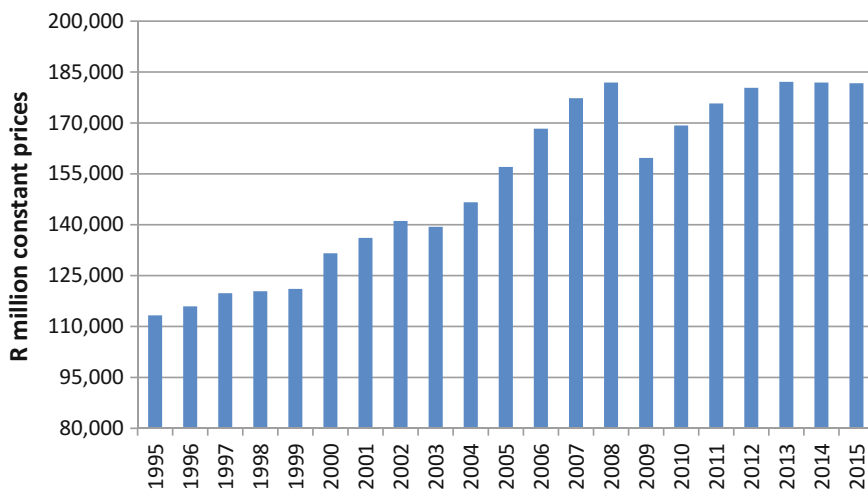


Fig. 5.5 Manufacturing gross value added in the GCR, 1995–2015. *Source* Authors' calculations from EasyData (2016)

investment that barely maintained manufacturing capital stock in the GCR (Figs. 5.6 and 5.7). The manufacturing sector, in this sense, was not expanding. From 2002 until 2008, net fixed investment picked up and the productive base expanded along with total employment, and GVA increases accelerated. Any gains in this period were lost as a consequence of the Global Financial Crisis. The year

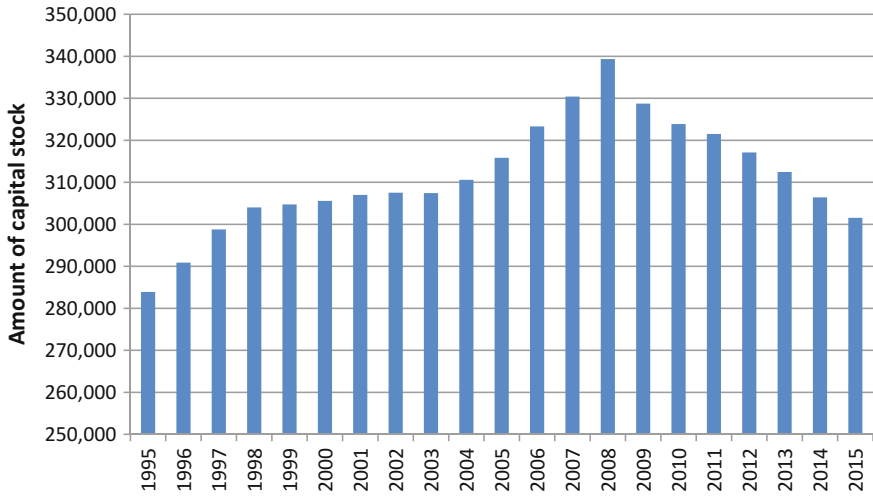


Fig. 5.6 Capital stock in manufacturing in the GCR, 1995–2015. *Source* Authors’ calculations from EasyData (2016)

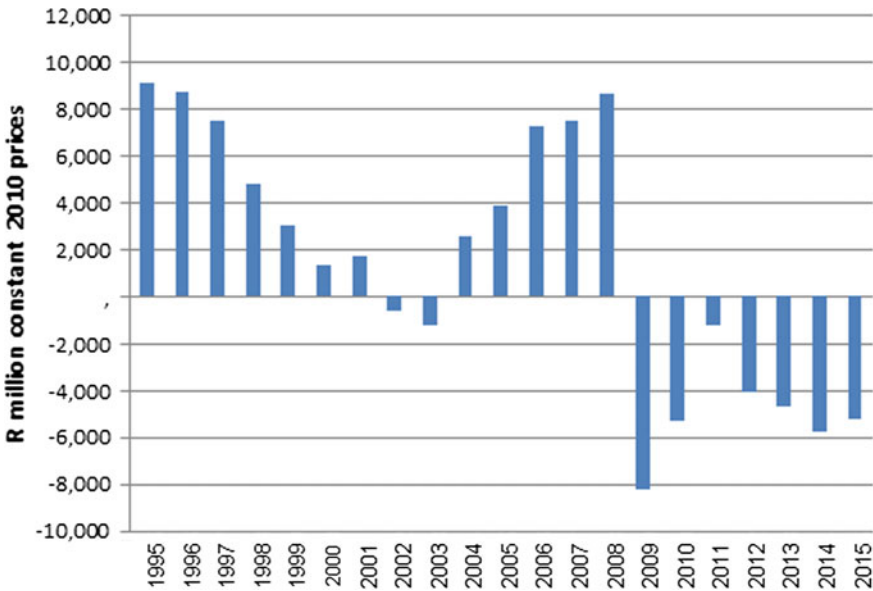


Fig. 5.7 Net domestic fixed investments in manufacturing in the GCR, 1995–2015. *Source* Authors’ calculations from EasyData (2016)

2009 saw over 43,000 direct job losses from manufacturing in the GCR from the previous year's levels, a running down of the capital stock, and GVA plummeted. While investment and GVA have had some recovery since 2011, employment numbers have not. Further, capital investment since 2009 has been insufficient to maintain the capital stock in manufacturing.

5.4.3 Inter-sectoral Differences

In order to better understand the failure of employment recovery in the sector since the recession of 2009, we need to go beyond aggregate figures and examine trends across manufacturing sub-sectors. Manufacturing employment in the GCR is heavily concentrated within a few sub-sectors. In 2015, 54.9% of manufacturing employment was within three manufacturing sub-sectors: metals, metal products, machinery and equipment (22.9%); food, beverages and tobacco (18%); and petroleum products, chemicals, rubber and plastics (14%). It is clear from these figures that the MEC remains central in GCR manufacturing. Figure 5.8 shows employment trends across manufacturing sub-sectors. It is clear that the aggregate trends seen in Fig. 5.4 are dominated by metals, metal products, machinery and equipment and petroleum products, chemicals, rubber and plastics. All other manufacturing sub-sectors have experienced stagnation or decline in employment since 1995, and particularly since 2008.

The distribution of fixed capital stock across manufacturing sub-sectors is even more concentrated than that of employment. Petroleum products, chemicals, rubber and plastic accounted for 50.3% of the total manufacturing capital stock in the GCR in 2015 (Table 5.2). Metals, metal products, machinery and equipment accounted for 15.7%. Levels of investment in fixed capital since 1995 have barely been sufficient for maintenance of the capital stock in most manufacturing sub-sectors. Despite its size and importance as a generator of manufacturing employment, metals, metal products, machinery and equipment has experienced a monotonic decline in capital stock since 2000. The only manufacturing sub-sector that has seen investment for expansion is petroleum products, chemicals, rubber and plastics (Fig. 5.9).

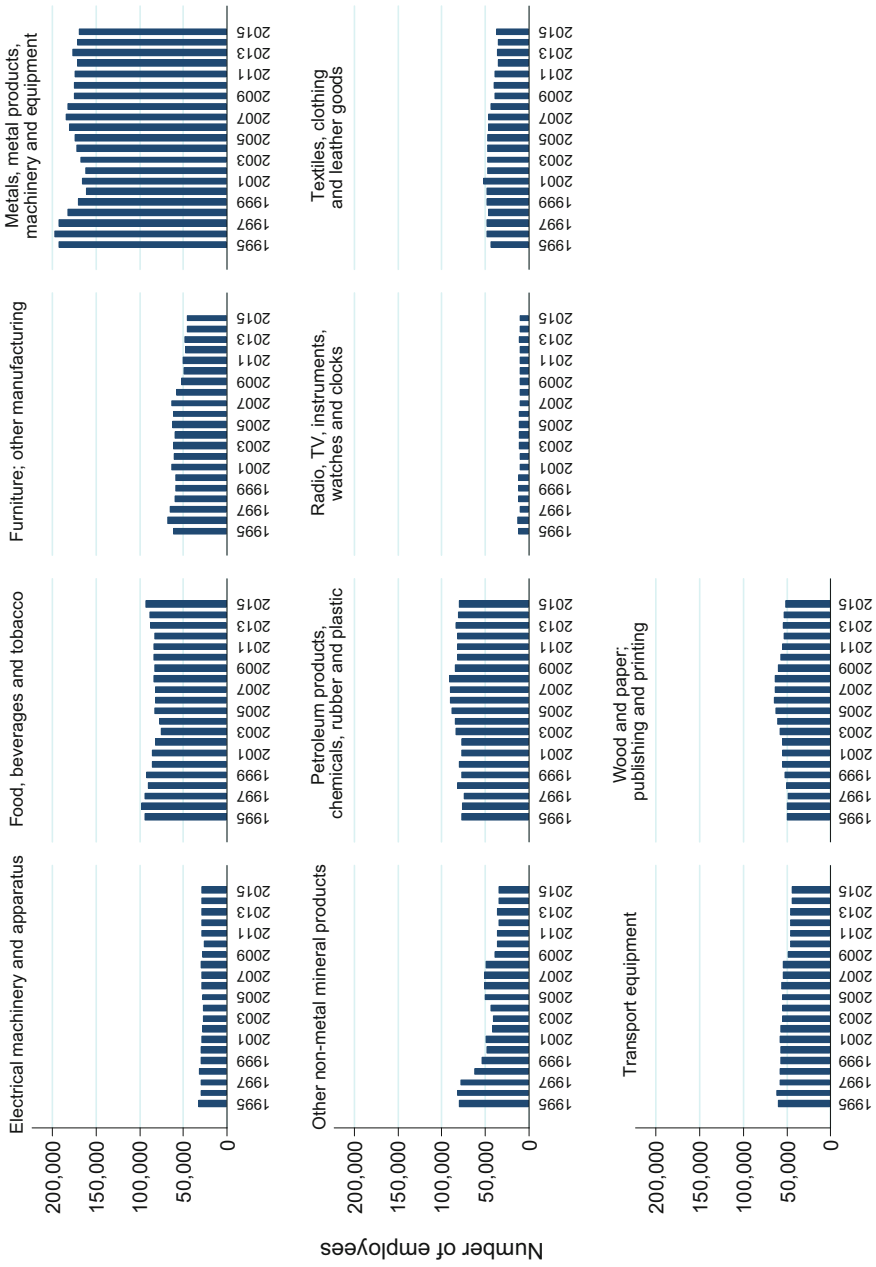


Fig. 5.8 Employment trends across manufacturing sub-sectors in the GCR, 1995–2015. Source Authors' calculations from EasyData (2016)

Table 5.2 Distribution of fixed capital stock across manufacturing sub-sectors in the GCR, 2015

Industry	Proportion (%)
Electrical machinery and apparatus	1.2
Food, beverages and tobacco	11.9
Furniture; other manufacturing	2.5
Metals, metal products, machinery and equipment	15.7
Other non-metal mineral products	4.9
Radio, TV, instruments, watches and clocks	0.5
Petroleum products, chemicals, rubber and plastic,	50.3
Transport equipment	7.4
Textiles, clothing and leather goods	0.8
Wood and paper; publishing and printing	4.8

Source Authors' calculations from EasyData (2016)

Recent evidence suggests that the crisis in the metal, metal products and machinery and equipment sub-sector has only deepened. The global crisis, followed by the crisis in mining because of global commodity prices, has produced a crisis in demand. Capacity utilization is at 75%, which explains the low levels of investment as new investment is unlikely to take place when existing capacity utilization is low (SEIFSA 2016). Figures 5.10, 5.11, 5.12 and 5.13 illustrate the continued dominance of MEC sectors in manufacturing across the GCR and the secular decline since the Global Financial Crisis.

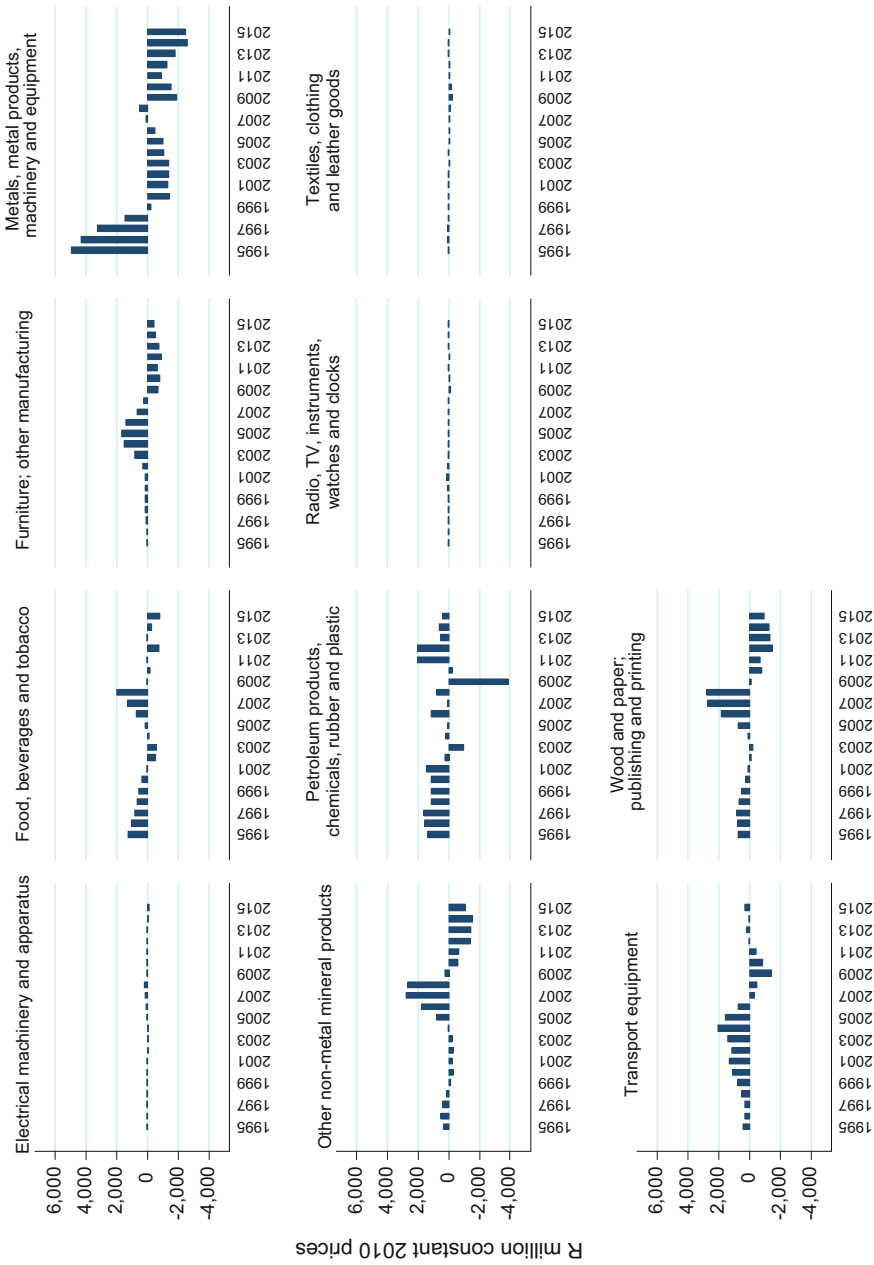


Fig. 5.9 Annual domestic fixed capital investment across manufacturing sub-sectors in the GCR, 1995–2015. *Source* Authors' calculations from EasyData (2016)

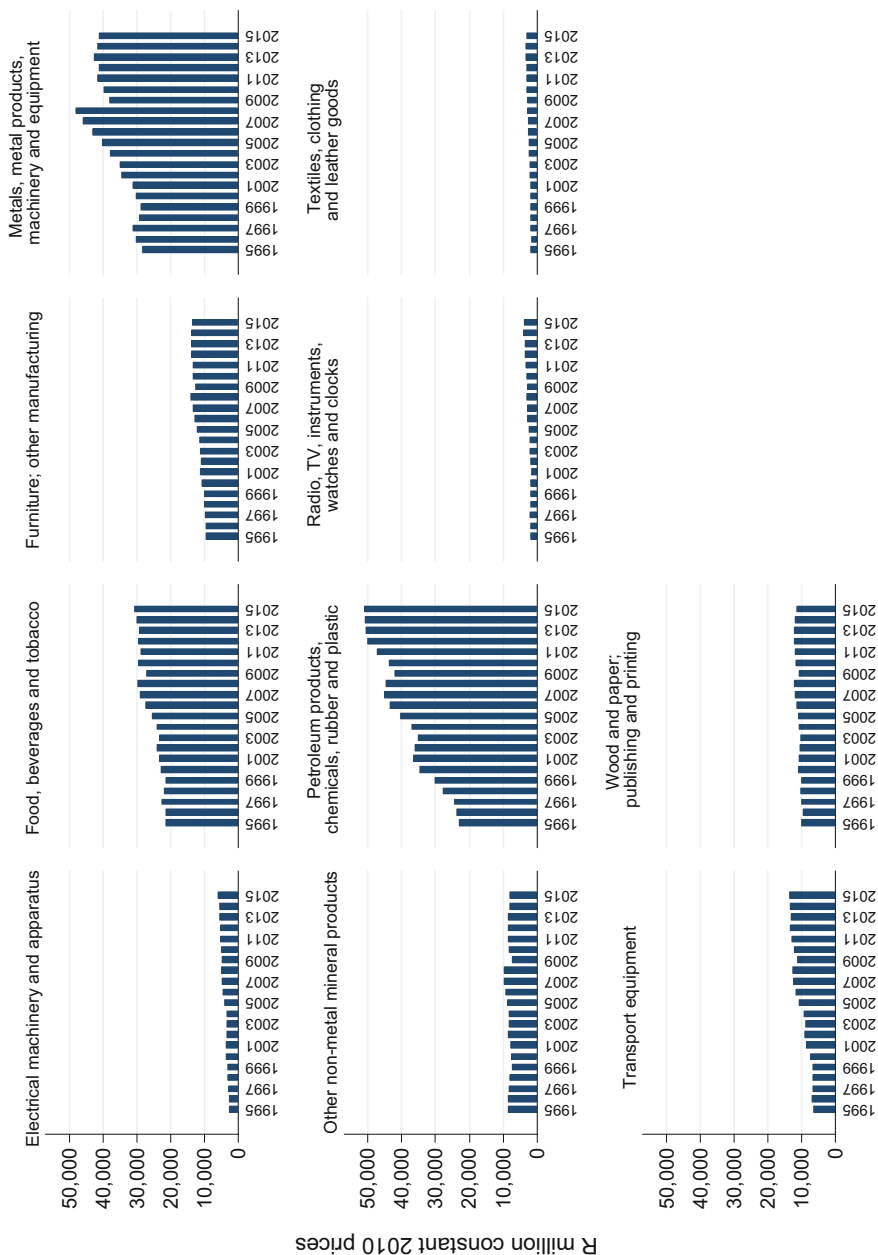


Fig. 5.10 Annual GVA at basic 2010 prices across manufacturing sub-sectors in the GCR, 1995–2015. *Source* Authors' calculations from EasyData (2016)

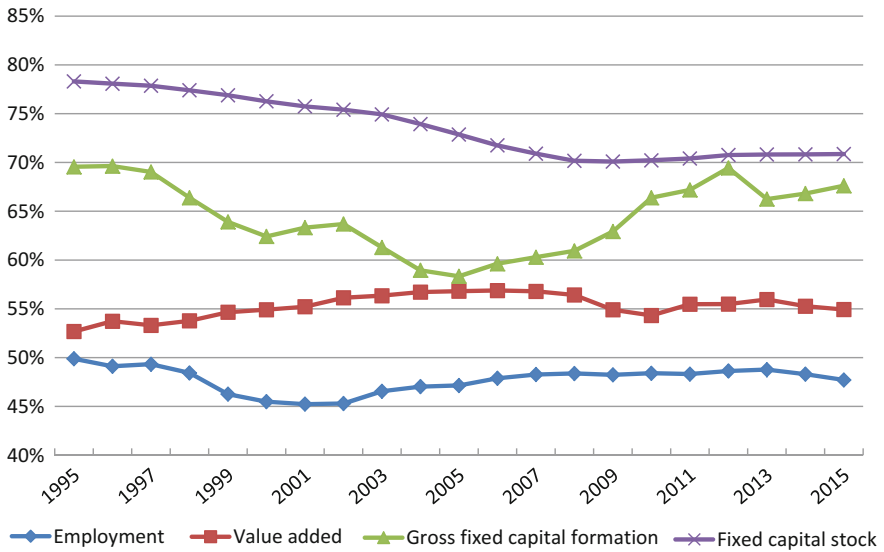


Fig. 5.11 Employment, gross fixed capital formation, fixed capital stock and value added of MEC manufacturing sectors as a share of total manufacturing in the GCR, 1995–2015. *Source* Authors’ calculations from EasyData (2016)

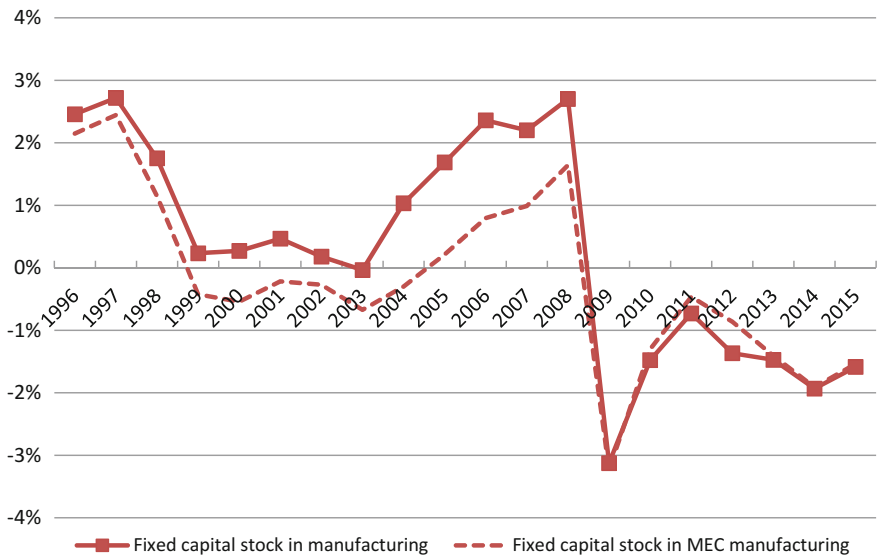


Fig. 5.12 Annual changes in total manufacturing and MEC manufacturing fixed capital stock in the GCR, 1996–2015. *Source* Authors’ calculations from EasyData (2016)

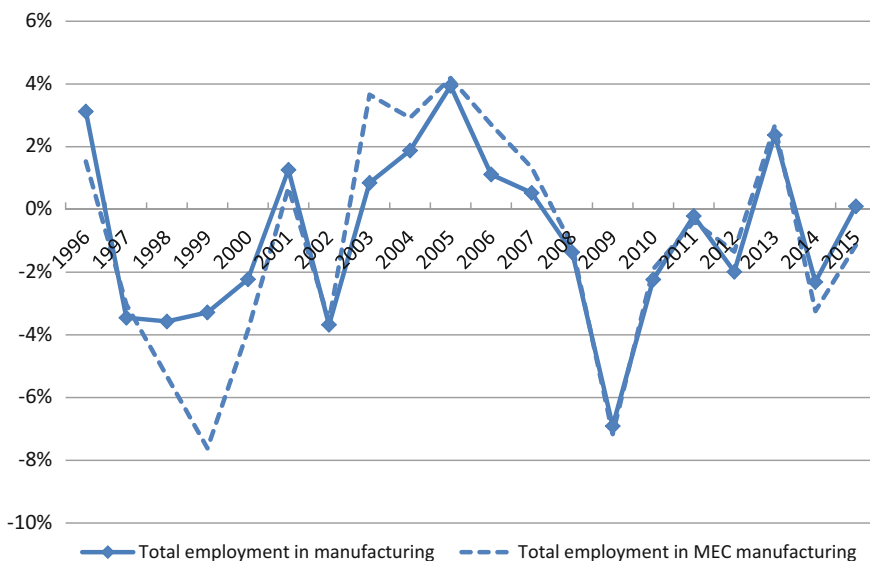


Fig. 5.13 Annual changes in total manufacturing and MEC manufacturing employment in the GCR, 1996–2015. *Source* Authors’ calculations from EasyData (2016)

5.4.4 *The Spatial Unevenness of Manufacturing in Gauteng*

Rogerson (2000) argues that at the beginning of the twenty-first century the distribution of manufacturing activities across the GCR was largely unchanged from the apartheid period. This continues to be true today. Manufacturing remains heavily concentrated along the east–west mining belt that spans the local City of Ekurhuleni and City of Johannesburg, diffusing into the West Rand local municipalities (Mogale City, Randfontein, Westonaria and Merafong), the City of Tshwane to the north, and the Vaal Triangle to the south, which includes the local municipalities of Emfuleni and Metsimaholo over the provincial border (Fig. 5.14). These amount to complexes within the complex, or ‘complex-cities’.

Figures 5.15 and 5.16 show five-yearly changes in manufacturing employment and gross value added (at basic 2010 prices) across these ‘complex-cities’ and the rest of the GCR. The areas with the highest density of manufacturing across the metropolitan municipalities of the City of Johannesburg, Ekurhuleni and the City of Tshwane, have seen the most dramatic falls in employment since 1995. These local municipalities were also hardest hit by shrinking demand brought about by the Global Financial Crisis, and whilst output and value added have improved since 2010, employment numbers continue to fall.



Fig. 5.14 Distribution of manufacturing firms across Gauteng and the GCR

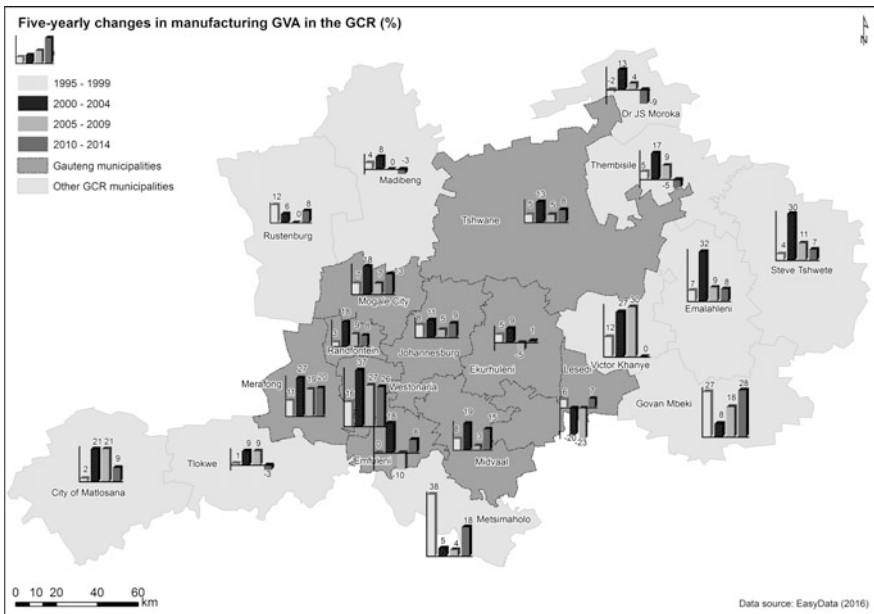


Fig. 5.15 Distribution of manufacturing GVA across the GCR, five-yearly changes. Source Authors' calculations from EasyData (2016)

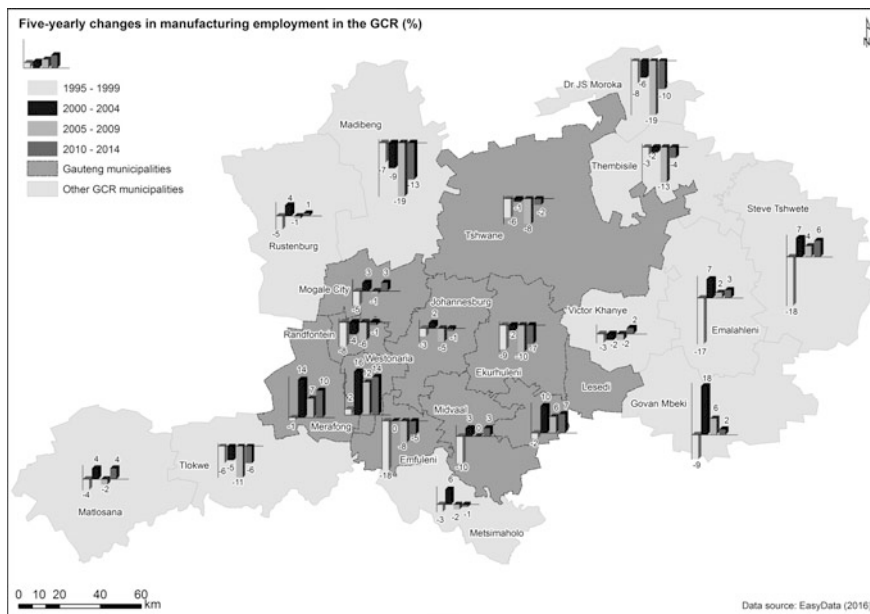


Fig. 5.16 Distribution of manufacturing employment across local municipalities in the GCR, five-yearly changes *Source* Authors’ calculations from EasyData (2016)

5.5 Conclusions

We have argued in this chapter that the manufacturing sector has specific properties that make it an important potential engine of growth: greater scope for learning-by-doing; dynamic increasing returns to scale; cumulative productivity increases; strong growth-pulling linkages with the rest of a domestic economy; and tendencies to technological change. In addition, manufacturing has important foreign exchange earnings and local manufacturing can potentially reduce the environmental damage of the long-distance movement of goods. De-industrialization is of great significance as it reduces an economy’s capacities in these respects, capacities that are unlikely to be replaced by services, particularly in a developing economy context where de-industrialization has been “policy-induced” (Palma 2014).

The evidence presented in the chapter suggests that manufacturing in Gauteng and the broader Gauteng City-Region remains highly path dependent, both in terms of its spatial distribution and in terms of the sub-sectors that dominate. Manufacturing employment remains heavily concentrated in metals, metal products, machinery and equipment; petroleum products, chemicals, rubber and plastics; and food, beverages and tobacco. Capital stock is even more concentrated in petroleum products, chemicals, rubber and plastic followed by metals, metal products, machinery and equipment. The largest and most important sectors remain highly

capital intensive and closely linked to, and dependent upon demand from mining. All other manufacturing sub-sectors—which have stronger backward linkages and employment multipliers—have experienced stagnation or decline in employment since 1995, and particularly since 2008. We argue then, that the MEC remains central in GCR manufacturing, its sectoral nature and its spatial distribution.

A major change is the contraction within the MEC core itself, one that threatens to weaken an already weak manufacturing sector even further. The data show a secular decline in MEC sectors since the Global Financial Crisis. Crashing global commodity prices and the crisis in the mining sector are being felt in the reduced demand for the metals sector, illustrating once more the problem of a manufacturing sector so closely linked to mining. Moreover, the crisis upstream in the steel sector, as a consequence of global over supply, is likely only to exacerbate the crisis downstream, long affected by import parity pricing in steel and difficulty attracting scrap metal (much of which is exported) in order to lower input costs. Significant job losses have already taken place, along with those in the mining sector itself.

What does this mean for policy? Discussion of detailed sector strategies is beyond the scope of this chapter, but different interventions are necessary for MEC and for non-MEC sectors (CSID 2010.) The labour intensity of non-MEC sectors such as textiles and footwear means they must remain a priority for policy and not be regarded as sunset industries. Food is an important sector, where there is evidence of considerable regional expansion in demand, though concerns remain about levels of concentration and the domination of the value chains by large players. As discussed above, the de-industrialization of the MEC core is the major change. The crisis in the metals sector, in particular, is a consequence of falling demand, caused firstly by the global recession and subsequently by the crash in global commodity prices. Provincial policy can assist by, at a minimum, addressing potential demand drivers. State infrastructure improvements, and the procurement decisions that go with this, can make a big difference. Improving the rail system, in particular, would have beneficial knock-on effects for the capital equipment sector. Building more public housing would benefit construction and cement. Water infrastructure is also in need of upgrading. However, much of the promised infrastructure spend has dried up, consumed by the need to resolve the crisis in Eskom, itself a consequence of a twenty-year failure to plan. Given the enduring significance of the GCR for national manufacturing, the Gauteng province needs to be integrated into the formulation of national manufacturing strategy, and the incentives offered under the Industrial Policy Action Plans (IPAP).

The functioning of the financial sector, which is not the subject of this chapter, needs further discussion. It remains large and powerful yet uninterested in financing the long term productive investment necessary for the kinds of structural change necessary to address poverty, unemployment and inequality, and bring about more broad-based economic development (Ashman et al. 2013). That Gauteng province now considers re-industrialization a strategic priority is a welcome development, but many policy documents, both adequate and inadequate, remain idling in drawers and filing cabinets years later, still unimplemented. Implementation will

require tough decisions, and ensuring that the strategic significance of manufacturing is not lost.

Acknowledgements Samy Katumba and Mncedisi Siteleki are thanked for the preparation of the figures in this chapter. The useful comments of the two reviewers who read an earlier version of this chapter are acknowledged.

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Chapter 6

Unpacking the Changing Economic Geography of Gauteng's Tertiary Sector

Christian M. Rogerson

6.1 Introduction

South Africa's National Development Plan 2030 identifies a vital role for the service sector in terms of future job creation (National Planning Commission 2011). This said, the tertiary sector is heterogeneous and in terms of Standard Industrial Classification encompasses the following varied categories of activities: wholesale and retail trade; catering and accommodation; transport and storage; finance and insurance; business services; community, social and personal services; and general government. The 'fuzziness' of the concept of service economy as a whole can be illustrated by looking at business services, one of the fastest growing segments of the tertiary economy. The category of business services itself represents a highly diverse array of activities that range "from security guards and cleaning services to design and engineering activities, legal services and architects" (Burke et al. 2014, p. 5).

The 2011 OECD report, among others, draws our attention to the continued trend towards structural change in the Gauteng City-Region and to the fact that approximately 70% of total Gross Value Added (GVA) now derives from the tertiary sector (OECD 2011, p. 20). The advance of tertiarisation in the shifting economic landscape of the Gauteng City-Region has been accompanied by a relative decline in significance of the historically critical drivers of the urban–regional economy, most notably those of mining and manufacturing (Grant Thornton 2008; City of Johannesburg 2011; Harrison and Zack 2012; Burke et al. 2014; Crankshaw and Borel-Saladin 2014; Human Sciences Research Council (HSRC) 2014). However, despite the tertiary sector's overwhelming economic weight in the city and city-region landscape, an examination of recent policy documents about future planning for inclusive or shared economic growth and reducing levels of unemployment in Gauteng reveals

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that the development potential of the tertiary sector is given less acknowledgement than the promotion of manufacturing (City of Johannesburg 2011; Gauteng Province 2012). In the case of Johannesburg's services economy, there exist currently only a handful of (published or unpublished) recent academic investigations that contribute to our understanding of its challenges and spatial dynamics (Parnreiter et al. 2013; Crankshaw and Borel-Saladin 2014; Visser 2014; Rogerson and Rogerson 2015; Gregory 2016a). Arguably the most detailed research is that relating to the city's expanding tourism economy, including accommodation services (Rogerson and Sims 2012; Rogerson 2013a, b, 2014a, b, c; Rogerson and Wolfaardt 2015; Ismail and Rogerson 2016; Rogerson and Rogerson 2016).

Against this background of neglect, the aim in this chapter is to offer an analysis of aspects of the current state and spatial distribution of tertiary activities in Gauteng province. In terms of source material, the chapter draws from existing secondary sources as well as the findings of a number of macro-level analyses conducted for the City of Johannesburg in order to inform policy development, including about the role of services (Grant Thornton 2008; Burke et al. 2014; HSRC 2014). Most importantly, the chapter draws upon primary data extracted from Global Insight and EasyData data bases. This is supplemented by AfriGIS Bizcount (2010) data to map the geography of tertiary firms in the GCR. Although there is a substantial informal sector of tertiary activities, most importantly around informal retailing, these are not the focus in this chapter which centres on the formal segment of the tertiary economy. More specifically, attention falls on two sets of material. First, the focus is on unpacking the overall picture and patterns of development of the tertiary sector including its uneven geographical development across Gauteng. Second, attention narrows to interrogate certain critical aspects of tertiary sector evolution and current challenges in the City of Johannesburg, which overwhelmingly has the largest concentration of tertiary sector activities in the province.

Given the diversity of the service economy, in seeking to understand the changing dynamics and spatial dimensions, three components of the services economy of Johannesburg are selected for further investigation. First, is the cluster of activities around finance, closely associated with Johannesburg's role as corporate decision-making centre (Surborg 2011; Cobbett 2014). Second, the role of tourism (including the accommodation sector), a form of consumption that is hidden in the standard classifications of the tertiary sector. And finally, the third focus is upon creative industries, which are again not measured separately in standard classifications concerning the service sector. In the international setting, however, creativity is seen variously as the foundation of "a new global orthodoxy" (Schlesinger 2017) or "the new gold of the global economy" (Flew 2014). Indeed, creative industries and creative enterprises are currently at the 'cutting edge' of city economic development programming, particularly in Northern cities (Gdaniec 2000; Drake 2003; Brecknock 2004; Pratt 2004; Scott 2004; Wu 2005; Pratt 2009; Flew and Cunningham 2010; Cunningham and Potts 2015; Gregory and Rogerson 2016; Yum 2016).

6.2 Unpacking the Tertiary Economy of Gauteng

This section provides an overview of the tertiary sector in Gauteng, its growth and geographical distribution between the different metropolitan and local authorities. The material in this section analyses EasyData data on the tertiary sector, which in terms of Standard Industrial Classification is categories SIC 6–9.

Tables 6.1 and 6.2 provide an analysis of the growth of the tertiary sector in Gauteng as indexed by its contributions to GVA and employment for the period 1995–2015. In addition, these tables reveal the contribution of the Gauteng tertiary sector to South Africa as a whole. Taken together, these two tables, relating both to contribution to GVA and employment, underscore that in national terms a polarization of the tertiary sector has occurred in Gauteng. Between 1995 and 2015 the proportional contribution of tertiary sector GVA in Gauteng expanded from 34.6 to 37.8% of the national total (Table 6.1). In terms of employment data, a similar trajectory of the polarization of the tertiary sector is disclosed, as in terms of formal sector tertiary employment, Gauteng's proportionate share rises from 35.4% in 1995 to reach 37% in 2015.

The growth of the tertiary sector in Gauteng is, however, uneven across the different sub-sectors. Table 6.3 shows both the respective contributions of eight different segments of Gauteng's tertiary sector to South Africa as a whole, as well as their changing respective share in the overall tertiary economy of Gauteng as indexed by GVA. It is evidenced that there are certain segments of the tertiary sector that are concentrated or particularly strong in Gauteng. In 1995 the segments of the tertiary sector which were 'over-represented' were government, communication, finance and insurance, and business services. By 2015 the strongest relative segments were shown to be finance and insurance, government, communication, and, business services (Table 6.3). The marked strengthening of finance and insurance and business services is especially noteworthy. By contrast, the two segments of the tertiary economy that, in relative terms, are consistently the weakest in Gauteng are wholesale and retail trade, and catering and accommodation services (Table 6.3). Another set of findings concerning the shifting structure in the tertiary economy of Gauteng relates to the role of government. In 1995 government was overwhelmingly the most significant segment as it represented 37.8% of the tertiary economy as indexed by contribution to GVA. However, in relative terms, between 1995 and 2015 the significance of government in the provincial economy eroded (to 25.6%), although it still remained the single largest segment. Between 1995 and 2015 the segments that showed the greatest relative growth were those of business services, finance and insurance, and communication. Five other segments of the tertiary economy, alongside government, exhibited relative decline. These are wholesale and retail trade, catering and accommodation services, transport and storage, communication, and community, social and personal services.

Table 6.1 Tertiary sector value in Gauteng and South Africa 1995–2015 (R millions Constant 2010 prices)

	1995		2001		2007		2015	
	No.	Contribution (%)	No.	Contribution (%)	Value	Contribution (%)	Contribution (%)	Contribution (%)
Gauteng	322,568	34.63	409,719	35.58	568,187	36.39	723,926	37.80
South Africa	931,425	100	151,698	100	1,561,302	100	1,915,204	100

Source Based on EasyData (2016)

Table 6.2 Tertiary sector employment in Gauteng, 1995–2015 (R millions Constant 2010 prices)

	1995		2001		2007		2015	
	No.	Contribution to RSA (%)	No.	Contribution to RSA (%)	No.	Contribution to RSA (%)	No.	Contribution to RSA (%)
Formal	2,210,498	35.4	2,453,665	36.4	2,854,972	36.9	3,049,688	37.0
Informal	362,848	31.7	331,442	32.0	513,410	32.4	1,113,498	33.9
Total	2,573,346	20.2	2,785,107	23.1	3,368,382	24.4	4,163,186	26.5

Source Based on EasyData (2016)

Table 6.3 Growth of different segments of the tertiary sector in Gauteng 1995–2015 (R millions Constant 2010 prices)

Sector SIC classification	1995			2015		
	Value	Contribution to RSA (%)	Contribution to tertiary (%)	Value	Contribution to RSA (%)	Contribution to tertiary (%)
Wholesale and retail trade (SIC 61–63)	54,838	28.8	17.0	125,078	31.6	17.3
Catering and accommodation services (SIC 64)	4,238	27.0	1.3	7,333	29.9	1.0
Transport and storage (SIC 71–74)	27,075	31.8	8.4	57,572	31.8	8.0
Communication (SIC 75)	6,334	40.7	2.0	40,209	50.2	5.6
Finance and insurance (SIC 81–82)	23,279	35.6	7.2	97,566	49.8	13.5
Business Services (SIC 83–88)	57,402	33.6	17.8	159,968	38.9	22.1
Community, social and personal services (SIC 92–96, 99)	273 634	30.2	8.5	50 729	31.1	7.0
General government (SIC: 99)	122 039	41.0	37.8	185 470	39.9	25.6

Source Author's calculations based on EasyData (2015)

Table 6.4 Proportional contribution of different municipalities to Gauteng tertiary economy (GVA data) (R millions Constant 2010 prices)

Municipality	Tertiary		Wholesale and retail trade		Catering and accommodation services		Transport and storage		Communication		Finance and insurance		Business services		Community, social and personal services		General government	
	1995	2015	1995	2015	1995	2015	1995	2015	1995	2015	1995	2015	1995	2015	1995	2015	1995	2015
Tshwane	29.1	27.6	21.0	21.9	24.2	23.3	20.5	21.9	33.0	32.3	22.7	21.2	26.0	26.3	27.3	26.8	37.8	37.8
Johannesburg	38.2	41.2	41.6	40.0	45.6	40.7	32.6	34.0	37.2	42.3	52.0	55.6	45.2	45.7	39.3	39.6	31.7	33.3
Ekurhuleni	22.7	22.5	26.5	26.0	21.1	25.4	36.6	31.5	21.5	19.8	19.1	18.0	20.8	21.2	22.2	22.8	19.5	20.5
Empuleni	4.0	3.0	4.4	4.0	3.4	3.5	3.9	3.5	2.4	1.6	2.0	1.1	3.0	2.1	4.4	4.0	4.7	3.4
Midvaal	0.6	0.6	0.7	0.9	0.5	0.7	0.7	1.0	0.4	0.3	0.5	0.3	0.7	0.4	0.7	0.8	0.5	0.5
Lesedi	0.0	0.0	0.5	0.6	0.3	0.5	0.7	0.7	0.2	0.3	0.3	0.3	0.2	0.3	0.5	0.6	0.6	0.5
Mogale City	2.7	2.4	2.8	3.3	2.9	2.8	2.7	3.6	3.5	1.9	2.2	1.6	2.5	2.2	2.9	2.7	2.8	2.0
Randfontein	1.0	0.9	1.1	1.2	0.8	1.1	1.1	1.8	1.0	0.7	0.7	0.6	0.7	0.7	1.1	1.0	1.1	0.8
Westonaria	0.4	0.5	0.5	0.7	0.8	1.2	0.8	1.0	0.5	0.6	0.5	0.8	0.5	0.6	1.1	1.3	0.9	0.8
Merapong City	0.8	0.9	1.0	1.4	0.4	0.8	0.5	1.1	0.3	0.4	0.2	0.2	0.3	0.4	0.4	0.5	0.4	0.4

Source: Author's calculations based on EasyData (2016)

and accommodation. This confirms that tertiary sector polarization is evident—in finance and insurance Johannesburg accounts for over 50%, in communication its share rises to 42.3% and in business services to 45.7%. Three, there was a relative decline in the contribution of Tshwane and Ekurhuleni to Gauteng’s tertiary economy—Tshwane’s contribution declined from 29.1 to 27.6%, while Ekurhuleni’s contribution declined from 22.7 to 22.5%. There were also mixed changes in the relative contribution of the various segments in Tshwane and Ekurhuleni to the Gauteng tertiary economy. The most notable changes were the strengthened role of wholesale and retail trade and transport and storage in Tshwane, and of both government and catering and accommodation in Ekurhuleni. Four, across the rest of Gauteng minor shifts were recorded, with the most notable perhaps being the relative decline of Emfuleni.

Table 6.5 shows the comparative structure of the tertiary economies of the three metropolitan areas as compared to Gauteng as a whole. The most important observations are as follows. First, between 1995 and 2015 the tertiary economy of Johannesburg became increasingly concentrated around business services and finance and insurance, with government and community, social, and personal services in relative decline. Second, in addition to the decline of transport and storage, an exact parallel trajectory is recorded for Ekurhuleni. Three, the most striking finding for Tshwane was the marked downturn in the significance of government in the city’s tertiary economy. Segments that rise in significance were business services, finance and insurance, communication, and catering and accommodation. Finally, as compared to the Gauteng tertiary economy as a whole, Johannesburg’s strengths in finance and insurance, business services and communication were clearly in evidence (Table 6.5).

6.3 Johannesburg’s Tertiary Economy

As a whole, the above analysis points to the centrality of Johannesburg in the tertiary economy of Gauteng. In particular, the results confirm the growing polarisation of tertiary sector activities in the city economy. Against this backdrop, this section turns now to focus on unravelling the dynamics of the tertiary economy further by looking at three particular components. These are (1) Corporate headquarters and finance, (2) Tourism, and (3) Creative industries. The critical issues impacting upon the development and emerging geographies of these three selected components of Johannesburg’s services economy are scrutinized. In addition, spatial issues are interrogated, mainly within the context of the different administrative regions of the City of Johannesburg (Fig. 6.2).

Table 6.5 Comparative structure of tertiary economy for the three leading metropolitan areas (R millions Constant 2010 prices)

	Gauteng		Johannesburg		Ekurhuleni		Tshwane	
	1995	2015	1995	2015	1995	2015	1995	2015
Tertiary	322,568	723,926	93,832	199,989	73,191	162,624	123,317	298,029
Wholesale and retail trade	17.0	17.3	12.3	13.7	19.9	20.0	18.5	16.8
Catering and accommodation services	1.3	1.0	1.1	0.9	1.2	1.1	1.6	1.0
Transport and storage	8.4	8.0	5.9	6.3	13.5	11.1	7.2	6.6
Communication	2.0	5.6	2.2	6.5	1.9	4.9	1.9	5.7
Finance and insurance	7.2	13.5	5.6	10.3	6.1	10.8	9.8	18.2
Business services	17.8	22.1	15.7	20.5	16.6	21.5	21.0	24.3
Community, social and personal services	8.5	7.0	8.0	6.8	8.3	7.1	8.7	6.7
General government	37.8	25.6	49.1	35.1	32.6	23.4	31.3	20.7

Sources Author's calculations based on EasyData (2016)

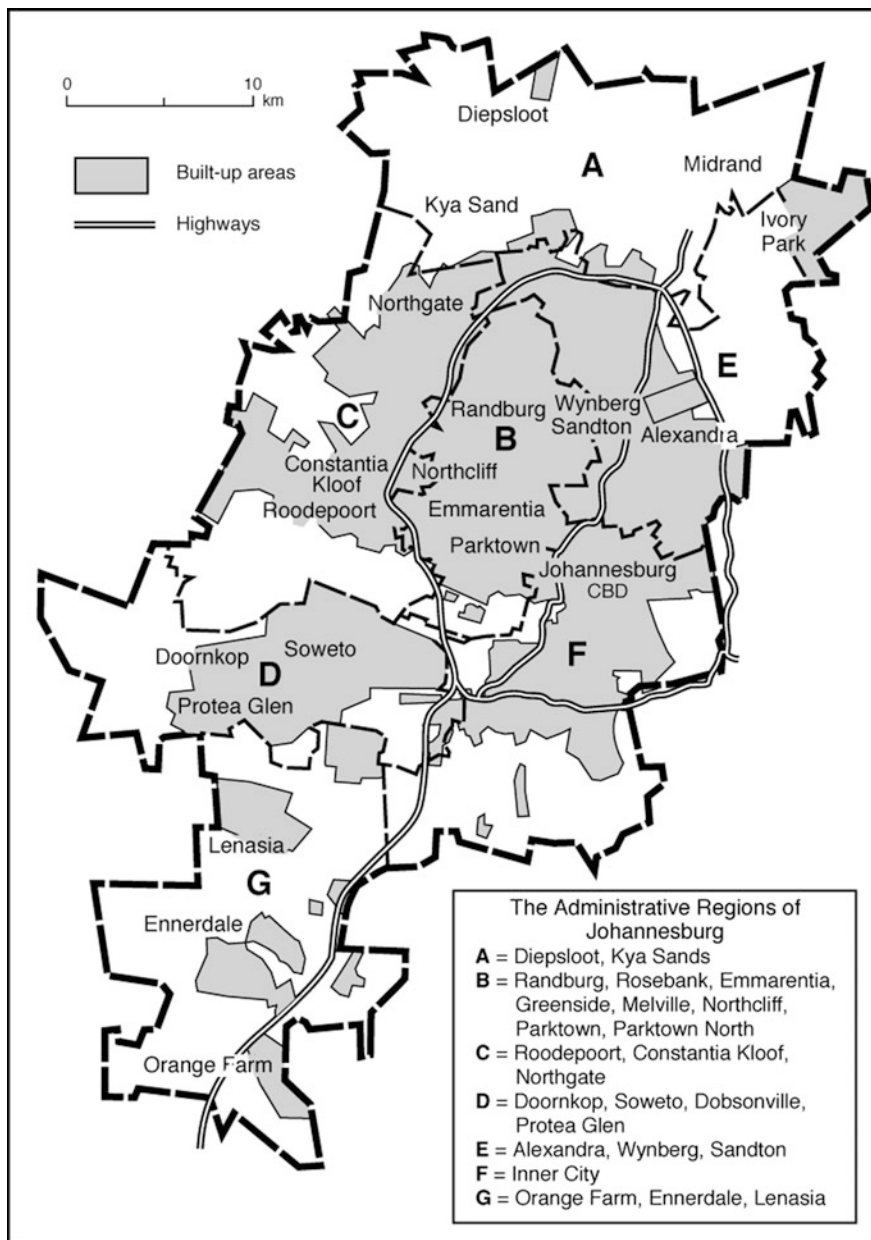


Fig. 6.2 The administrative regions of Johannesburg

6.3.1 *Corporate Headquarters and Finance*

Cobbett maintains that finance and its allied activities (such as insurance, accounting and legal services) represent “one of the services in which South Africa excels” (2014, p. 151). Johannesburg is Africa’s leading financial centre and the finance sector is by far the most significant contributor to GVA for the city (HSRC 2014; Rogerson and Rogerson 2015). Harrison and Zack identify Johannesburg as a “global service centre in banking, finances and related services” (2012, p. 564). This status “owes much to the historical links between mining and banking” in the city (Harrison and Zack 2012, p. 568), a view that is also held by Surborg (2011) and Cobbett (2014). Since 1995, it is evident that finance and insurance have expanded rapidly in terms of contribution to GVA for Johannesburg, even though they have not been major sources of new employment opportunities (Rogerson and Rogerson 2015). This said, it is argued that as “finance is a critical enabler of economic activity, the main job impact is in the growth of goods and services activity which is enabled rather than in finance itself” (Burke et al. 2014, p. 6).

Contemporary Johannesburg is arguably an international financial centre, interwoven with global markets through the country’s distinct political economy, which is anchored on mining (Cobbett 2014). Historically significant factors in the city’s rise as a financial centre were the establishment of the Johannesburg Stock Exchange, the clustering of major domestic banks, the growth of short-term money-markets and the establishment of building societies in the city (Cobbett 2014). Harrison and Zack (2012) stress the legacy of the mining sector in shaping the contours of Johannesburg’s service sector, especially of finance. They point out that, despite the transference in 1999 of the headquarters of Anglo-American to London, Johannesburg is the headquarters for at least seven enterprises in the global mining Top 100 and that the city “remains a prominent node within a global corporate network of mining firms” (Harrison and Zack 2012, p. 562). Across the mining sector as a whole, Surborg documents “considerable ownership power in Johannesburg” (2011, p. 112). In the global network of command and control of platinum, the city of Johannesburg accounts for at least one-fifth of international production (Surborg 2011, p. 97). In addition, mining companies assumed a critical role in an expanding chain of financial power with Anglo-American having significant equity stakes in major banks and insurance companies that are headquartered in Johannesburg (Harrison and Zack 2012).

It is evidenced therefore that Johannesburg’s flagship finance sector has, to a large extent, “evolved from the financial needs and power of mining” (Harrison and Zack 2012, p. 564). Several studies undertaken in the 1970s and 1980s demonstrated the concentration of corporate headquarter offices in Johannesburg and the associated critical financial management functions (Rogerson 1974, 1984; Cox and Rogerson 1985). Since the democratic transition in 1994, Johannesburg has continued its financial hegemony of the South African economy (Rogerson 1996) and affirmed its position as the leading city in southern Africa more broadly (Rogerson and Rogerson 2015). The city is the locus for 74% of national corporate headquarters and 55% of

total office space in South Africa. In an important contribution, Surborg draws attention to Johannesburg's "peculiar and perhaps dependent position in relation to other world cities, particularly London" (2011, p. 116). He maintains that Johannesburg functions in many respects as a satellite city to London, which accords it the status of 'a linking city' in the complex multipolar global network of finance (Surborg 2011; Rogerson and Rogerson 2015). According to Surborg (2011, pp. 129–130) "linking cities cannot be considered as being in sole control, but crucial in facilitating the extraction of surplus value" more especially by "facilitating the connections between capital and production". Johannesburg's role as linking city and basing point for global capital is explained as follows:

Johannesburg is part of the world city network, even if it is only a minor node. The city is the administrative centre that facilitates the efficient resource extraction for much of southern Africa. While considerable ownership over the resource industry is concentrated in Johannesburg, the city is also a node through which surplus is channelled to distant shareholders (Surborg 2011, p. 131).

At the heart of Johannesburg's present-day strength in finance and corporate decision-making is the city's position as the 'gateway' for international as well as local business for finance into the regional African hinterland. Research conducted on the reasons for foreign investors choosing Johannesburg as the location for their business operations underscores the significance of its gateway function and several related aspects of the business environment, most notably the city's attraction of an existing agglomeration of office headquarters with the corresponding strength in finance and other associated services (Rogerson 2009; Rogerson and Rogerson 2010). As Cobbett (2014) asserts, Johannesburg, as gateway to Africa, assumes the function of connecting neighbouring countries in Africa with global actors and networks. Likewise, Games (2012) draws attention to the strategic positioning of South Africa as a political gateway to Africa, focusing on the African Renaissance and the New Partnership for Africa's Development. Attention has turned recently to embrace the notion of South Africa as economic or business gateway to the continent as a whole, especially following the country's membership of BRICS (Games 2012). Arguably, national government views the city of Johannesburg as continental headquarters for companies doing business in Africa as well as the axis of emerging transnational financial networks across the continent (Cobbett 2014). Many of these enterprises, according to Cobbett (2014), are Islamic-based businesses and investment agencies using Johannesburg as a hub for product development and roll-out into Africa. Thus, as financial gateway Johannesburg takes on the critical role "as the nexus of control and linkage, organizing the capitalist economy of South Africa and the wider region" (Rogerson and Rogerson 2015, p. 350).

This said, while South Africa has the largest and best capitalised banks in Africa, has the continent's biggest stock exchange, is an established hub for private equity, and possibly enjoys the status of having Africa's best infrastructure, shifting debates around gateways are occurring as a result of new business and geopolitical considerations (Cobbett 2014; White and Kitimbo 2014). In particular, it has been suggested that in the narrative of 'Africa rising' and economic reform programmes,

“the continent has become more disaggregated in foreign investors’ minds” (Games 2012). As a consequence, foreign investors are seeking more than one gateway and thus are viewing South Africa (and by implication, Johannesburg) increasingly as an entry point to southern Africa only, rather than to the wider arena of sub-Saharan Africa (Games 2012, p. 2). Even for SADC countries, Johannesburg’s hegemonic role is under threat as Brazilian companies opt for Luanda as their preferred basing point for entry into Africa. Another factor leading to the creation of multiple gateways is thickening networks of airline connectivities across Africa. With Nairobi and Addis Ababa as emerging airline hubs, visitors no longer have to fly into Johannesburg in order to access other African destinations (White and Kitimbo 2014).

Several African cities, most notably Lagos and Nairobi, are now jostling with Johannesburg and seeking to position themselves as emerging gateways for Africa. Moreover, as South Africa yields its position as Africa’s premier economy, investors search for new entry points and access to the continent’s high growth markets (Cobbett 2014; White and Kitimbo 2014). Although Johannesburg can still boast the continent’s most advanced hub for financial services, other locations are emerging as competitors. The list of competitors includes Dubai, which is beginning to leverage its growing trade connections, competitive services and connectedness as assets for becoming an African platform for business. Indeed, with Johannesburg’s declining quality of utilities (especially electricity supply), rising corruption and continued high levels of crime, Dubai is potentially a very competitive gateway to Africa (White and Kitimbo 2014). Beyond external threats to Johannesburg’s gateway function (and, by implication, to tempering the continued growth of its financial service economy) are critical internal factors. South Africa’s prospects as economic gateway or springboard for investors are increasingly impacted by skills shortages, declining state efficiency, lack of policy transparency, economic mismanagement, and escalating corruption, which, collectively, are tarnishing the country’s—and correspondingly Johannesburg’s—position as gateway to Africa.

An analysis of Global Insight data was recently conducted by the HSRC (2014) across the seven administrative regions of the City of Johannesburg for the sectoral contribution to GVA. Table 6.6 shows that in 2011 the finance sector was calculated as contributing an estimated 29.6% to the total GVA across the City of Johannesburg as a whole. It emerged as the most important contributor across five of the seven administrative regions, the only exceptions being regions D (Soweto) and G (Deep South, Ennerdale and Orange Farm), in which community services is the largest sector (HSRC 2014, p. 21). Compared to the share of finance in the city as a whole, the regions A (Midrand and Diepsloot); B (Randburg and Rosebank); C (Roodepoort); and E (Sandton and Alexandra) are relatively over-represented in terms of contribution by finance to GVA. Correspondingly, the regions D (Soweto); F (Inner City and Southern Johannesburg); and G (Deep South, Ennerdale and Orange Farm) are relatively under-represented in the finance sector.

At a more fine-grained level, the changing geography of finance and corporate headquarters is dominated by the shift that has occurred from the Johannesburg inner city, the traditional hub of corporate headquarters and finance, to Sandton the new emerging financial capital of South Africa. Among others, Murray (2011)

Table 6.6 Sectoral contribution to GVA across the regions of Johannesburg

	A	B	C	D	E	F	G	Johannesburg
Agriculture	0.5	0.2	0.6	0.2	0.2	0.2	0.6	0.3
Mining	1.8	2.8	1.5	2.3	2.0	4.0	1.7	2.5
Manufacturing	15.1	11.7	13.9	9.6	13.7	12.5	12.8	13.0
Electricity	3.4	2.2	2.0	3.0	2.1	3.5	3.2	2.7
Construction	5.1	4.3	6.1	4.2	5.1	3.9	5.0	4.8
Trade	17.2	16.9	17.5	17.9	17.4	19.4	18.8	17.9
Transport	9.5	7.3	7.6	9.7	8.0	8.3	10.1	8.3
Finance	32.7	33.7	32.9	23.9	32.4	22.8	28.8	29.6
Community Services	14.7	20.9	17.9	29.2	19.2	25.5	19.0	21.0

Sources HSRC (2014) based on Global Insight data

traces the hollowing out of the historic inner city as the primary location of corporate enterprises from the 1980s as part of a saga of capital disinvestment and municipal neglect of the area. He records that as late as 1990 the Johannesburg inner city:

housed the headquarters of sixty-five of the hundred largest companies on the Johannesburg stock exchange, thirteen of South Africa's thirty largest corporates, six of the country's eight mining conglomerates and nine of its eighteen leading life insurance companies. In addition, the central city functioned as the national financial centre, serving as home to eleven of the leading sixteen banking institutions, the Johannesburg Stock Exchange, and the National Reserve Bank (Murray 2011, p. 87).

Post-1994, when Johannesburg was exposed to the competitive vagaries of the world economy it was impacted by the centrifugal pressures of globalisation and spatial fragmentation, which accelerated corporate flight from the inner city and the northward shift of the geographical axis of the finance sector (Murray 2011; Parnreiter et al. 2013). As Parnreiter et al. (2013) show, a spread of the financial headquarters of major corporates into other parts of Johannesburg occurred, including Rosebank, Midrand and new northern office spaces in the Bryanston, Sunninghill and Woodmead areas.

Amid worsening decay in the inner-city, the decision was taken in 2000 to relocate the Johannesburg Stock Exchange from the inner city to Sandton. This both confirmed Sandton's new status as Johannesburg's financial centre (Cobbett 2014), and simultaneously represented "the final event of the exodus of businesses away from the inner-city" (Parnreiter et al. 2013). For Murray, this "marked a significant turning point in the balance of power between the old Johannesburg financial district and the new Sandton business node" (2011, p. 99). The inner city became only one of several clusters of finance-related business areas within the extended metropolitan region of Johannesburg (Murray 2011, p. 88). This said, an examination of the changing geography of corporates in Johannesburg reveals that the inner city continues to hold on to certain 'old' economic sectors and domestic enterprises in the resource-based economy, as well as certain established banks.

New foreign investors coming into South Africa post-1994 sought out headquarter office locations in the spatially-distinctive “global city zone” of Sandton, often with signature ‘green buildings’ (Rogerson 2014a). The broad pattern is thus of Sandton and other northern office areas operating as the new globalised CBD for metropolitan Johannesburg, whereas the inner city holds on to a financial management function for certain long-established South African companies, mainly in the resource sector (Parnreiter et al. 2013).

6.3.2 *Tourism*

Tourism is a service sector of increasing significance for the economy of Johannesburg, although the contribution of tourism as an economic sector is largely hidden in the available official data about the service economy. Nevertheless, its impact goes far beyond the recorded data for ‘catering and accommodation’ (Rogerson and Rogerson 2015). For the past two decades Johannesburg has benefited immensely from the post-apartheid boom in tourism that occurred in South Africa following the country’s reintegration with the global tourism economy (Rogerson and Visser 2007). The city is a major beneficiary of the expansion of both international and domestic tourism since 1994 (Rogerson and Rogerson 2014). In terms of sectoral evolution, the trajectory of tourism development in Johannesburg has taken a different course to that of other major South African cities such as Cape Town, Durban and Port Elizabeth, which are long-established leisure destinations (Rogerson 2013; Rogerson and Rogerson 2014, 2017). Indeed, the city of Johannesburg is best understood as a ‘non-traditional’ urban tourism destination—in the 1990s the sector was identified as a potential source of new employment creation and economic vitality, with several interventions enacted to drive tourism expansion (Rogerson 2002; Rogerson and Visser 2007).

New product development has occurred to expand select competitive niches for Johannesburg as an urban tourism destination. Scope for growth exists, as argued in one recent analysis of the city’s evolving tourism economy, albeit that “this will take place within niche markets that leverage the position and strengths of Johannesburg” (Grant Thornton 2008, p. 86). Arguably, new tourism product development in Johannesburg focused upon maximising the city’s potential for business tourism (convention centres, conference promotion), new cultural and heritage tourism attractions (Newtown Cultural Precinct, Constitution Hill, the Apartheid Museum), sports stadia, and the role of Soweto in the political struggle as a focus for what has been styled variously as township, poverty or slum tourism (Rogerson 2008; Van der Merwe 2013; Frenzel et al. 2015; Frenzel 2016; Masilo and Van der Merwe 2016). In addition, the city has marketed one its biggest assets—its shopping facilities—as an African retailing mecca for cross-border shopper traders from proximate countries in southern Africa and beyond (Rogerson 2011). Much impetus for new product

innovation as well as tourism product upgrading derived from South Africa's hosting of the (now corruption tainted) FIFA 2010 Soccer World Cup during which Johannesburg, as the most significant host city, enjoyed the greatest boost in tourism from the event (Ferreira 2011; Rogerson 2013a, b, c). Looking forward, it is likely that the segment of meetings, incentives, conferences and exhibitions (MICE tourism) "will continue to be the dominant driver of the tourism sector" in the city (Grant Thornton 2008, p. 86).

By 2010, "Johannesburg accounted for an estimated 11.8% share of national tourist spending, just behind Cape Town, which emerged as an iconic international tourism destination after South Africa's re-entry into the global economy" (Rogerson and Rogerson 2015, p. 359). The city's rise as an urban tourism destination has been further strengthened and mutually reinforced through the supportive infrastructure provided by the establishment of clusters of high quality four and five star hotel accommodation. From the mid-1990s, Johannesburg experienced a restructuring and upgrading of the city's hotel sector with notable expansion occurring in upmarket hotel property developments. These quality hotels are particularly targeted to serve the needs of (long haul) international visitors to South Africa as well as upmarket business travellers, many of them from sub-Saharan Africa (Rogerson 2013a, b, c, 2014b). Self-serviced apartments are another element in the accommodation landscape for business travellers in Johannesburg (Greenberg and Rogerson 2015).

A broad picture of tourism in Johannesburg can be gleaned from analysing the data for local tourism trips and bednights available from the Global Insight data base. This information confirms Johannesburg's status as one of the leading destinations within the tourism space economy of South Africa. Between 2001 and 2012 the total number of tourism trips for Johannesburg is estimated to have expanded from 1.9 million to 3.2 million. Of this total, the largest share is trips to visit friends and relatives (VFR travel), mainly by domestic travellers, which is also the pattern nationally (Rogerson 2015a, b). As is shown on Fig. 6.3, VFR travel accounted for 41% of trips by 2012. The growth of Johannesburg as a destination for both leisure and business travel is noticeable. With the country's largest cluster of corporate headquarter offices and decision-making locations, Johannesburg is overwhelmingly South Africa's most significant business tourism destination (Rogerson and Rogerson 2014; Rogerson 2015c). For visitors from other countries in sub-Saharan Africa, Johannesburg is a major shopping destination, often nicknamed Africa's Dubai (Rogerson 2011). With tourism new product development taking place, the city's increasing popularity for purposes of leisure travel by groups of both international and domestic tourists is also significant.

Figure 6.4 shows patterns of bednights in Johannesburg as broken down between international and domestic visitors. It is evident that the city's traditional importance as a destination for domestic tourism is now matched by its importance for international travel (Rogerson and Rogerson 2014). In terms of international trips, the greatest element in the Johannesburg tourism economy is visitors from

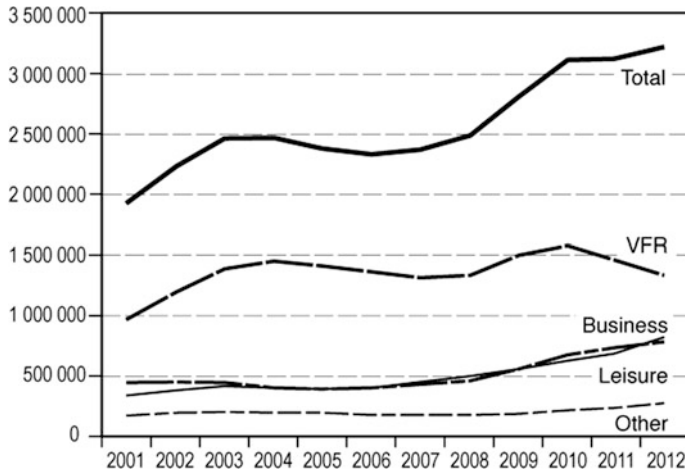


Fig. 6.3 Johannesburg tourism trips by purpose, 2001–2012

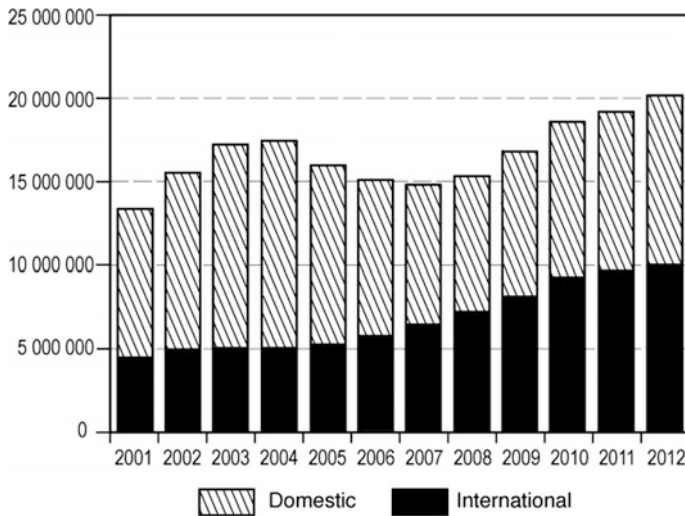


Fig. 6.4 Johannesburg tourism: Bednights by origin of visitor (2001–2012)

sub-Saharan Africa, cross-border shopper/traders in particular, mainly from Zimbabwe, Mozambique, Lesotho, Swaziland, Zambia and Malawi (Rogerson 2011). Long haul international tourists from Europe, the Americas, Asia or Australasia spend much shorter periods of time in Johannesburg compared to Cape Town. For many of these visitors, township or poverty tours around Soweto are an increasingly regular addition to tourist itineraries, with the product offerings of

Soweto diversifying to include even the adventure activity of bungee jumping (Rogerson 2008; McKay 2013; Frenzel et al. 2015).

Not surprisingly, the tourism economy exhibits a pattern of geographical differentiation across the city. The uneven spatial development of tourism can be analysed using Global Insight data concerning tourism trips, purpose of trip, origin of trip (domestic or international), and visitor spend. During 2011 it is estimated the city of Johannesburg was the destination for an estimated 3.04 million trips. Table 6.7 shows leading indicators for the Johannesburg tourism economy across the seven regions. Several points must be highlighted: In terms of both total trips and visitor spend, the two most significant regions are regions E, Sandton, and B, the Randburg–Rosebank area. The areas of Johannesburg which are least important for tourism trips and spend are the lower income, mainly black settlement areas of region D, Soweto and region G, the Deep South, Ennerdale and Orange Farm. A recent report for the City of Johannesburg commented on the underdevelopment of tourism in region G, stating that it was “significantly limited with regards to tourism related activities and products, with some tourism elements completely absent” (Grant Thornton 2008, p. 148). Furthermore, it was noted that accessibility “to the area is very limited and hospitality activities i.e. accommodation and formal catering and restaurants are basically non-existent” (Grant Thornton 2008, p. 148).

As differentiated by purpose of travel, regions E and B account collectively for 60.5% of leisure trips and 50.7% of business trips. Regions D and G once again record the lowest share of both leisure and business trips in Johannesburg. The dominance of Sandton and Rosebank for business tourism is inseparable from their roles as locations of business headquarters, the clustering of high quality hotels and, in the case of Sandton, the establishment of the convention centre (Rogerson 2002). By contrast, a markedly different pattern appears for visiting, friends and relatives (VFR) tourism. In this category Soweto accounts for 27% of the city’s VFR tourism, with region F, the Inner City and Southern Johannesburg the second most important. Region C, Roodepoort, is the least significant for VFR travel. Lastly, in terms of origin of tourists, the city’s two leading tourism nodes of Sandton and Rosebank are most important for international tourists whereas Soweto

Table 6.7 Leading tourism indicators: Relative share of each region for City of Johannesburg (2011)

	A	B	C	D	E	F	G
% Total trips	12.5	18.4	10.1	15.5	21.0	15.9	6.7
% Total spend	11.8	24.2	10.3	7.1	29.1	15.1	2.4
% Leisure	12.9	26.0	9.6	3.3	34.5	13.5	0.3
% Business	12.9	23.4	12.8	6.2	27.3	15.9	1.5
% VFR	12.5	11.7	8.5	27.0	11.5	15.8	12.9
% International	12.1	23.1	11.9	6.7	26.9	17.5	1.9
% Domestic	12.7	15.5	9.0	20.8	17.4	15.0	9.6

Source Author’s calculations based on Global Insight data

is the most significant destination for domestic travellers on account of the large flows of VFR travellers into the area (Rogerson and Rogerson 2016).

Tables 6.8 and 6.9 provide further detail of the contemporary geography of tourism in the city. A number of points can be highlighted. First, in relative significance of purpose of travel, the Sandton and Rosebank areas leisure and business tourism are the key drivers for the local tourism economy. By contrast, in the other five regions of Johannesburg the largest number of trips is accounted for by VFR travel—in the case of both regions G (Deep South, Ennerdale, Orange Farm) and D (Soweto), very high proportions of VFR tourists are recorded, reaching a share of 87% in the case of region G. The geography of VFR travel is thus distinctly different to that of leisure or business travel in the Johannesburg tourism economy (Rogerson and Rogerson 2016). Second, in terms of origin of trip, domestic tourism is larger in volume than international tourism, across the whole of Johannesburg. Comparing the regions to the city as a whole, it emerges that regions G and D are substantially over-represented in terms of domestic tourism, whereas B and E are flagged as most significant for international tourism. Overall, a close relationship is observable between the Sandton and Rosebank nodes as most significant for international, leisure and business tourism, whereas Soweto and the Deep South are dominated by domestic and VFR travel. Tourism in Soweto, the iconic ‘slum tourism’ destination for international tourists, is overwhelmingly dominated by domestic tourists.

Table 6.8 Tourism trips by purpose for each region (2011)

	A	B	C	D	E	F	G	Johannesburg
Leisure	25.4	34.6	23.4	5.2	40.3	20.7	0.9	23.5
Business	23.6	29.0	29.0	9.1	29.7	22.7	5.1	22.2
VFR	45.3	28.7	38.0	78.6	24.8	44.8	87.3	46.6
Other	5.7	7.7	9.6	7.1	5.2	11.8	6.7	7.7

Source Author’s calculations based on Global Insight data

Note Leading purpose of travel in each region is in bold

Table 6.9 Tourism trips by origin for each region (2011)

	A	B	C	D	E	F	G	Johannesburg
Domestic trips	63.4	52.7	55.6	83.8	51.7	58.6	89.3	62.2
International trips	36.6	47.3	44.4	16.2	48.3	41.4	10.7	37.8

Source Author’s calculations based on Global Insight data

6.3.3 *Creative Industries*

Creativity is touted as the fuel of the modern global economy (Gibson 2014). As Visser states: “Much of the excitement surrounding the creative industries is to be found in their potential to diversify economies and enable countries to leapfrog into a dynamic sector of the global economy” (2014, p. 16). The concept of ‘creative industries’ is, however, a relatively recent category in academic, policy and industry discourse (Cunningham 2002; Flew 2003; Turok 2003; Cunningham 2005; Flew and Cunningham 2010; Scott 2014; Jones et al. 2016; Yum 2016; Lampel and Germain 2016). It is suggested that its neo-liberal origins can be found in Britain with the Blair Labour government’s establishment of a Creative Industries Task Force (CITF) after its electoral victory in 1997 (Flew 2014). The creative industries policy discourse has been embraced in a number of other parts of the world and at a global scale the United Nations Conference on Trade, Aid and Development (UNCTAD) “has become an enthusiastic proponent of the creative industries as a new engine of growth in developing countries” (Flew and Cunningham 2010, p. 114). From its roots in the global North, the notion of creative industries has diffused and been taken up in Asia, Latin America, the Caribbean, and most recently in Africa (Flew 2014).

In the 1998 Creative Industries Mapping Documents, prepared by then newly constituted UK Department of Culture, Media and Sport, creative industries were conceptualised as activities that have their origin in individual creativity, skill and talent, and that have the potential for wealth and job creation through generation and exploitation of intellectual property (Rogerson 2006a). Since the late 1990s, however, definitional disputes have surrounded the term (Garnham 2005; Galloway and Dunlop 2007; Cunningham 2008; Gibson 2014; Gong and Hassink 2016). As Flew states:

In some instances, it is essentially a restatement of the case for supporting the arts and culture, couched in economic language as preferred by funding agencies. For others, it marks the convergence of the arts, media, design and ICT sectors, while some associate it with the tsunami of cultural democratisation associated with networked social media and DIY online publishing. (2014, p. 11)

UNCTAD (2008) offers an extended definition of creative industries, proposing that creative industries: are engaged *inter alia* in the creation, production and distribution of goods and services that use creativity and intellectual capital as primary inputs; constitute a suite of knowledge-based activities focused on but not limited to the arts, or comprise tangible products and intangible intellectual artistic services with creative content and economic value; and are at the crossroads between the artistic, services and industrial sectors. Overall, the interconnected nature of creative industries is stressed, with nine sectors identified including design, publishing, visual arts, creative services (such as architecture, advertising), cultural sites, traditional arts and crafts, performing arts, audio-visual, and new media (UNCTAD 2008).

Turok observes that global research interest in the development of creative industries “has burgeoned in recent years” (2003, p. 549). Arguably, creative industries have recently become “a major new consideration in urban economics and city politics” (Brecknock 2004, p. 1). Flew maintains that creative industries “tend to cluster in cities, and many of the world’s leading cities are also global leaders in the creative industries” (2014, p. 12). Vibrant policy debates surround issues of creativity and creative clusters as well as the role of creative industries in job creation, urban regeneration and economic value-added (see, for example, Drake 2003; Flew 2003; Turok 2003; Brecknock 2004; Pratt 2004; Garnham 2005; Wu 2005; Scott 2006; Lazzeretti et al. 2008; Potts and Cunningham 2008; Cunningham and Potts 2015; Bialic-Davedra et al. 2016; Gregory and Rogerson 2016). Scott highlights a surging new creative economy and rising levels of optimism concerning ‘cultural-industrial districts’ as “drivers of local economic development at selected locations, above all in large cosmopolitan cities, but also in many other kinds of geographical contexts” (2004, p. 463). Several policy initiatives designed to nurture creative industries have been launched in cities across Europe, North America and Australasia (Flew and Cunningham 2010). Among others, Evans (2005) points out that across the international experience creative industries are included now in a distinguished list of ‘leading edge’ or ‘growth sectors’ such as financial services, ICT or high technology to denote the strength and potential of local economies.

In terms of policy response, the City of Johannesburg was relatively slow to acknowledge the potential of creative industries, especially compared to Cape Town (Visser 2014, p. 30). At national level the need to promote ‘cultural industries’ for purposes of economic development had been flagged during the late 1990s by the (former) Department of Arts, Culture, Science and Technology. The category of cultural industries—similar to categorisation of creative industries—was defined as incorporating music; the visual arts; the publishing sector (based on creative writing of literature); the audio-visual and media sector; performing arts; the craft sector (including traditional African art, designer goods and souvenirs); cultural tourism; and, the cultural heritage sector. The Economic Development Unit of the City of Johannesburg recognised the role and potential of creative industries in planning for *Joburg 2030*, the city’s blueprint for economic development. Belatedly, during 2005, alongside new support programmes for business process outsourcing call centres, ICT, freight and logistics, and sport, it was announced that Johannesburg’s Economic Development Unit would also actively support the sector of ‘creative industries’. A Sector Development Programme for creative industries was prepared, which centred around sector clustering and support aimed at the removal of constraints and inefficiencies and the harnessing of opportunities. The programme was anchored on the foundations provided by the creative industries sector scoping study for Johannesburg (undertaken in 2003), which followed on from national investigations of the sector (City of Johannesburg 2003). The major focus of the scoping investigation was the segments of TV and film; music; performing arts; visual arts; crafts; and design. The study research highlighted that, as a

whole, the “Johannesburg creative industries sector dominates the national profile” (City of Johannesburg 2003, p. 42).

During 2008 a report produced for the Economic Development Department reiterated the relevance of creative industries for Johannesburg’s future economic development (Grant Thornton 2008). This report highlighted once more the key constraints that need to be addressed for creative enterprise development. These include limited funding; high costs of telecommunications; crime and security; poor public transport; absence of collaboration; and, importantly, a perceived lack of support from government, which prioritised sport over creative industries. One reason for the meagre levels of business support by government is the limited transformation of creative industries, as the vast majority of creative entrepreneurs running SMMEs are whites (Minty 2005; Grant Thornton 2008). A marked racial divide is observed between the creative spaces inhabited of white entrepreneurs and the black-owned creative enterprises concentrated in Alexandra, the Johannesburg CBD and Soweto (especially Diepkloof/Meadowlands) (Grant Thornton 2008, p. 148). Beyond the example of Newtown, dedicated initiatives for developing urban spaces that “are attractive to the creative industries and creative classes” (Visser 2014, p. 30) are almost entirely absent from planning interventions by the City of Johannesburg. Significantly, the most dynamic inner city cluster of creative enterprises—at Maboneng precinct—is a private sector driven initiative (Gregory 2016b).

Notwithstanding a massive burst of international research on creative industries and clear recognition of its potential for urban economic development programming, in South Africa local urban scholars have accorded only minimal attention to understanding the sector in Johannesburg (Gregory 2016a). Cape Town has attracted some research interest during the past decade, (Booyens 2012; Booyens et al. 2013; Booyens and Rogerson 2015) while only a small number of scholarly investigations have been undertaken on creative industries in Johannesburg. These investigations have variously interrogated aspects of Johannesburg’s rise as the fashion capital of Africa (Rogerson 2006b); the nexus of creativity and urban tourism, especially of ‘creative tourism’ (Rogerson 2006a); and the unravelling of the dynamics and spatial organisation of the film and television economy (Visser 2014).

The most recent, and also the most in-depth and detailed analysis of the contemporary economic geography of creative industries in Johannesburg, is the work of Gregory (2016a). Applying the eight categories of UNCTAD (2008) to unpacking creative industries in Johannesburg, the audit conducted by Gregory (2016a) revealed a total of (at least) 2325 creative businesses in the city, with the largest numbers of enterprises being in creative services; audio-visual; visual arts; and publishing and print media. The locational preferences of creative enterprises are an important focus in creative industries scholarship (Lazzeretti et al. 2008; Gong and Hassink 2016). Although creative enterprises can be found across all regions of Johannesburg, in line with international experience, marked geographical concentrations of creative industries are evidenced (Gregory 2016a). The largest numbers of creative industries are to be found in the northern suburbs generally,

and in the Sandton area (and surrounds) and Randburg, in particular. Other notable clusters exist in the western parts of the city, the inner city, and Midrand. Smaller clusters of creative industries occur in the southern suburbs and Soweto. The area of Johannesburg which exhibits only minimal activity for creative industries is region G, encompassing the Deep South, Lenasia, Ennerdale and Orange Farm. A further critical finding from Gregory's (2016a) work is that the different sub-categories of creative industries exhibit different geographies across the city. For example, the mass of audio-visual enterprises is clustered in the north-west suburbs close to Randburg and the headquarters of Multichoice; new media enterprises and design businesses focus primarily on Sandton and Randburg; and the large component of creative services are grouped mainly in Sandton, Randburg and the northern suburbs. In contrast, the axis of the small performing arts economy occurs in Johannesburg central city, with Braamfontein and the Maboneng precinct emerging as vital spaces for the consumption of visual arts (Gregory 2016a). The development of the Maboneng precinct is of particular interest as the growth of creative industries in this part of inner city Johannesburg is an asset for the renewal of leisure tourism in the inner city (Murtagh 2015; Gregory 2016b).

6.4 Conclusion

This chapter has attempted to unravel the shifting profile and aspects of the challenges facing the (formal) tertiary sector of Gauteng. It was revealed that at both national and provincial scales of analysis, the tertiary sector exhibits polarization tendencies. Over the past two decades the City of Johannesburg has continued to advance as the apex of Gauteng's tertiary economy. The diverse set of activities that are encompassed in Johannesburg's tertiary economy constitute vital foci of economic dynamism and are critical drivers for local economic growth and job creation. Despite the significant role of the services economy for Johannesburg and Gauteng, it is remarkable that so little academic attention has been paid to understanding its workings, challenges and emerging geographies. It is within this essential investigatory void about services that this chapter sought to excavate aspects of the recent economic geography of three segments of the services economy: finance and allied activities associated with Johannesburg's role as corporate command centre; the growing sector of tourism' and the emerging economy of creative industries.

This analysis reveals to policy makers that a 'one-size-fits-all' approach to policy development cannot be applied to the service economy because of its heterogeneous character. The three selected segments of the services economy exhibit different trajectories, different challenges and different geographies. The critical role of services for the future economic development of Gauteng, and for Johannesburg in particular, necessitates an improvement of our knowledge base of the service economy and a major breakthrough. Arguably, urban scholars and economic geographers have an extensive research agenda to undertake in order to facilitate

evidence-based policy making in Johannesburg around the tertiary sector. Another vital academic challenge, however, is to move the research horizon beyond Johannesburg and to explore more fully the dynamics and challenges that confront the tertiary economy in other parts of Gauteng, in particular in the under-researched Ekurhuleni and Tshwane metropolitan areas.

Acknowledgements Wendy Job and Samkelisiwe Khanyile are thanked for preparing the accompanying figures and Koech Cheruiyot for data inputs. The useful comments of two referees on an earlier version of this chapter are acknowledged.

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Chapter 7

Locating the Informal Sector in the Gauteng City-Region and Beyond

Sally Peberdy

7.1 Introduction

The informal sector plays an important role in the lives and livelihoods of most residents of South Africa and Gauteng, providing income to individuals and households through business opportunities and employment. At the same time, it is a site of consumption through the provision of services and goods. Nationally, the informal sector contributed 5.9% of GDP in 2013, with own final use production contributing a further 5.1% (Statistics South Africa (StatsSA) 2014a, p. 11). This chapter focuses on the informal-sector businesses that are not registered for income tax or value-added tax (VAT) and have less than five employees (StatsSA 2014b).¹

Although some attention has been paid to the informal economy in South Africa, as Rogan and Skinner (2016) note, little attention has been paid to spatial aspects (whether at provincial, or municipal levels, or settlement type), industry, or gender. This chapter explores the economic geography of entrepreneurship and employment in the informal sector of the Gauteng City-Region (GCR). The chapter starts with a brief overview of the policy context, examining how the informal sector is imagined by South African policymakers. The structure of the informal sector in Gauteng is then outlined and placed in international and national contexts. The chapter then looks in more detail at the economic geography of the informal sector of the GCR. Starting with informal-sector entrepreneurship, the chapter explores its

¹This chapter does not engage with the wider informal economy, which provides livelihoods to residents through agriculture; informal, or precarious, employment in the formal sector and private households; or, through informally rented housing.

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spatial distribution, what businesses do and where different types of business are located, and where businesses source supplies, including the links between the formal and informal economies, sources of start-up capital, growth and incomes.

The chapter first draws on data from the Gauteng City-Region Observatory (GCRO) Quality of Life (QoL) 2015 survey. The QoL 2015 survey interviewed a representative sample of 30,002 residents in Gauteng at their place of residence (GCRO 2015a). Among these were 1575 informal-sector and 849 formal-sector business owners. Second, it uses data from a GCRO 2014 survey of 1567 international migrant and South African informal-sector entrepreneurs, interviewed at their place of business at selected urban areas and sites in Gauteng (GCRO 2014a).² Third, it draws on a GCRO 2014 survey of 1,270 informal-sector cross-border traders who travel to Gauteng to buy goods for their informal businesses in their home countries. These interviews took place in Johannesburg (GCRO 2014b).³ The chapter also draws on StatsSA's 2013 Survey of Employers and the Self Employed (SESE) (StatsSA 2014b).⁴

7.2 South African Imaginaries of the Informal Sector

Traditional approaches to the informal sector tend to emphasize its difference and separation from the formal sector (Chen 2012; Vanek et al. 2014; Rogan and Skinner 2016). The informal sector is often described as the 'second economy', running in parallel with the formal economy, but not in tandem—a dual economy (Hart 1973). It is usually characterized as a survivalist sector of last resort, where people fleeing economic recession and unemployment seek income-earning opportunities (Chen 2012; DTI 2012; Skinner 2016). It is also seen, particularly by legalists, as standing outside regulatory frameworks and a place to escape what are perceived to be onerous tax, labour and business legislations (De Soto 1989). Political economists or structuralists do see links between the formal and informal sectors. They suggest that the informal sector is a place where goods are produced for the formal sector because it can avoid complying with labour and other regulations (Castells and Portes 1989; Chen 2012; Skinner 2016). With the exception of political economists, other theoretical approaches make little of links between the

²The survey was undertaken with the African Centre for Cities (ACC) and the Southern African Migration Programme (SAMP) and was funded by the GCRO and the International Development Research Centre (IDRC). Some 930 international migrant and 637 South African entrepreneurs participated. Interviews were undertaken in Johannesburg (941), Pretoria (218), Ekurhuleni (217), Emfuleni (141), and Randfontein (50) at selected sites where informal-sector entrepreneurship was known to take place. Interviewees were randomly chosen using intervals.

³The survey was undertaken in conjunction with the ACC, SAMP, and the University of Eduardo Mondlane and was funded by the GCRO and the IDRC. Cross-border traders were interviewed at transport nodes, shopping centres and places of accommodation in Johannesburg.

⁴Gauteng showed the lowest response rate of any province in the SESE 2013 survey—62.5% compared to the national figure of 81.2% (StatsSA 2014b, p. 20).

informal and formal sectors or consider that some informal-sector businesses are more than survivalist enterprises (Chen 2012). Most approaches advocate the formalisation and regularisation of informal-sector businesses.

In South Africa, the informal sector has moved in and out of the vision of national economic policy. In the immediate post-1994 years there was apparent inclusion of the informal sector through recognition of small, medium and micro enterprises (SMMEs) in the National Small Business Act of 1996 (Rogerson 2015, p. 230). However, informal sector enterprises were largely overlooked in the application of the Act (Rogerson 2004, 2015, 2016). In 2003, then President Thabo Mbeki, echoing the dualist school which keeps the informal and formal sectors firmly separate, revived interest by initiating a debate about the roles of the first and second economies (Rogerson 2007). For the African National Congress (ANC), the second economy was a “mainly informal, marginalised, unskilled economy, populated by the unemployed and those unemployable in the formal sector” (ANC 2004, p. 7, cited in Rogerson 2015, p. 231). In 2006 the Department of Trade and Industry (DTI) set out an Integrated Small Business Development Strategy (ISBDS) (Rogerson 2015). The emphasis of the strategy for informal or second economy businesses was to encourage formalisation and then growth (Rogerson 2016).

In 2011, the National Planning Commission (NPC) published the *National Development Plan Vision 2030* (NDP) to provide a guide to economic and social development as well as strategies to reduce inequality in the country. The NDP contends that SMMEs have the capacity to generate the majority of new jobs through public and private procurement, improved access to debt and equity finance, a simplified regulatory environment, and support services (NPC 2011). However, as Fourie (2016) observes, the NDP pays virtually no attention to the informal sector in its analysis of the economy and the employment possibilities of the SMME sector. In 2012, the DTI re-visited the informal economy drawing up a National Informal Business Development Strategy (NIBDS) to bring the informal economy into the “economic mainstream” (DTI 2013, p. 5). So again, the focus was on formalising informal enterprises. And again, informal sector enterprises were seen as standing outside the mainstream economy. Furthermore, as Rogerson (2016) observes, the strategy centred on the retail sector, virtually ignoring manufacturing, construction and tourism activities in the informal sector.

A National Informal Business Upliftment Strategy (NIBUS) was launched in 2014 (Rogerson 2015). Unlike its predecessors, it recognised that informal economic activities extend beyond the retail sector to manufacturing, services, construction, maintenance, agriculture and tourism (Rogerson 2015). Again, the aim was to develop informal-sector businesses to the point that they can formalise. The spatial focus of NIBUS was on businesses in townships, other economically-struggling urban spaces, and rural areas. The creation of the Informal Business Upliftment Facility (IBUF) followed the development of NIBUS (Rogerson 2015). IBUF is intended to provide financial support to small businesses to grow, formalise and create employment. Notwithstanding these seemingly inclusive approaches to the informal sector, the proposed Licencing of Business Bill, tabled in 2013, contradicts the aims of the NDP and NIBUS. The Bill, if

retained in its current form, and if passed, would require every business to register and get a licence from the local authority (Rogerson 2015, p. 236). It reflects concerns about the size of the informal sector, the perceived lack of regulation, the participation of non-nationals in the SMME sector, and is an attempt to bring the sector under regulatory control. Given capacity constraints in municipalities, the bill was returned for revision.

The emphasis on growing small businesses (including those in the informal sector) in townships is echoed in provincial, metro and municipal economic development policies (see Chap. 9 in this volume). The economic policies of Gauteng, Johannesburg, Tshwane, and Ekurhuleni, developed in the 2010s, all express a focus on developing township economies.⁵ The language is of ‘modernisation’ and ‘re-industrialisation’, again with an emphasis on growing informal-sector businesses so they can be formalised (Gauteng Provincial Government (GPG) 2016a, b; Gauteng Department of Economic Development (GDED) 2016). Provincial and municipal economic development policies also encourage the movement of formal businesses into townships. In the retail sector this has included the development of shopping malls. Policies also emphasise the need to re-industrialise township economies. While little industry was allowed to grow within townships in the apartheid years, some residual industrial development on the edges of former homeland areas is evident in places like Babelegi and Ekangala (Tshwane). The policies do not mention the incorporation or development of informal-sector manufacturers.

Provincial policymakers, like their national counterparts, also see the informal sector as separate from the formal, and a place that absorbs the unemployed. The GDED articulated this perspective saying, “[w]hen working class people lose their jobs from formal employment, the informal sector remains an alternative source of employment” (GDED 2016, p. 6; see also DTI 2008). Notwithstanding this view, the provincial government has taken a step away from national policy approaches, towards recognition of the informal sector and its potential to create productive links with the formal sector. Ostensibly in alignment with NIBUS, the province has developed the Gauteng Informal Business Upliftment Strategy (GIBUS). GIBUS takes a more positive approach than NIBUS. The aim of GIBUS is to “ensure that the sector is provided with financial and non-financial support as well as proper trading facilities for sustainability” (GDED 2016, p. 6) As in all other policies, the informal sector is seen as standing on the outside or edges of the provincial economy, as the measures introduced are to enable “micro businesses to graduate into the mainstream economy” (GDED 2016, p. 6). Again formalisation is seen as the way forward.

National, provincial and municipal policies, directly or indirectly, imply that informal-sector businesses and employees stand outside the regulatory framework

⁵It is unclear whether these policies will be pursued in Johannesburg, Tshwane and Ekurhuleni following the 2016 local government elections that saw changes in government from the African National Congress (ANC) to the Democratic Alliance (DA) in the first two metros.

and separate from the formal sector. When it is seen as engaging with the formal sector, the informal is seen to undercut formal sector businesses by taking advantage of standing outside the regulatory framework. Yet, this chapter shows that informal-sector enterprises often do have to comply with government regulatory frameworks. And, informal-sector entrepreneurship and employment have strong links to the formal sector. Those who perceive informal-sector businesses as small and survivalist also imply a spatial isolationism, where one person desperate for an income-earning opportunity sets up a small business to earn that income to survive, but has little contact with the state, and other businesses or places, only with their customers. As Skinner (2016) suggests, the heterogeneity of the informal sector in terms of activity must be addressed as the needs of different parts of the sector vary. Similarly, they may require different policy responses, and not just regularisation and formalisation.

7.3 Situating Gauteng's Informal Sector

Internationally, there are wide variations in the contributions of the informal sector to non-agricultural employment (Vanek et al. 2014) (Table 7.1). The informal sector in South Africa is smaller than in most countries in sub-Saharan Africa, and has a different structure (Table 7.2). In South Africa in 2014, employment in the informal sector, including 1-person firms, employers, paid employees and unpaid workers, contributed 17% to total employment (including agriculture). It provided work to over 2.5 million people (Table 7.2). However, as Rogan and Skinner (2016) observe, even though the informal economy is proportionally smaller in size, in comparison to most African and other comparable countries, it is still a significant source of livelihoods for South African individuals and households (see also Cichello and Rogan 2016).

Table 7.1 Contribution of informal-sector employment to non-agricultural employment (%)

Region	Contribution of informal-sector employment to non-agricultural employment
Sub-Saharan Africa	66
South Asia	82
East and South-east Asia (excluding China)	65
Latin America and Caribbean	51
Middle East and North Africa	45
China ^a	33
Eastern Europe and Central Asia	10

Source Vanek et al. (2014, p. 8)

Note ^aestimate based on six cities (Fuzhou, Guangzhou, Shanghai, Shenyang, Wuhan and Xi-an)

Table 7.2 Contribution of the informal sector to total employment in South Africa, 2014

Informal self-employment		Employment in the informal sector		Total informal sector
Employers	Own-account/1-person firms	Paid informal employees (paid)	Unpaid workers	
313,012	1,118,091	1,055,708	41,221	2,528,032
As a percentage of total employment (including agricultural)				
2.05 (0.12)	7.33 (0.22)	6.92 (0.21)	0.27 (0.04)	16.58 (0.31)

Source Reproduced from Rogan and Skinner (2016, p. 5)

Note standard deviations are shown in brackets

The proportion of people owning non-VAT registered businesses is not even across provinces (StatsSA 2014b). In 2013, the SESE found around 1,517,000 people ran informal-sector businesses in South Africa, of whom almost a third (30% or 455,000 people) did so in Gauteng (StatsSA 2014b, p. 4). This contribution may reflect the relative size of the population of the province as well as its larger economy. Thus, in 2013, although 5% of the working age population of Gauteng ran an informal-sector business, this proportion was exceeded in Mpumalanga (6%) and Limpopo (6%) (see Table 7.3). The QoL 2015 survey found 5.2% of the adult population of Gauteng owned a business in the informal sector and 2.8% a business in the formal sector (GCRO 2015a).

Although some people, including South African policymakers and others who ascribe to the dualist approach, think that the informal sector absorbs labour during times of economic recession and shrinking formal economies, South African and provincial data suggests otherwise (Burger and Fourie 2016; Rogan and Skinner 2016). The SESE 2013 shows a decline in participation in the sector during the recession of 2008/9 (Table 7.3). Nationally, and provincially, the proportion of the working-age population running an informal-sector business fell between 2005 and

Table 7.3 Provincial proportions of working-age population running informal-sector businesses, 2005, 2009, 2013 (%)

	2005	2009	2013
Gauteng	6.2	3.3	5.0
Western Cape	2.8	2.1	2.2
Eastern Cape	1.7	1.2	1.6
Northern Cape	1.7	1.2	1.6
Free State	5.8	3.3	3.3
KwaZulu-Natal	5.6	3.8	4.7
North West	5.8	3.1	3.1
Mpumalanga	6.5	5.1	6.1
Limpopo	8.0	4.8	6.3
South Africa	5.6	3.5	4.3

Source StatsSA (2014b, p. 7)

Fourie (2016) has found anomalies in the SESE 2001 data, including a likely overestimation of the size of the informal economy, hence the SESE 2001 has not been used here

2013 (Table 7.3). Similarly, there appears to have been shrinkage in the business sector in 2014 with declining growth in the national and provincial economies. The GCRO QoL surveys found the proportion of business owners declined from 11% in the 2011 and 2013 QoL surveys, to 8% in 2015, although the proportion (65%) of informal-sector entrepreneurs remained consistent (GCRO 2015a). So, it seems that recession does not lead to increased participation in the informal economy.

7.4 Economic Geography of Informal-Sector Businesses in the GCR

Reflecting population group distribution in the province, the QoL 2015 survey found that informal-sector business ownership in Gauteng was dominated by black Africans (80% of all informal-sector entrepreneurs) (GCRO 2015a).⁶ White (15%), Indian/Asian (4%) and coloured (2%) entrepreneurs made up the remainder. Black African entrepreneurs (73%) were more likely to operate their business in the informal sector than any other population group (compared to 59% of coloured, 45% of white, and 42% of Indian/Asian entrepreneurs) (GCRO 2015a). Women entrepreneurs (68%) were more likely than men (63%) to operate a business in the informal sector, although women were outnumbered by men (57%) in the sector (GCRO 2015a). The majority of entrepreneurs in the informal sector were aged between 25 and 55 years (71%) (GCRO 2015a). In the QoL 2015 survey, only 2% of entrepreneurs in the informal sector had no education, while 13% had only primary education. A further third had incomplete secondary education while 30% had completed secondary school. Some 20% had post-secondary education of some kind (GCRO 2015a).

The participation of international migrants in the informal entrepreneurial space has been contentious in South Africa and the province (Peberdy 2016a, b). They are frequently the target of sometimes deadly xenophobic attacks. They are accused of taking over and monopolising economic spaces, particularly in townships (Peberdy 2016a). In the QoL 2015 survey, international migrants comprised 16% of informal sector entrepreneurs and 12% of formal sector entrepreneurs (GCRO 2015a). The remaining entrepreneurs in the informal sector had either been born in Gauteng (57%) or had moved to the province from elsewhere in South Africa (27%). International migrant entrepreneurs are, however, more likely (73%) than their Gauteng-born (63%) or internal migrant (66%) counterparts to operate in the informal sector (GCRO 2015a). International migrants are slightly over represented among business owners as they comprised 7% of respondents in the QoL 2015 survey, but they can in no way be said to dominate the informal sector of the province.

⁶The population group categories used by StatsSA are used in this chapter.

7.4.1 What Informal-Sector Businesses Do

The sectors in which informal-sector businesses in South Africa operate differ in some ways from other countries on the continent and further afield (StatsSA 2014b; Grabrucker et al. 2016). In particular, participation in manufacturing is much higher in other parts of sub-Saharan Africa than in South Africa (Vanek et al. 2014, p. 13; StatsSA 2014b, p. 10). The QoL 2015 survey used the Standard Industrial Classification (SIC) system (7th edition) to classify the businesses of participants (StatsSA 2015a). Although it is a slightly different system than used in the SESE 2013, comparison of national data from the SESE 2013 and provincial data from the QoL 2015 survey shows some differences in the national and provincial profiles of informal-sector businesses. In particular, there are differences in the proportions of informal-sector entrepreneurs involved in agriculture (0.7% nationally and 1.5% in Gauteng), construction (10.7% nationally and 5.9% in Gauteng), trade (54.4% nationally and 47.4% in Gauteng), transport (6.1% nationally and 3.6% in Gauteng) and community and social services (13.1% nationally and 3.5% in Gauteng) (StatsSA 2014b, p. 10; GCRO 2015a).

The QoL 2015 survey also found that although informal-sector and formal-sector entrepreneurs operated in the same overall economic space of the GCR, their sectoral profiles were different (Table 7.4). Notable were the higher proportions of informal-sector entrepreneurs in the wholesale and retail trades as well as services, and lower proportions in sectors allied to professional qualifications and construction. Among informal-sector entrepreneurs, the category of wholesale and retail trade was dominated by retailers (82%), particularly those selling food. The distributions of businesses and concomitant skills in the informal sector, shown in Table 7.5, suggests possibilities for the development of informal-sector businesses and township economies.

Table 7.4 Types of informal-sector and formal-sector businesses in Gauteng, 2015 (%)

	Informal sector	Formal sector
Wholesale and retail trade; repair of motor vehicles and motorcycles	47.4	27.5
Accommodation and food service activities	11.8	9.5
Other service activities	9.4	5.7
Manufacturing	7.2	5.7
Information, financial, real estate, professional, scientific and administrative	7.1	22.4
Construction	5.9	10.1
Transportation and storage	3.6	6.5
Education, human health and social work	3.5	7.9
Agriculture, forestry and fishing	2.2	1.5
Arts, entertainment and recreation	1.5	3.0
Other	0.6	0.2

Source GCRO (2015a)

Table 7.5 Types of informal-sector activity in Gauteng, 2015 (%)

Wholesale and retail trade	Retail food and beverages in stores, stalls and markets	64.8
	Retail non-food items in stores, stalls and markets	19.3
	Wholesale	2.5
	Repair and sale of motor vehicles and parts	13.2
Accommodation and food service activities	Beverages	55.1
	Restaurants and takeaways	30.0
	Event management	14.0
	Accommodation	1.2
Service activities	Hairdressers, barbers and beauticians	74.1
	Repair household and personal goods	12.5
	Repair computers, phones and electronics	9.4
	Other services	4.3
Manufacture and make goods	Clothes and leather goods	36.2
	Metal products/welding	23.4
	Food	19.1
	Furniture	13.8
	Other	7.5

Source GCRO (2015a)

7.4.2 Types of Businesses and Their Spatial Distribution

Informal-sector entrepreneurial activities are not distributed equally across the province (Figs. 7.1 and 7.2). The differences between the proportions of entrepreneurs in the informal and formal sectors of municipalities in the province are likely to reflect the penetration (or lack of it) of the formal sector, and the size and the prevalence of different types of settlements. Informal-sector entrepreneurs are concentrated in former black African, coloured and Indian townships and the central business districts of the GCR (Fig. 7.2). Formal-sector businesses are also found in these spaces, but are more likely to occupy spaces in formerly white areas and areas zoned for business and manufacturing (Fig. 7.2).

The informal sector plays an important role in providing goods and services to residents close to their homes (Peberdy 2015). However, Fig. 7.3 shows that services needed by small businesses, such as banking and internet services are less available, and they are likely to be even less so in areas where informal-sector businesses operate. Business services are even less likely to be in walking distance of entrepreneurs and residents, considering that many informal sector entrepreneurs operate from, or close to, home.

There are not stark concentrations by type of business in specific places in the province. However, Figs. 7.4, 7.5, 7.6 and 7.7, showing the locations of informal-sector wholesale and retail traders, manufacturers and people providing

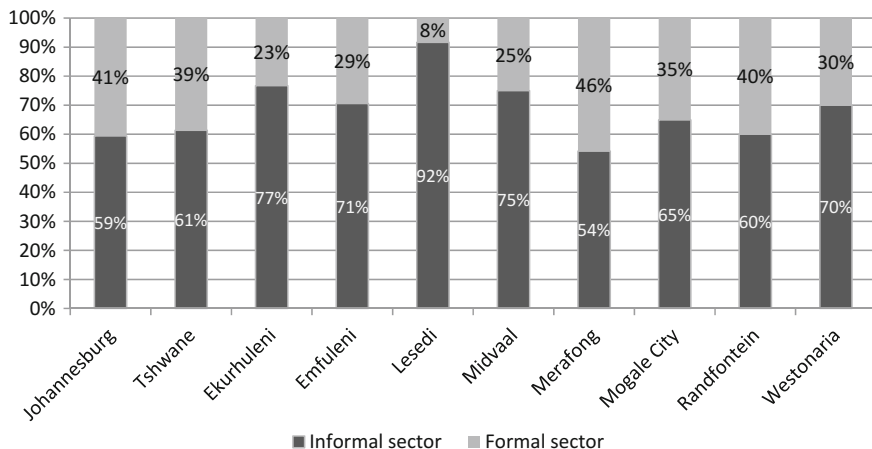


Fig. 7.1 Informal-sector and formal-sector entrepreneurs by municipality in Gauteng, 2015. *Source* GCRO (2015a)

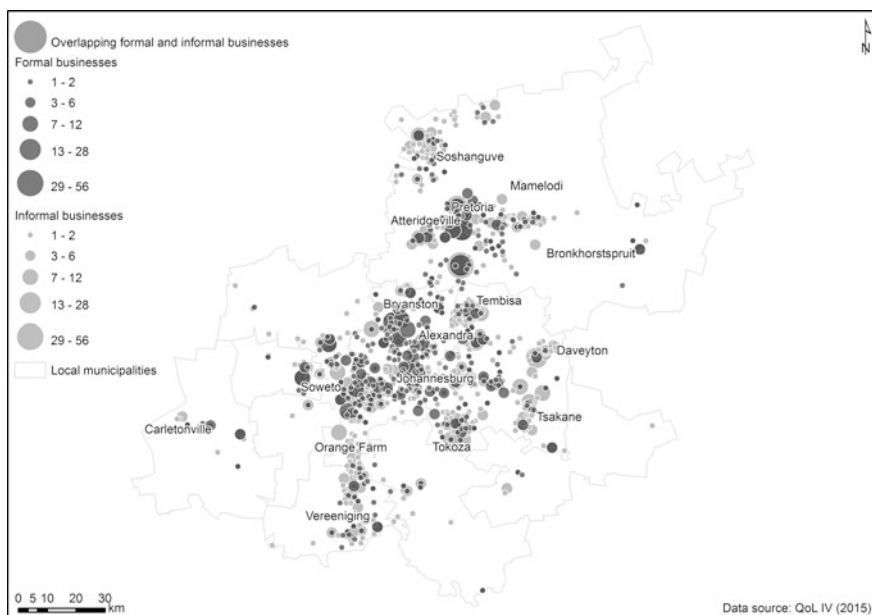


Fig. 7.2 Location of informal-sector and formal-sector businesses in Gauteng, 2015. *Source* GCRO (2015a)

professional, financial, administrative and creative services, demonstrate that some businesses do concentrate together. In some cases, this could lead to overtrading, but in others it could lead to businesses taking advantage of sectoral concentrations.

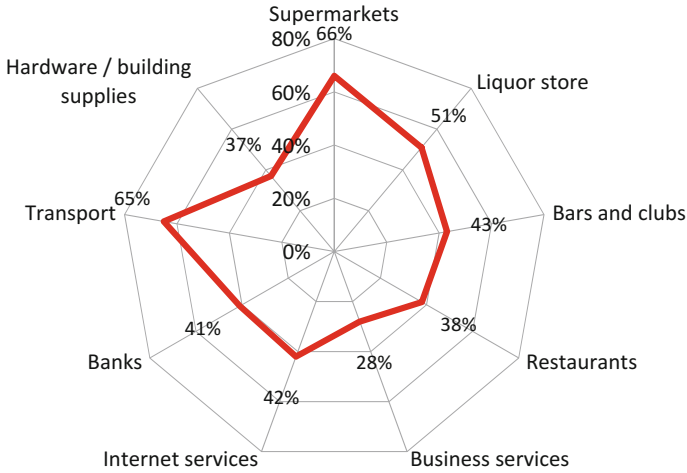


Fig. 7.3 Services within 750 metres of residents’ homes in Gauteng, 2015. Source GCRO (2015a)

Figure 7.4 shows the concentration of informal-sector businesses in the wholesale and retail trade in townships. However, it also shows that there are spaces for informal-sector retailers in the CBDs of urban areas such as Johannesburg, Pretoria

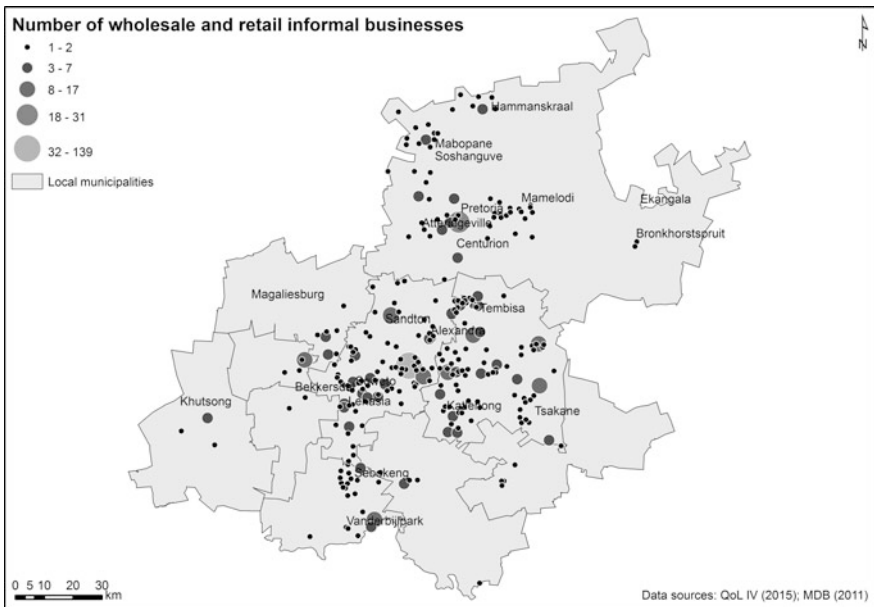


Fig. 7.4 Distribution of informal-sector wholesale and retail businesses in Gauteng, 2015. Source GCRO (2015a)

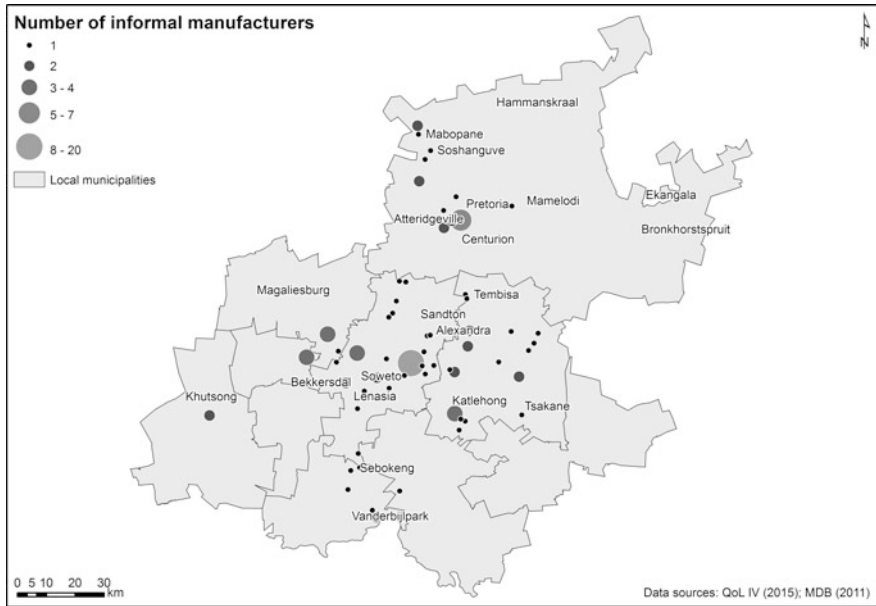


Fig. 7.5 Distribution of informal-sector manufacturers in Gauteng, 2015. Source GCRO (2015a)

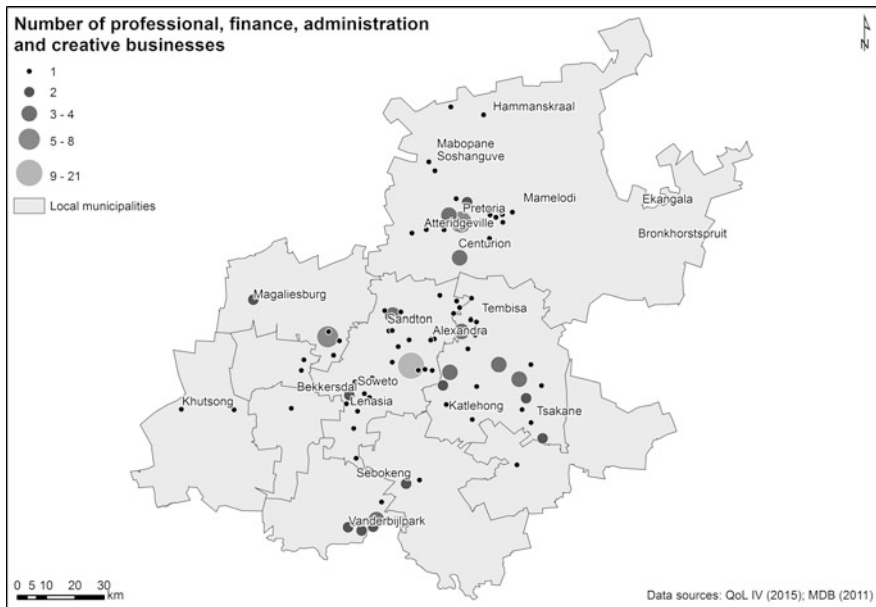


Fig. 7.6 Distribution of informal-sector professional, finance, administrative and creative businesses in Gauteng, 2015 Source GCRO (2015a)

(Tshwane), Centurion, Ekurhuleni and Vanderbijlpark. These are spaces that were not readily available to informal-sector traders prior to 1994 (Rogerson 2000).

Figure 7.5 shows that manufacturing activities are found in township areas as well as in the CBDs of Johannesburg and Pretoria (Tshwane). The location of manufacturing skills is important given provincial and municipal policies to develop and ‘re-industrialise’ townships.

There has been a shift to increasing employment in the professional, financial, and administrative sectors of the informal sector. Figure 7.6 shows that this sector has penetrated some township areas, even if entrepreneurs providing these services are most likely to have their businesses in the CBDs of Johannesburg, Pretoria and Vanderbijlpark. Again this is an area that provincial and municipal governments are interested in growing.

7.4.3 Spatial Patterns of Sourcing Supplies

Where do informal-sector entrepreneurs get supplies for their businesses? Although some source supplies from places close to their businesses, others travel considerable distances to get them (Fig. 7.7). Many entrepreneurs from townships travel to the CBDs of the metros of Johannesburg, Tshwane and Ekurhuleni. There are

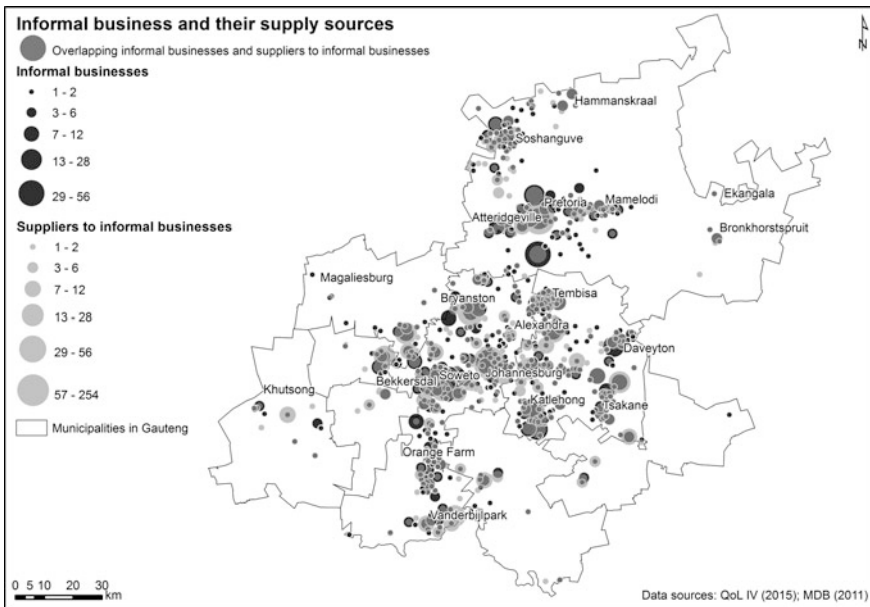


Fig. 7.7 Location of informal-sector businesses and where they source supplies in Gauteng, 2015. Source GCRO (2015a)

differences in patterns of travel for supplies of entrepreneurs in different townships. It is notable that entrepreneurs in Soweto do not seem to source supplies close to home, but travel elsewhere. By contrast, those in townships like Tembisa, Mamelodi, Soshanguve, Sebokeng, and to a lesser extent Katlehong and Tsakane, seem to find supplies close to home. This may, in part, reflect the types of businesses of entrepreneurs in these townships, as well as where the suppliers for their type of business are located. Overall, it is not possible to identify distinct spatial concentrations in the places informal-sector entrepreneurs source goods by type of industry. However, it is notable that informal-sector businesses involved in the retail sector tend to source their supplies from CBDs.

Figure 7.8 shows the locations of formal-sector businesses and where they get their supplies. Although some are located in townships, the majority are not. Those located in townships are unlikely to source their goods from within townships. Overall, 36% of formal businesses in townships bought from suppliers in the township within which they are located, while 56% of informal-sector businesses sourced their supplies locally (GCRO 2017).

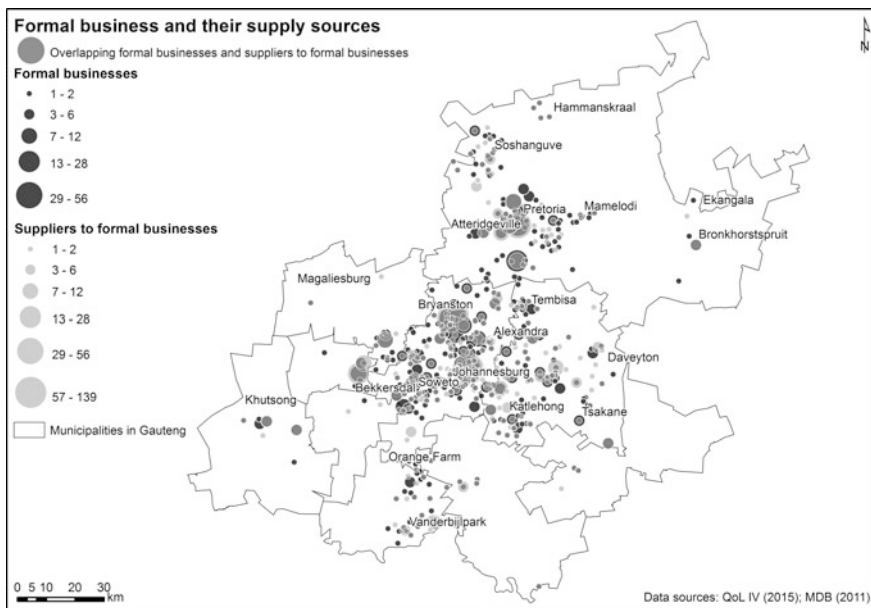


Fig. 7.8 Location of formal-sector business and where they source supplies in Gauteng, 2015. Source GCRO (2015a)

7.4.4 *Linkages Between the Informal Sector and the Formal Sector and the State*

Generally, analyses of the informal sector tend to separate it from the formal, and not just because of its perceived informality (Devey et al. 2006; Rogerson 2007; Altman 2008; Chen 2012). Yet, informal-sector businesses in Gauteng have strong ties to the formal sector. First, and most important, are the links between informal and formal sectors when the former buys supplies (Table 7.6). These connections are to some extent reflected in where informal-sector entrepreneurs travel to buy supplies (Fig. 7.7). Second, informal-sector entrepreneurs from the region, and further afield, source supplies for their informal-sector businesses in their home countries from the formal sector in South Africa.

The first responses to the question of where they source their supplies in the GCRO 2014 survey of informal-sector entrepreneurs found as many as 78% bought the supplies for their businesses from the formal sector (see also Table 7.6 showing multiple responses to the question, as many used more than one source). Only 3% ever bought goods from the informal sector. The survey found some spatial differences in the types of outlets used to buy supplies between entrepreneurs operating in different municipalities. This might reflect the kinds of businesses predominating in different places, as well as the size of businesses and the availability of different kinds of outlets for buying supplies. By buying from the formal sector, informal-sector entrepreneurs contribute to the vitality of the retail, wholesale, manufacturing and agricultural sectors of the province.

The informal sector is sometimes thought to pose ‘unfair’ competition to the formal sector because it does not have to conform to business and labour legislation. Yet, with increasing formalisation of township economies, including the development of malls in townships and other spaces, it may be the formal sector which threatens informal-sector entrepreneurs. In the GCRO 2014 survey of

Table 7.6 Sources of supplies of informal-sector businesses in Gauteng, 2014 (%)

Wholesaler	43.0
Supermarkets	26.2
Direct from factory	25.0
Fresh produce markets	19.9
Small shops/retailers in SA	13.8
Make or grow them myself	8.3
Direct from immigrants	7.4
Direct from farmers	3.4
Home province/country/another country	3.3
Other informal-sector producer/retailer	2.9
Not applicable/other	3.0

Source GCRO (2014a)

Note Multiple response question so percentages add up to more than 100%

informal-sector entrepreneurs over a third (35%) said competition from large stores affected their business often and another 36% said it did so sometimes (GCRO 2015a).

Like their South African-based counterparts, informal-sector cross-border traders (entrepreneurs who travel from other countries to the GCR to buy supplies for their businesses in their home country) predominantly buy them from the formal sector. The GCRO 2014 survey of informal-sector cross-border traders in Johannesburg (noting that some used multiple outlets) found that 58% bought from wholesalers, 50% from Chinese-owned malls, 44% direct from factories, 31% from outlets at the Oriental Plaza, and 34% from retailers outside malls (GCRO 2014b). Only 5% ever bought goods from the informal sector.

Informal-sector cross-border traders make a significant contribution to the formal wholesale and retail sector of the province. The GCRO 2014 survey of informal cross-border traders found the average spend on goods per trip for business in Gauteng was R11,679 (GCRO 2014b).⁷ The 1161 traders in the survey who paid for accommodation spent on average R490 per trip. The average spend on transport per trip was R1060 (although part or all of transport spend could be in their home country) (GCRO 2014b). A SATourism (SATour) 2014 survey found the total average direct spend of people shopping for business who entered through land borders was R17,100 (SATour 2015, p. 36). In 2014, SATour recorded 521,838 African land border entries for the purpose of shopping for business in South Africa (SATour 2015, p. 1).

According to SATour, the destination of 41% of Africa land border entries is Gauteng (SATour 2015, p. 33; see also Peberdy et al. 2016).⁸ Thus, in 2014 there were at least 213,950 African land border entries to shop for business in the province. If the SATour figure for total direct spend of R17,100 is used, in 2014, African informal-sector cross-border traders spent over R3.7 billion shopping in Gauteng for their businesses. Noting that informal-sector cross-border traders may buy more than one type of good on a trip, the six most popular types of goods bought were bedding, household products, plastic goods and furniture (46%); new clothing, footwear and fabric (41%); accessories (29%); food (25%); cellphones, phone accessories and electronics (19%); and toiletries and cosmetics (19%).

Thus, there are strong links between the formal sector of the GCR and the informal sector of the province—as well as with the informal sectors of neighbouring countries and those further afield. These links benefit the formal sector, which is the main supplier to informal cross-border traders from the region and the rest of the continent as they enable the formal sector of the province to reach

⁷See also GCRO Vignette, No. 26. Informal sector cross-border trade spending in Gauteng (<http://www.gcro.ac.za>).

⁸A 2008 Southern African Migration Programme (SAMP) survey found 41% of cross-border traders travelled to Johannesburg to shop (Peberdy et al. 2016). Other significant destinations in the 2008 survey were: Durban (17%); Musina (6%); Polokwane (5%); and Mbombela (2%) (Peberdy et al. 2016). In the GCRO 2014 survey the other main destinations in Gauteng were Tshwane, Randfontein, Vereeniging/Vanderbijlpark and Hammanskraal/Babelegi (GCRO 2014b).

informal (and formal) markets in places and spaces which would otherwise be unreachable (Fig. 7.9).

The informal sector is often thought to stand outside, and even avoid, regulatory frameworks that formal-sector businesses adhere to. And, according to South African Revenue Service (SARS) requirements, many informal-sector businesses and owners do stand outside the tax framework, but without breaking tax laws. This is because their turnovers and profits are beneath the tax thresholds. In the GCRO 2014 survey of informal-sector entrepreneurs, the stated profits of two thirds of interviewees meant they did not need to pay business or personal income tax (GCRO 2014a). But, just because they are not liable to collect VAT and fall under the personal and business income tax threshold, it does not mean that informal-sector entrepreneurs do not contribute to the government fiscus. Rather, they contribute to VAT when they buy supplies, as they purchase largely from the formal sector.

Similarly, informal-sector businesses are often said to be unregistered and to fail to comply with environmental and health and safety standards. In the case of the former, most municipalities require small businesses and street traders to register. Markets and street stands are often owned by municipalities or private companies—access requires registration and payment of rent. Environmental and health and safety authorities should apply the law as required whether a business is in the informal or formal sector. The GCRO 2014 survey of informal-sector entrepreneurs

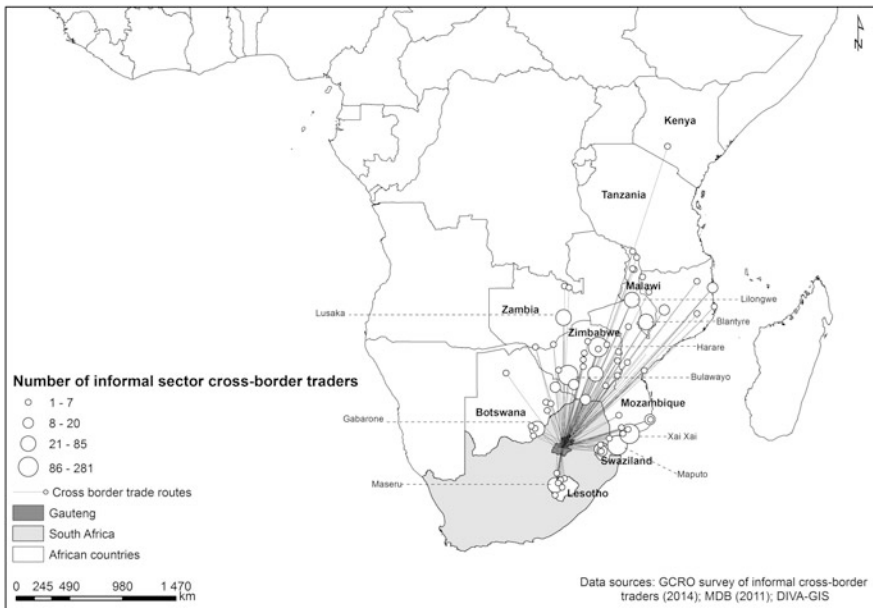


Fig. 7.9 Destinations of informal-sector cross-border traders who bought goods in Gauteng, 2014. *Source* GCRO (2014b)

found that participants regularly interacted with the state (GCRO 2014a; Peberdy 2016a). As some entrepreneurs may be operating or selling goods in places where they are not permitted to, and/or selling counterfeit goods, it may be understandable that 30% of those interviewed said confiscation of their goods was a problem for their business often, or sometimes (GCRO 2014a). Another 29% found harassment and demands for bribes from police were problems for their business often, or sometimes (GCRO 2014a). Most disturbing is that (17%) said physical assaults on entrepreneurs by the police were a problem for their business (GCRO 2014a). These are encounters with the state that most formal-sector businesses are unlikely ever to have to grapple with, let alone experience frequently.

7.4.5 Capital/Income/Profits and Business Growth

The SESE 2013 shows that many people in South Africa lack the use of formal banking facilities. It found that nationally, only 20% of informal-sector entrepreneurs had a bank account (StatsSA 2014b, p. 14). Noting that people use multiple methods, the survey showed that of those who had bank accounts, two thirds used the bank to make business payments, a third used the internet, and 15% used cellphone banking (StatsSA 2014b, p. 15). For many entrepreneurs and their customers, at least in township areas, banking facilities are spatially unavailable (Fig. 7.10). Most informal-sector businesses do not operate with formal debt (StatsSA 2014b, p. 15).

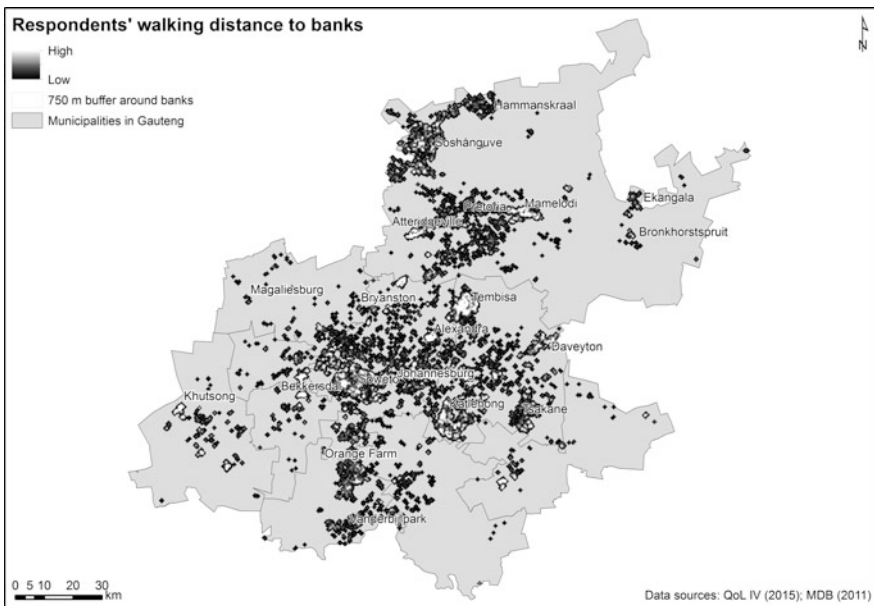


Fig. 7.10 Residents with banks within 750 m distance of their homes in Gauteng, 2015. *Source* GCRO (2015a)

Access to start-up capital for businesses is a problem for many informal-sector entrepreneurs in Gauteng. Nationally, the SESE 2013 found that 76% had used their own savings to start their business (StatsSA 2014b, p. 15). The QoL 2015 survey found the main source of startup capital was personal savings for both informal-sector (81%) and formal-sector (70%) entrepreneurs (GCRO 2015a). Only 5% of informal-sector entrepreneurs had ever obtained a bank loan, while 6% borrowed from relatives to start their business (GCRO 2015a). Despite its intentions, government support of informal-sector businesses is weak. The QoL 2015 survey found only 0.3%, or five out of 1575 informal-sector entrepreneurs, had secured a loan from a government agency to start their businesses. And, less than a quarter (24%) knew of any government departments or agencies that supported small business (GCRO 2015a).

Informal-sector businesses in the province show potential for growth despite the low amounts of startup capital used (Fig. 7.11). The GCRO 2014 survey asked informal-sector entrepreneurs how much startup capital they had used and how much their business would be worth if they sold it at the time of interview, including stock and premises, as applicable (GCRO 2014a). Not surprisingly, the smaller the amount of capital used, the smaller was the growth in the business. However, growth happened across the board. For instance, the value of the businesses of nearly one in five people who had started with capital of less than R2500 had grown to more than R5000. Of those who had started with R5001 to R10,000, only 15% still valued their business at between R5001 and 10,000, and none at less than R5000 (GCRO 2014a). Businesses in the manufacturing and retail sectors showed the highest potential for growth (GCRO 2014a; Peberdy 2016a). Business owners in these sectors, particularly non-food retail, were likely to have used higher amounts of startup capital than participants in other sectors GCRO 2014a; Peberdy 2016a).

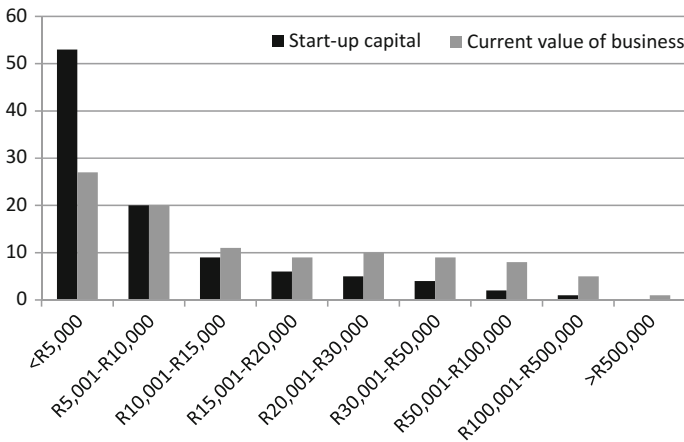


Fig. 7.11 Growth of informal-sector businesses in Gauteng, 2014 (%). *Source* GCRO (GCRO 2014a)

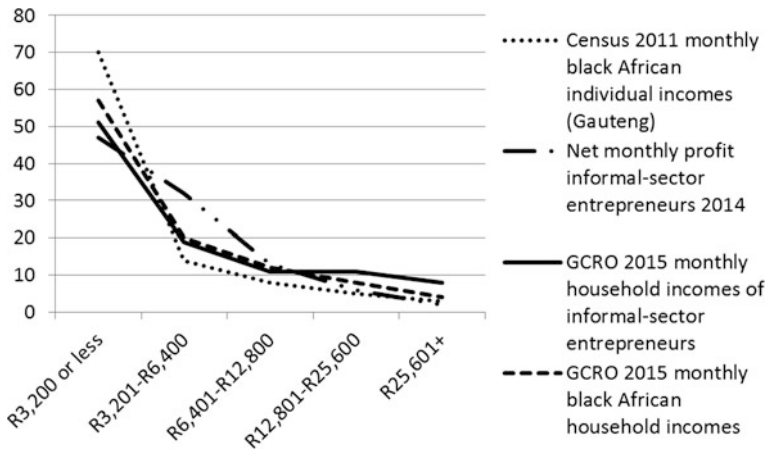


Fig. 7.12 Net monthly profit and black African monthly incomes in Gauteng (%). Sources StatsSA (2011), GCRO (2014a, 2015a)

Although often seen as a marginal survivalist activity providing low incomes, the GCRO 2014 survey of informal-sector entrepreneurs in the GCR found informal-sector entrepreneurs’ incomes compared favourably to those of black African households in the province, in the QoL 2015 survey, that knew their household income, and black African individuals in Census 2011 (Stats SA 2011) (Fig. 7.12). Cichello and Rogan (2016, p. 1) found that although informal-sector employment does little to alleviate poverty in aggregate, the impact on poverty of informal-sector incomes means that its loss has nearly the same impact on a household as the loss of a formal-sector job. And, they found that in 2012 “an informal self-employment job had 63% of the poverty reduction impact of a formal employment job” (Cichello and Rogan 2016, p. 17).

7.5 Employment in the Informal Sector

Besides providing income-earning opportunities for informal-sector entrepreneurs, the informal sector also provides waged employment. The QoL 2015 survey found that 62% of informal-sector business owners were 1-person firms (owner operated). Another third employed between 1 and 5 people, 3% employed 6 and 10 people, 1% between 11 and 20 people and another 1% between 21 and 50 people (GCRO 2015a).⁹ The GCRO 2014 survey of informal-sector entrepreneurs found that 35%

⁹In comparison, of the business owners operating in the formal sector, 24% were 1-person firms; 40% employed 1 to 5 people; 18% between 6 and 10; 11% between 11 and 20; 5% between 21 and 50; and 3% employed more than 50 workers (including 1%, or eight respondents, who employed over 200 workers each).

employed other people (GCRO 2014a). Less than a quarter (23%) of their employees were family members (GCRO 2014a). Overall, the 545 employers in the survey employed 2025 non-family members and 589 family members (GCRO 2014a).

Of the 2.5 million people in the informal sector, Rogan and Skinner (2016, p. 5) found that in 2014 there were 1,055,708 paid informal employees (comprising 7% of all workers) and 41,221 unpaid workers (comprising 0.3% of all workers). Nationally, the share of people employed in the informal sector rose from 16% in 2009, to 17% in 2015. In Gauteng, the share of employment in the informal sector rose from 11% in 2009, to 14% in 2015 (StatsSA 2015b, pp. 4–20). However, the QoL 2015 survey found that 25% of people in work (not business owners or self-employed) were employed in the informal sector (14% full-time and 11% part-time). Of the remainder, 61% worked full-time in the formal sector and 14% part-time.

The SESE 2013 found nationally that the largest sectors of employment for workers in the informal sector were trade (35%), services (26%), and construction (23%) (Table 7.7). Tables 7.7 and 7.8 indicate some of the issues in determining the sectoral profile of employers and employees, as well as their distribution. Notwithstanding these problems, they show that the sectoral profile of employment in the informal sector in Gauteng is slightly different from the national profile.

A quarter of residents in the QoL 2015 survey were employed in the informal sector and a further 5% had a business in the sector (GCRO 2015a). So, it is not surprising that 30% of households received all, or part, of their household income from the informal sector (GCRO 2015a). However, the value of the contribution to the household income was not specified. A third (33%) of black African households reported receiving part or all of their household income from informal employment as compared to 25% of Indian/Asian, 24% of coloured and 20% of white households (GCRO 2015a). Households receiving part or all of their income from the informal sector were most likely to live in townships (Fig. 7.13).

Table 7.7 Types of informal-sector employment in South Africa and Gauteng (%)

	QLFS, 2014–Q3 (South Africa) <u>employers and</u> <u>employees</u>	SESE 2013 (South Africa) <u>employees</u>	QoL 2015 survey <u>employees</u> (Gauteng)	QoL 2015 survey <u>employers</u> (Gauteng)
Agriculture	n/a	2.4	4.3	2.1
Manufacturing	9.0	5.5	12.7	7.2
Construction	16.6	22.7	19.9	5.9
Trade	41.7	34.5	22.0	47.3
Transport	9.1	5.2	8.1	3.6
Finance	7.2	3.7	8.7	8.7
Services	16.4	26.0	11.9	12.8
Other	0.2		12.4	12.4 (includes 11.8% accommodation and food services)

Sources StatsSA (2014b, p. 15), Rogan and Skinner (2016, p. 12), GCRO (2015a)

Table 7.8 Types of informal-sector and formal-sector employment in Gauteng, 2015 (%)

	Employed full- or part-time, informal sector	Employed full- or part-time, formal sector
Wholesale and retail	22.0	16.1
Construction	19.9	9.0
Manufacturing	12.7	12.5
Community, social and personal services	11.9	7.4
Financial, insurance, real estate and business services	8.7	16.2
Transport, storage and communication	8.1	7.6
Public sector or government	4.6	16.6
Agriculture, hunting, forestry, fishing	4.3	2.5
Electricity, gas and water supply	3.9	5.2
Other	2.0	1.0
Mining and quarrying	1.8	5.7

Source GCRO (2015a)

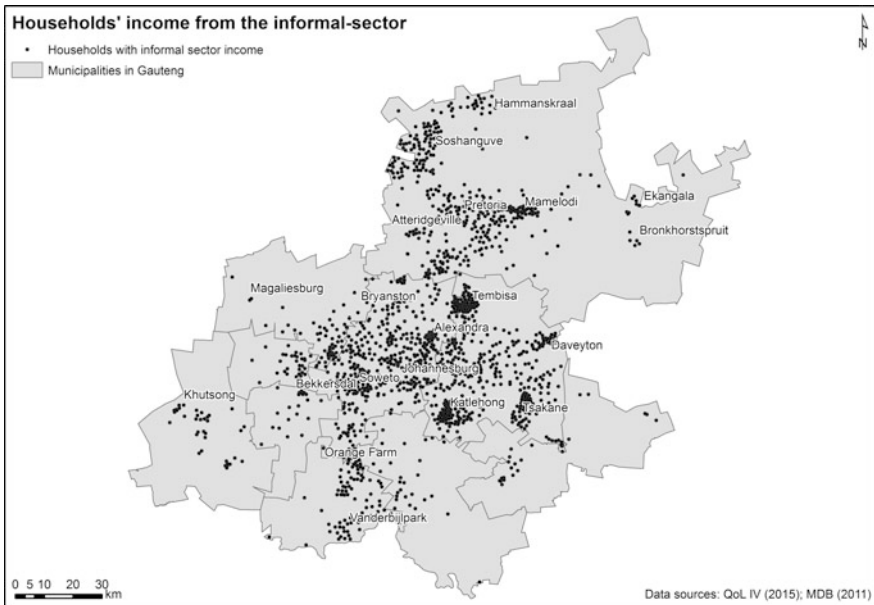


Fig. 7.13 Households receiving all or part of income from the informal sector in Gauteng, 2015. Source GCRO (2015a)

7.6 Conclusion

This chapter has demonstrated that the informal sector penetrates all corners of the province, whether in the form of entrepreneurs, as 1-person firms, or employers and their employees. Although informal-sector entrepreneurial activity can be found across the province in virtually all types of neighbourhoods, it is concentrated in townships and CBDs. While the province is home to the largest proportion of South Africa's informal-sector entrepreneurs, South Africa and Gauteng show relatively low levels of informal-sector activity compared to most other African countries. Similarly, the structure of the informal sector in South Africa and Gauteng differs from that on the rest of the continent, showing, in particular, much lower levels of manufacturing activity. Although informal-sector business owners comprise just 5% of the population, this sector is important to residents in the province, providing income-earning opportunities to nearly a third of households (GCRO 2015a).

Contrary to conceptualisations of the informal sector, including those of the state, there are strong links between the formal and informal sectors of the GCR, with informal-sector entrepreneurs largely sourcing their supplies from the formal sector. Thus they contribute to the formal wholesale and retail trade sector of the province. Informal-sector cross-border traders from other countries who source goods from the formal sector in the GCR for their informal-sector businesses in their home countries, provide markets that would otherwise be unavailable to the formal wholesale and retail sector in Gauteng. Thus they extend the spatial footprint of this part of the formal economy of the province, and provide further links between the formal and informal.

Relationships to the formal sector can perhaps be observed where informal entrepreneurs source their goods. Many travel to the CBDs of the major metros and other urban centres to get their goods. However, some townships, for instance, Tembisa appear to have outlets providing supplies to informal entrepreneurs. It is worth investigating these relationships further as the province and municipalities introduce policies to develop township economies. And, as formalisation takes place in townships and larger formal retailers and malls enter these spaces as policies of 'modernisation' and 're-industrialisation' come into effect, it will be necessary to take into account their impact on informal-sector businesses. It could hamper the growth shown by informal-sector businesses in the GCRO 2014 survey. Downstream impacts could lead to the closure of informal-sector businesses, or negatively impact their formal-sector suppliers as well as the household incomes of informal-sector entrepreneurs and their employees.

Although informal-sector entrepreneurship is often perceived as survivalist, the incomes of informal entrepreneurs compare relatively favourably with black African incomes in the province, notwithstanding that such incomes are generally low. Furthermore, there is evidence of growth of businesses in the sector. And, the informal sector also provides employment, although little is known about the working conditions and pay of people employed in the sector.

The use of personal savings to start businesses and the lack of availability of banking services indicate a need to encourage the development of informal-sector business. Government informal-sector support schemes are not reaching informal-sector entrepreneurs. National, provincial and municipal policies relating to the informal sector emphasize formalisation and regulation. The latter, embodied in the Business Licensing Bill, suggests a need to count, to register and license, but without consideration of why this should be done, what the capacity of municipalities for implementation is, or what the cost to businesses might be. While formalisation for some businesses has the potential to bring benefits, for instance, the ability to bid for contracts from municipalities and other institutions, it also comes with costs that might be too high for some small businesses. But a strong case needs to be made as to why formalisation and regulation are seen as most important, rather than encouraging access to land, capital and skills to develop businesses. And, as importantly, what the advantages of formalisation are to economic development and growth, as well as household livelihoods.

The emphasis on regularisation and formalisation in part reflects the challenges posed by the informal sector. Informal-sector businesses can be untidy, cluttering the urban form and public spaces. Some businesses require monitoring and interventions in the arena of environmental health. Others may require the same in regard to employment practices. Regularisation of informal-sector businesses could help to overcome this, but as currently practiced and imposed, leaves informal-sector entrepreneurs open to harassment from corrupt officials. Formalisation would enable informal-sector businesses to access new markets, but many may need support from the state to do so. Despite the intentions of NIBUS and GIBUS, it is evident that these initiatives have yet to reach, or affect, most informal entrepreneurs in the province.

Although not as large as in other parts of the continent, the informal sector provides income-earning opportunities for 1-person firms, employers and employees in the province and the GCR. It also contributes significantly to the retail and wholesale sector of the economy. Its spatial penetration into economically weaker spaces in the GCR means that it provides income-earning opportunities in these spaces, while demonstrating that there are economic possibilities there as well. Furthermore, it provides goods and services to people close to where they live. However, the chapter shows that there is a need for further investigation into the spatial aspects of the sector. In particular, where businesses are located, spatial concentration, and where businesses are able to source supplies. Further investigations could enable the development of more marginal economies in townships and other spaces in the GCR, while facilitating integration into the formal sector.

Acknowledgements Mncedisi Siteleki and Samkelisiwe Khanyile are thanked for the preparation of the figures in this chapter. The useful comments of the two reviewers who read an earlier version of this chapter are acknowledged.

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Chapter 8

Testing Economic Growth Convergence and Its Policy Implications in the Gauteng City-Region

Koeh Cheruiyot and Darlington Mushongera

8.1 Introduction

For several decades, the manner in which economic trends and government policies affect the distribution of income has been a central topic in economic research and policy analysis (Lerman and Yitzhaki 1985; Jenkins and Micklewright 2007; Niehues 2011). With a substantial body of research on the measurement, drivers, and consequences of inequality available as necessary guides, addressing poverty and inequality has been a key policy objective for the South African government as well. However, despite several efforts since 1994, inequality remains an intractable development challenge confronting government across all its three spheres. And while conceptually challenging (Bernstein 2010), the distribution of income and wealth always also emerges as a divisive point in both political and academic circles in South Africa (Bosch et al. 2010).

In the South African context, understanding inequality and the subsequent impact on society continues to be a priority research area for policymakers and academics alike, following the first major study on poverty and inequality commissioned by national government during the 1995/96 financial year (Seekings 2007). While both poverty and inequality are key policy priorities, inequality poses far greater challenges for the South African government because of its implications for economic growth and poverty reduction efforts, and its potential to jeopardize efforts aimed at achieving social cohesion and social justice (Ravallion 2001; Everatt 2003; Bourguignon 2004; Salardi 2005; Tregenna 2011). It is argued that continued inequality makes a mockery of the country's democratic project. Several

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local and international studies on inequality in South Africa point out that the country's level of income inequality is exceptionally high by international standards and has risen since 1993 (Leibbrandt et al. 2010; Van der Berg 2010; Tregenna and Tsela 2012). For instance, inequality measured in terms of the Gini coefficient rose from 0.59 in 1993 to 0.70 in 2008 (Deaton 1997; Woolard et al. 2009). Several factors, including the apartheid legacy, and continued inequality in access to economic opportunities, are responsible for the prevailing situation. Beyond Gini-based inequality, there is also strong evidence of race-based inequality. For example, in 2008, blacks made up 79% of the country's total population but received only 44% of income, while whites, who constituted 9.2% of the total South African population, received 40.3% (Woolard et al. 2009).

On a regional scale, the Gauteng City-Region (GCR) is a microcosm of similar characteristics of high income inequalities in the country as a whole. Given past government efforts to reduce income inequality through redistributive mechanisms and increased access to opportunities for previously-disadvantaged groups, there is a need to test if there has been any income convergence, as well as spatial convergence, between race groups. This chapter contributes to empirical literature on sub-national (or spatial) growth and convergence by exploring the level and pattern of income convergence (or divergence) in the GCR.

The chapter is structured as follows: Sect. 8.2 gives a brief description of theories of spatial inequality and looks at spatial inequality in South Africa, and the measures government has taken to address it. Section 8.3 sets out the economic convergence analysis and reviews the meaning and role of economic convergence in public policymaking. Section 8.4 describes the methods and data used, including the study area and estimation models. In Sect. 8.5 we present the results of economic convergence analysis for Gauteng, and Sect. 8.6 presents concluding remarks.

8.2 Understanding (Spatial) Income Inequality

8.2.1 *Theories of Spatial Inequality*¹

Theoretically, spatial inequality is determined primarily by the location decisions of firms and households—firms aim for profit maximisation, and households aim for maximisation of job market outcomes (Kim 2008). Notwithstanding the lack of consensus on the applicability of models and the economic geography approach (either regional or urban models) that incorporate regional and urban location decisions in a unified manner, it is widely agreed that spatial inequality is the net result of the balance of forces of concentration and dispersion. Further, it seems that the two perspectives—regional and urban—are complementary, despite their

¹This section relies primarily on Kim (2008) who provides a good summary of theories of spatial inequality.

differences in explanations regarding sources of concentration (centripetal) and dispersion (centrifugal) forces. According to Kim (2008), the sources of centripetal forces that lead to concentration in a regional perspective are natural advantages, Marshallian externalities (associated with increasing returns to scale as a result of technological spill-overs, labour market pooling, access to nontraded intermediate inputs) and non-pecuniary externalities (associated with forward and backward linkages and market size). The centrifugal forces that lead to dispersion are immobility in factors and goods caused by high transportation and communications costs. He argues that from the urban perspective, the most important difference is the addition of new costs of concentration in the form of congestion costs that result from the fixed supply of land. The resulting concentration, in turn, leads to increased housing and commuting costs, as well as additional costs caused by greater crime, pollution, and exposure to disease. Thus, depending on the mix of first factors (i.e., natural resource advantages and geographic proximity to rivers and ports) and second factors (e.g., density of human interactions), and the nature of geography and related outcomes (e.g., internalization of external economies or lack of them), economic theorists argue that spatial inequality may be either beneficial or harmful (Kim 2008).

At the regional level, there are two classes of models in regional economics that have very different policy implications when dealing with regional inequality. Models in the one class are based on the standard neoclassical assumptions of constant returns to scale and perfect competition, while those in the other class are “new models of economic geography” based on imperfect competition and increasing returns (Kim 2008). In the first type of model described above, the role of government is limited to infrastructural investments that impact on mobility of goods and other factors of production (Kim 2008). And although its role is relatively limited, government may increase regional specialization or inequality by lowering the mobility of goods, or may decrease inequality by lowering the mobility of factors. This may, in turn, have a significant impact on spatial inequality as a result of increasing returns. Kim (2008, citing Puga and Venables 1999), adds, that while regional inequality generally arises as an economy shifts from agriculture to manufacturing, the degree of shift may depend on the rapidity with which consumers increase their expenditure share in the manufacturing and, later, services sectors. According to the ‘new models of economic geography’, spatial inequality may arise in three ways: (1) as a result of the potential for ‘cumulative causation’ forces, small subsidies can potentially have significant first-order effects; (2) infrastructural investments that increase the mobility of goods, labour, and capital, may have a significant impact on spatial inequality because of the self-enforcing nature of increasing returns; and (3) since the equilibrium market allocations are inefficient in these models, markets will not reach the optimal level of spatial inequality without government intervention (Kim 2008, pp. 5–6).

At the urban level, theories of inequality differ from those of regional inequality in their treatment of land. Congestion costs associated with land tend to limit inequality. As firms and workers concentrate in one urban location to take advantage of agglomeration economies, they also bid up land rents, and the optimal

city size is determined by the balance of agglomeration economies as well as congestion costs. From this theoretical perspective, urban inequality is likely to rise if localization economies are particularly strong in a few industries, and is likely to fall if congestion costs are more significant relative to agglomeration (Kim 2008). Noting the importance of an understanding of both urban and regional inequality in policy circles (since they are interdependent), Kim (2008) stresses that how urban inequality affects regional inequality depends on the existence of an urban–rural wage gap, urban specialization at industry level, and the size distribution of cities. Kim (2008) cautions, however, that these classes of urban and regional models are incapable of modelling structural shifts in economic activities from agriculture to manufacturing and services—one of the hallmarks of development—and consequently they are inadequate guides for understanding regional inequality, especially in developing countries.

Urban and regional models that explain sources of potential spatial inequality, globalization and trade, as well as the type and quality of prevailing institutions, also have a role in explaining spatial inequality. Kim (2008) explains the potential role of globalization and foreign trade in determining the pattern of spatial inequality (be it urban or regional). From the neoclassical (constant returns to scale) perspective, he argues that unless regions and their cities have identical exposures to trade and similar comparative advantages, foreign trade is likely to increase spatial inequality. From an increasing returns perspective, he argues that spatial inequality is likely to rise when some regions derive the benefits of increasing returns from foreign trade while others remain more reliant on domestic trade.

Institutions matter not only for growth and development, but also with respect to spatial inequality (Kim 2008). While most recent studies have focused on understanding the impact of institutions on the development and growth of nations, regional differences in the quality of institutions may also impact regional economic development within nations significantly (Kim 2008, citing Banerjee and Iyer 2005; see also Kapur and Kim 2006; Bruhn 2008; Kim 2007). In addition, political institutions that determine the distribution of power and fiscal resources between different spheres of government, from national to local governments, can also play a major role in determining spatial inequality (Kim 2008, citing Henderson 2002).

8.2.2 Spatial Inequality in South Africa

Inequality analysis in South Africa has gone through a number of phases in the last twenty years. Analysts have utilized available datasets to describe patterns of inequality and identify possible factors driving inequality during each period. Four phases can be identified: pre-1994; post-1994 to 2000; early 2000s to 2010, and the current period. However, there has not been a significant amount of research exploring spatial inequality, except in the work of scholars Naudé and Krugell (Naudé and Krugell 2003, 2004; Krugell and Naudé 2005; Krugell 2005). In their 2003 study of cities and their role in subnational economic growth, Naudé and

Krugell found that economic growth in cities was able to have a significant impact in terms of reducing inequality. Their data on convergence shows conditional convergence in output between poorer towns. A limited sigma convergence was found between 1990 and 2000, which was essentially driven by declines in the standard deviations of per capita income among the poorest quintile of towns (Naudé and Krugell 2003, 2004). They concluded that a better understanding of South Africa's spatial economy also requires analysis beyond growth, looking at the spatial side of poverty and inequality (Naudé and Krugell 2003, 2004).

Kanbur and Venables (2005) share the viewpoint that spatial and regional disparities in economic activity, incomes and social indicators, are on the increase, not just in South Africa, but in other countries such as China, Russia, Mexico and India as well. They contend that spatial inequality is a dimension of overall inequality, but it has added significance when spatial and regional divisions align with political and ethnic tensions to undermine social and political stability (Kanbur and Venables 2005). Also important in the policy debate is a perceived sense that increasing internal spatial inequality is related to greater openness of economies and to globalization in general (Kanbur and Venables 2005). Nel and Rogerson (2009) also note the widespread existence and persistence of spatial inequalities internationally, and argue that a conscious decision on the part of state authorities is needed in response. One way is by government speeding up their own country's development through a reshaping of its economic geography (World Bank 2009; Nel and Rogerson 2009, 2016). In a country like South Africa, where national government has taken the decision to respond to spatial inequalities, a first step in addressing such inequalities and in developing an appropriate policy response is to understand the causes (Seekings 2007; Nel and Rogerson 2009; Rogerson and Nel 2016).

8.2.3 *Inequality Patterns and Trends*

Since little research on spatial inequality exists, this section looks at some of the patterns of income inequality that demonstrate the need for a spatial approach if a true picture of the extent of inequality is to be understood. A number of studies have been carried out regarding inequality in South Africa since 1994. This section summarizes some of the general findings and highlights their relevance in light of this GCR study. Research on poverty, inequality and welfare patterns in South Africa has been facilitated using datasets from the 1993 World Bank-initiated South African *Living Standards Survey* (LSS) (World Bank/SALDRU² 1993). LSS was intended to compose a picture of living standards just before the democratic government took over in 1994, to serve as a benchmark for measuring future progress (Deaton 1997). In his analysis, Deaton (1997) found that blacks were not only

²SALDRU is the Southern Africa Labour Development Research Unit, based at the University of Cape Town, South Africa.

poorer than whites, but their living standards were more unequally distributed. The overall Gini coefficient was 0.59, but was the highest for blacks in comparison to the other races. This is obviously explained by South Africa's historical legacy of apartheid policy, which was based on the principle of separate development (Leibbrandt et al. 2011). Table 8.1 shows some welfare measures derived from Deaton's (1997) analysis by race. Indicators are that blacks were worse off than coloureds, Indian and whites. Deaton's inequality measures are not surprising since inequality was entrenched in the policies of the apartheid government and in the history of the country generally.

After 1994, the new government invested heavily in the collection of statistics—through Statistics South Africa (StatsSA)—leading to an increase in the number of household surveys (see Seekings 2007 for a complete review). Some of the major datasets are the Quarterly Labour Force Survey (QLFS),³ the Income and Expenditure Survey (IES), the General Household Survey (GHS) and the national census. Analyses of income inequality were then also up-scaled, along with poverty analyses, because of the availability of new data. No 'perfect' consensus about the level and pattern of inequality exists because of the various methods applied and differences in the manipulation of data (Bhorat and Kanbur 2006; Seekings 2007). Nevertheless, all these studies show that income inequality has risen since 1994, and that racial-based income inequality has lessened compared to during the apartheid era (Leibbrandt et al. 2009). Leibbrandt et al. (2010) show that the Gini coefficient of per capita income has remained highest for blacks and lowest for whites. Around 2005, the Gini coefficient for coloureds dropped to below that of Indians, indicating a general improvement in income status for coloureds.

Another trend that analysts seem unable to agree upon is that within-group inequality is increasing fast, with the black population most affected (Bhorat and Van der Westhuizen 2008). Debate rages on, with some scholars arguing that within-group inequality is driving overall inequality, while others think that between-group inequality is the primary factor (see Van der Berg and Louw 2004; Møller 2007; Seekings 2007; Leibbrandt et al. 2011).

8.2.4 Anti-inequality Government Policy Initiatives in South Africa

Like many governments elsewhere, the South African government has committed itself to eradicating poverty and reducing inequality both nationally and internationally. The grandest of all commitments is the Constitution of the Republic of South Africa (Chap. 108 of 1996), regarded as one of the most noble and progressive constitutions in the world (Brand and Heyns 2005; Gumede 2011). Among

³This was formerly the October Household Survey (OHS) and more recently the Labour Force Survey (LFS).

Table 8.1 Selected welfare measures by race, South Africa, 1993

Measure	Blacks	Coloureds	Indians	Whites	All
PCE (household)	325	483	828	1793	615
Gini coefficient	0.45	0.41	0.38	0.34	0.59
Coefficient of variation	1.06	0.99	0.92	0.73	1.56
Headcount ratio	0.32	0.08	0.0	0.0	0.25
Poverty gap ratio	0.11	0.02	0.0	0.0	0.08

(Source Deaton 1997)

Note PCE = per capita expenditure

other things, the Constitution guarantees equal access for all and the right to material dignity (Republic of South Africa 1996; Gumede 2011). The Constitution compels the government to implement policies designed to realise these rights and remove disparities inherited from a racially-oriented colonial history. Since 1994, a number of redistributive policies have been designed and implemented by government, within its three spheres, in a bid to meet constitutional demands. The most notable of these were the Reconstruction and Development Programme (RDP) of 1994–1996; Growth, Employment and Redistribution (GEAR) of 1996; the Expanded Public Works Programme (EPWP) of 2004; the Accelerated and Shared Growth Initiative for South Africa (AsgiSA) of 2006; Broad-Based Black Economic Empowerment (BBBEE), and more recently the New Growth Path (NGP) and National Development Plan (NDP) Vision 2030, both of 2011 (ANC 1994; Republic of South Africa 2003, 2004, 2006, 2010). The underlying principle behind all these policy initiatives has been to address the major challenges—poverty and inequality!

Each of these policies had certain ideological undertones and frameworks for how government policy could influence the economy and tackle these challenges. What is clear, however, is that each time a new policy was designed, it was reacting to the shortcomings of a previous one. The great debate about the interrelationship between growth, poverty and inequality clearly underpins all these policies, but a precise conviction of what needs to be tackled first and how, is lacking. It is only towards the end of these initiatives that income inequality begins to emerge as the chief culprit hindering poverty reduction efforts.

The National Planning Commission (NPC), through its national development plan, has made it clear that a new narrative focusing on national efforts for attacking poverty is needed (NPC 2011). This is, in a way, an acknowledgment of the inadequacies of both previous and current policies intended to alleviate poverty and inequality. Has government done too little, or has it backtracked on some of its commitments? Has the political and economic policy mix been incorrect? It can be argued, however, that expecting government to overhaul completely an economic system and a way of life built and fortified over centuries of colonial rule, in just over two decades, is overambitious.

The South Africa government is a signatory to the United Nations (UN)-led Millennium Development Goals (MDG) of 2000. This is a collective effort by

member countries to target and improve the eight basic development indicators,⁴ the most important of which is poverty, by 2015. In spite of these efforts, results have not been impressive—levels of poverty and deprivation are still high, and the gap between poverty and affluence is still large (Woolard 2002; Seekings 2007). A lot still needs to be done, given the patterns and trends in inequality observed and outlined in this chapter so far. This chapter aims to contribute to possible solutions by providing a diagnostic analysis of the spatial configuration of income inequalities, and test for the existence of economic convergence, using Gauteng as a case study.

8.3 Economic Convergence and Its Role in Public Policy

8.3.1 *The Meaning of Economic Convergence*

Economic convergence or divergence is derived from the neoclassical growth model, originating with Solow (1956). The neoclassical growth model predicts that poorer economies will grow faster than rich ones, thus poor economies will tend to converge toward rich ones. In the literature on convergence research, the most cited scholars are Barro and Sala-i-Martin (Barro et al. 1991; Barro and Sala-i-Martin 1992, 1995). An overview of the widely available convergence literature (see also, for instance, Barro and Sala-i-Martin 1995; Romer 1996; Durlauf and Quah 1999; Temple 1999), reveals two types of convergence addressed by economists—beta convergence and sigma convergence. Beta convergence is commonly used in studying the convergence hypothesis (Barro and Sala-i-Martin 1992; Naudé and Krugell 2003). It occurs when poor national, regional, or local economies grow faster than rich ones, eventually catching up in some measure of growth, mostly per capita income level (Rey and Montouri 1999).

It is necessary to make a distinction between absolute and conditional beta convergence. Absolute convergence estimation is based solely on the economic variables of interest: the estimation disregards any economic variables that may have an influence on the growth pattern of the economic variable of interest (e.g., per capita income). The estimation process assumes that all economies share the same foundations, such as rates of saving and technology. However, if economies vary in their savings rates, human capital and initial capital stock, etc., then the neoclassical growth model predicts *conditional* convergence of the economic variable under investigation. When estimating conditional convergence, variables determining the stationary state of economies are controlled, thus per capita

⁴These are eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability, and develop a global partnership for development (UNDP 2015).

incomes, for instance, converge conditionally on each economy's steady state (Naudé and Krugell 2003).

Sigma convergence occurs within a group of national, regional, or local economies when the variance of their economic growth indicator tends to get smaller over time, thus the poor economies catch up with the rich economies (Rey and Montouri 1999). Sigma convergence is used to answer the question of whether the distribution of per capita income, or some other economic variable of interest among national, regional, and local economies, is becoming narrower over time. A simple way of answering this question is to calculate the variation of (log) per capita incomes over time. If the dispersion—commonly measured as the coefficient of variation or (unweighted) standard deviation—is shrinking over time, then convergence is taking place (Rey and Montouri 1999; Bernat 2001).

While a wide range of convergence literature posits that beta convergence is normally expected to lead to sigma convergence, Young et al. (2008) caution that beta convergence is a necessary, but *not* a sufficient condition for sigma convergence.

8.3.2 *Role in Public Policymaking*

How relevant are convergence studies in directing public policy issues? Canaletta et al. (2002) state that public policy is not indispensable in the neo-classical world. They regard the process of convergence, its causes and its types, as going beyond being a theoretical problem to constitute a practical policy consideration. According to these scholars, if there is absolute convergence among a group of countries or regions, caused mainly by the accumulation of capital as a result of decreasing returns, we can expect convergence to continue in a mechanical way. Sala-i-Martin (1996) shows how the empirical study of economic convergence can provide reasons to support the need for some kinds of public policy interventions. For example, if a study of economic convergence shows that temporal interregional differences in income levels tend to diminish, then there may be less need to formulate public policies than if the differences tend to perpetuate. He asserts that, where the study of economic convergence shows that the regions that were relatively poor, say, 100 years ago, are still the same ones that are poor at the present time, then enacting public policy to enable these regions to escape their predicament is advisable. He cautions, however, that his empirical study of evidence of regional growth and convergence showed similar speeds of convergence (2% per annum) across the United States, Japan and five European nations, and public policy seemed to play a very small role in the overall process of regional convergence in those areas (Sala-i-Martin 1996).

Barro and Sala-i-Martin (1992) investigated patterns of convergence across 73 regions of Western Europe from 1950. They noted that the process of convergence within the European countries (2%) was similar to that of the United States in many respects. While examining the process of regional convergence in the United States

using pooled state-level per capital income, Lall and Yilmaz (2001) concluded that the implications of the use of policy instruments were not very clear. However, it does appear that an efficient way to stimulate convergence would be to improve (through public policy) region-specific characteristics, such as technical efficiency and organizational capacity, and reduce the susceptibility of the regional economy to macroeconomic shocks. Public policies that are aimed at removing barriers to factor mobility may be critical in increasing the speed of convergence. This is possible since these policies can act as catalysts for overcoming structural rigidities.

Naudé and Krugell focused on sub-national growth differentials and convergence in South Africa (see Naudé and Krugell 2003, 2004; Krugell and Naudé 2005; Krugell 2005; Krugell et al. 2005). They examined local economic growth empirics using sub-national panel data between 1990 and 2000 (Naudé and Krugell 2004), and found indications of conditional convergence in output between poorer towns, as well as between cities and towns overall. Their results also suggested limited sigma convergence, driven by the standard deviation of per capita income among the poorer quintile of towns. In their 2004 paper, Naudé and Krugell investigated cross-regional medium-term (from 1998 to 2002) growth rate differentials among 354 magisterial districts (administrative units during the apartheid-era in South Africa). Using various statistical techniques, they found that local economic growth was explained by distance from internal markets, human capital, the export sector, and physical capital stock. Cautioning that their data covered only a relatively short time span, their initial estimation of unconditional (absolute) beta convergence suggested convergence. Specifically, the regression plot was positive, and its poor fit ($R^2 = 0.018$) suggested the omission of variables that play a role in regional growth rates. In their dynamic model, which estimated conditional convergence, initial income per capita (in 1997) emerged with a coefficient showing significant evidence of conditional convergence—1.2% for the period 1990–2000. Other explanatory variables included in their estimations that proved to be significant, and which thus played an important role in sub-national growth rate differentials, were human capital, institutional quality, openness and geography (see Naudé and Krugell 2004, p. 455, for a description of these and other variables used in their estimations).

8.4 Methods and Data

8.4.1 Study Area and Data

The analysis of convergence in this chapter covers 507 wards within Gauteng province (one ward in Mogale City was excluded for lack of data).⁵ The reasons for

⁵This chapter works with the 2011 municipal boundaries. The municipal boundaries were changed after the manuscript had been completed.

focusing on this area are manifold. Although it covers a small spatial area compared to the other provinces in the country, Gauteng exerts a significant influence on the lives of people throughout South Africa and beyond. Its unique characteristics, such as significant place-based variations across the province, make it an important and interesting case study. To date, nearly all studies on inequality in South Africa have been pitched at a national level, which can partly be explained by the nature of the data sets available.⁶ One example is the National Income Dynamics Study (NIDS) initiated by the Presidency in 2006. As a national survey, NIDS is limited to allow provincial-level and municipal-level analyses. Thus, for meaningful policy conclusions to be drawn for Gauteng, the province deserves a separate analysis.

This chapter uses ward-level median household income census data, obtained from Statistics South Africa (StatsSA), for 2001 and 2011 (StatsSA 2001, 2011). The median is used since it is a better measure of central tendency than dealing with skewed data such as incomes.

The formula below was used to calculate the median household income (Yusuf et al. 2014):

$$\text{Median household income} = L + \left\{ \frac{i}{f} * [(p * n) - C] \right\} \quad (8.1)$$

In Eq. (8.1), L is the lower limit of the median group,⁷ i is the width of the median group, f is the frequency of the median group, n is the total number of observations, p is 0.5, and C is the cumulative frequency for the group preceding the median group.

8.4.2 Analytical Techniques

The analytical techniques employed include exploratory spatial data analysis and spatial models.

Exploratory spatial data analysis (ESDA) This refers to a set of techniques employed interactively to visualize and explore data where space matters. This process is useful in detecting potentially interesting and explicable patterns for informing the formulation of hypotheses. Measures of spatial autocorrelation that are useful in detecting interesting patterns, including clusters and outliers, are central to ESDA techniques (Anselin et al. 2006). Specific techniques employed to

⁶The National Income Dynamics Study (NIDS) is being executed by SALDRU, which is based at the University of Cape Town, South Africa.

⁷Statistics South Africa (StatsSA) presents income data in 12 income bands or groups. The calculated median household income excluded the no-income group, a group StatsSA (2015) speculates, are either households who did not want to divulge their income information or poor households with no, or irregular income. The authors had no way to validate StatsSA's (2015) assertion.

identify the geographic dimensions of ward-level incomes include Moran’s *I* scatter plot, and cluster and significance maps. Moran’s *I* scatterplot is based on Moran’s *I* statistic (see Rey and Montouri (1999) for an explanation of how it is calculated). The ESDA results (Moran’s *I* = 0.639, and *p* = 0.000, for 2001 ward median incomes, and Moran’s *I* = 0.605, and *p* = 0.000 for 2011) confirmed that the data was spatially autocorrelated, and thus required the use of spatial models.

Spatial models The standard empirical growth model is used to measure beta convergence in this chapter. Since we are not controlling for any economic variables except the initial ward-level median household income, growth is modelled using the unconditional convergence equation below. The linear equation in natural logs (ln) represents the movement of wards about their steady state and initial level of income (Rey and Montouri 1999).

$$\ln(Y_{2011}/Y_{2001}) = \alpha + \beta \ln Y_{2001} + \varepsilon_{2001} \tag{8.2}$$

where Y_{2011} and Y_{2001} are ward-level median household income in 2011 and 2001, respectively. The parameter β can be interpreted as the rate of unconditional beta convergence to the steady state, with $\tau = t_2 - t_1 > 0$. A negative value of β implies that convergence in median household income is occurring, while a positive value implies divergence. However, to account for significant spatial autocorrelation in the data, we extend Eq. (8.1) and employ three alternative spatial models, detailed below. The focus on three alternative spatial models rather than one specific spatial model was necessitated by indeterminate spatial dependence tests—even though both Langrange Multiplier (lag) and Langrange Multiplier (error) were statistically significant, both respective robust LM (lag and error) tests were statistically insignificant. We thus rely on spatial error and spatial lag models to capture respective spatial dependence (s).

A *spatial error model* (SEM) is applicable where errors across space exhibit spatial covariance, thus violating the assumption of uncorrelated error terms, with the error term represented as:

$$\varepsilon_t = \lambda W \varepsilon_t + \mu_t \tag{8.3}$$

Equation (8.3) is solved to become

$$\varepsilon_t = (I - \lambda W \varepsilon_t)^{-1} \mu_t \tag{8.4}$$

where λ is a scalar spatial error coefficient and μ is an independent and identically distributed (i.i.d.) $\sim N(0, \sigma^2 I_n)$ nuisance term. The parameter W represents a weight matrix constructed using the concept of Queen Contiguity between contiguous wards (i.e., wards with borders that touch). Parameter W is row standardized meaning it has rows adding to unity, while parameter ρ measures the effect of spatial dependence. Given the above, in order for Eq. (8.1) to accommodate the spatial error covariance, it becomes

$$\ln(Y_{2011}/Y_{2001}) = \alpha + \beta \ln Y_{2001} + (I - \lambda W \varepsilon)^{-1} + \mu_{2001} \quad (8.5)$$

A *spatial autoregressive* (or lag) model (SAR) is appropriate where the estimated dependent variable is influenced by both explanatory variables at the same location and by other variables in the neighbouring locations. To accommodate the autoregressive component, Eq. (8.1) becomes

$$\ln(Y_{2011}/Y_{2001}) = \alpha + \beta \ln Y_{2001} + \rho W \ln(Y_{2011}/Y_{2001}) + \varepsilon_{2001} \quad (8.6)$$

Finally, to calculate the rate of (sigma) convergence (θ), which focuses on dispersion or spread of incomes, we employ the formula below:

$$\theta = \ln(\beta + 1) / -k \quad (8.7)$$

where β is the rate of unconditional beta convergence to the steady state and k is the number of the years in the period.

8.5 Economic Convergence in the Gauteng City-Region

8.5.1 Exploratory Spatial Data Analysis

In this section, we report on exploratory spatial data analysis (ESDA) results, including scatterplots and cluster mapping. Figure 8.1 shows the levels of median household income per ward with reference to the Gauteng provincial median for 2001 and 2011. In 2001, there were 309 wards with more than the provincial median income of R27,081, while 198 wards had less than the provincial median income. In 2011, fewer wards (302) had more than the provincial median income of R52,813, while more wards (205) had less than the provincial median income. The results suggest evidence of unconditional divergence of median household incomes in Gauteng's wards.

In Fig. 8.2, Moran's I scatterplots show the type of spatial autocorrelation present in ward-level median household income in 2001 and 2011. A Moran's I scatterplot regresses a spatially-lagged transformation of a variable (on the y-axis) on the original standardized variable (on the x-axis). The spatial lag-transformed variable takes into account the median value of a given variable for neighbouring regions (e.g. wards). In this study, the slope of the Moran's I measures global spatial autocorrelation or overall clustering in median household income. The four quadrants describe four types of spatial association, starting with the x-axis, followed by y-axis: High-High (H-H), Low-Low (L-L) (positive spatial autocorrelation) and High-Low (H-L), Low-High (L-H) (negative spatial autocorrelation) (Anselin 2005). In the two Moran's I scatterplots, the positive spatial associations (represented by the High-High and Low-Low clusters) dominate the negative spatial associations (represented by the High-Low and Low-High outliers).

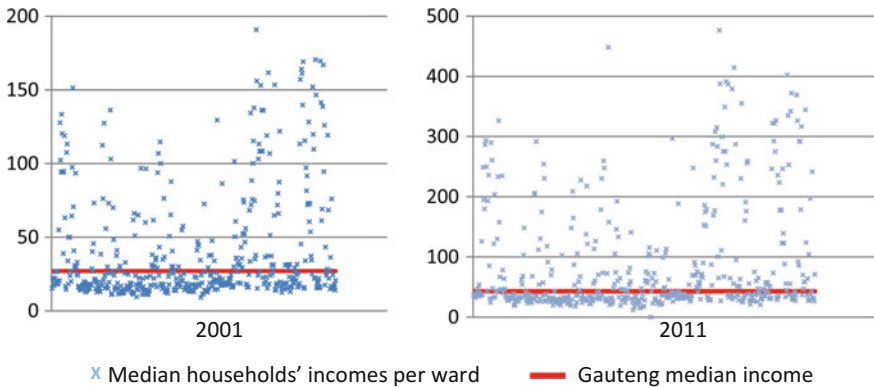


Fig. 8.1 Median household income (R 000) per ward in Gauteng, 2001 and 2011

The results (Moran's $I = 0.639$, and $p = 0.000$ for 2001; and Moran's $I = 0.605$, and $p = 0.000$ for 2011 ward median income) from the ESDA, confirm that the data was spatially autocorrelated, thus indicating the use of spatial models.

In Table 8.2 the spread of ward-level spatial associations in median household income are represented at the municipal level. The first four columns in the table represent spatial associations in 2001, while the last four columns represent spatial associations in 2011. The following observations can be made: First, the three larger metros in Gauteng (Johannesburg, Tshwane and Ekurhuleni) are characterized by more wards in the High-High and Low-Low clusters than in Low-High and High-Low clusters. Second, except for Midvaal, the small local municipalities have more wards in the Low-Low clusters than the other cluster types. Lastly, as shown in the respective Moran's I scatterplots above, there are fewer negative spatial associations across metros and local municipalities alike.

Table 8.3 shows the percentage change in the number of wards in each of the four quadrants of the Moran's I scatterplot between 2001 and 2011. Positive and negative percentage values indicate an increase and a decline, respectively, in the wards in a given municipality between 2001 and 2011. A number of observations can be made: First, Johannesburg metropolitan municipality, as well as the local municipalities of Mogale City, Randfontein, and Emfuleni, had increases in the number of wards in the Low-Low cluster. Second, Westonaria, Midvaal, Merafong City and Tshwane had increases in the number of wards in the High-High quadrant. In this regard, Johannesburg, Emfuleni, Randfontein, and Mogale City were 'losers'. With 1% and 0% change in High-High and Low-Low quadrants, in Gauteng overall, percentage changes were minimal.

Figures 8.3 and 8.4 show the spatial distribution of median household income per ward in 2001 and 2011, respectively. A number of observations can be made. First, comparing the distribution of median incomes in 2001 and 2011, the three metros of Johannesburg, Tshwane and Ekurhuleni, continued to have higher incomes than the local municipalities. In fact, the number of wards with higher incomes had increased in the metros, especially in the cores of Johannesburg and

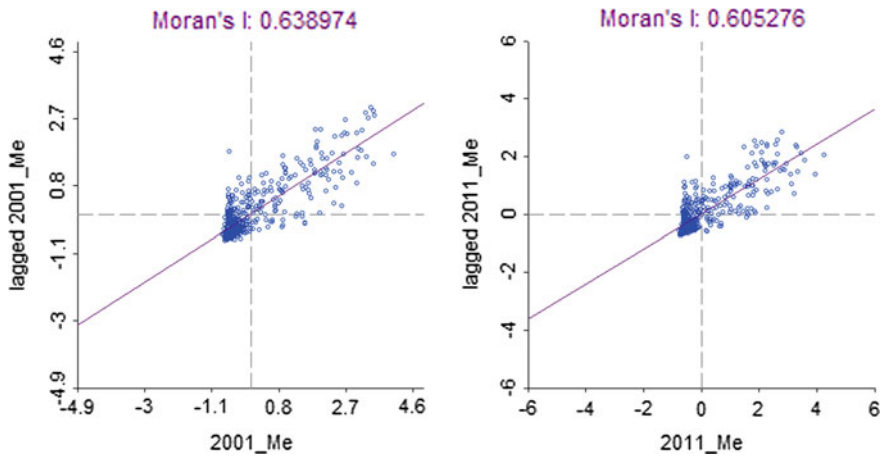


Fig. 8.2 Moran's I scatterplot of median household income, 2001 and 2011

Table 8.2 Municipal-level spatial autocorrelation

Municipality	HH (Q1) _01	LH (Q2) _01	LL (Q3) _01	HL (Q4) _01	HH (Q1) _11	LH (Q2) _11	LL (Q3) _11	HL (Q4) _11
Ekurhuleni	31	17	49	4	27	21	48	5
Emfuleni	7	2	33	3	7	1	34	3
Johannesburg	51	19	52	8	49	16	60	5
Lesedi	0	0	11	2	1	0	10	2
Merafong City	2	2	19	4	7	2	14	4
Midvaal	3	4	6	1	6	4	3	1
Mogale City	12	6	13	3	8	5	17	4
Randfontein	4	2	13	3	4	1	14	3
Tshwane	41	6	49	9	43	8	47	7
Westonaria	1	2	12	1	2	1	11	2
Gauteng	152	60	257	38	154	59	258	36

(Source Authors' calculations)

Tshwane. Second, despite pockets of low incomes, local municipalities (Midvaal, Lesedi, and parts of Westonaria and Randfontein) had more wards with higher incomes in 2011 than in 2001. However, Emfuleni and Mogale City, the north-west parts of Randfontein, and township wards in the north of Tshwane, had more wards with low median household incomes.

Figures 8.5 and 8.6 show spatial clustering of median household income. The figures show significant High-High clusters in central Gauteng, especially in Johannesburg and Tshwane, and fewer in Ekurhuleni metropolitan municipality. Pockets of High-High clusters were also found around the Carletonville and

Table 8.3 Municipal-level % change in the number of wards in each quadrant of the Moran’s I scatterplot

Municipality	HH_% change	LH_% Change	LL_% Change	HL_% Change
Ekurhuleni	-13	24	-2	25
Emfuleni	0	-50	3	0
Johannesburg	-4	-16	15	-38
Lesedi	Undefined ^a	-100	Undefined ^a	0
Merafong City	250	0	-26	0
Midvaal	100	0	-50	0
Mogale City	-33	-17	31	33
Randfontein	0	-50	8	0
Tshwane	5	33	-4	-22
Westonaria	100	-50	-8	100
Gauteng	1	-2	0	-5

(Note ^aThe number of wards increased from none (i.e. 0) to 10, so calculating a % is not possible)
 (Source Authors’ calculations)

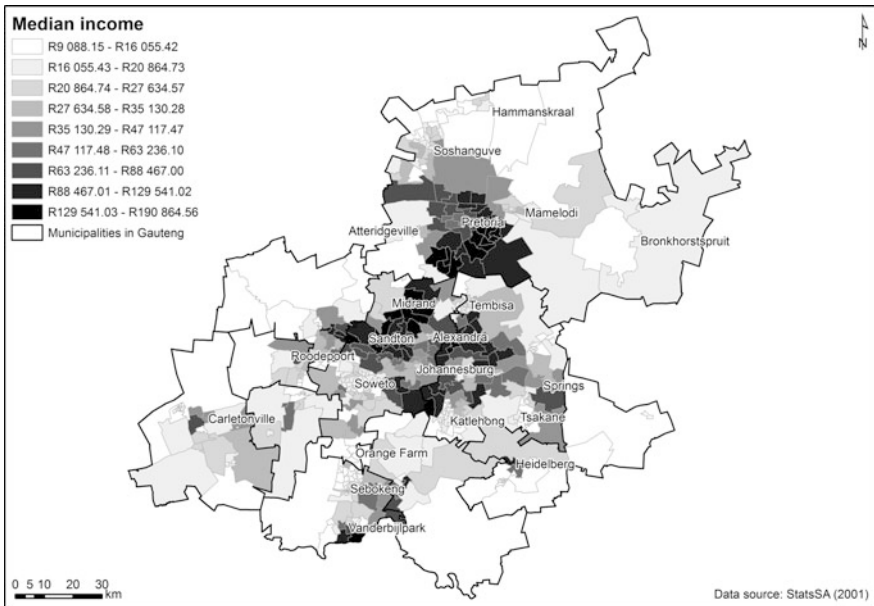


Fig. 8.3 Median household income per ward, 2001

Vanderbijlpark suburbs, among other places. While in this area the overall pattern has remained, there was displacement between 2001 and 2011 when High-High clusters are compared. Several significant Low-Low clusters are evident in the two cluster maps. In the 2001 cluster map, one significant Low-Low cluster is present in

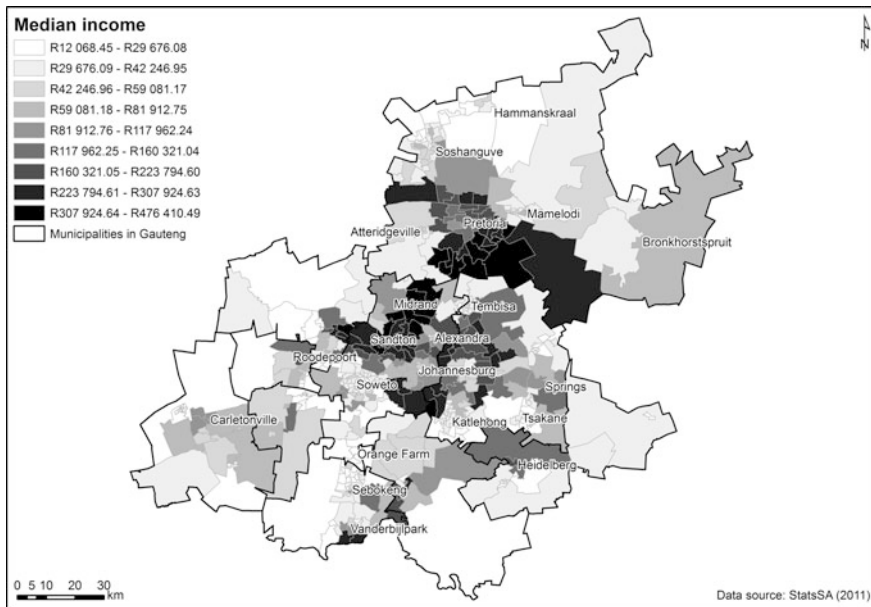


Fig. 8.4 Median household income per ward, 2011

north-west Tshwane (in Hammanskraal and its surroundings) and three clusters are present in the south-west of the province, in Merafong City, Westonaria, and Emfuleni local municipalities. Pockets of Low-Low clusters were also found in Katlehong, Thokoza, Vosloorus and Tsakane townships in Ekurhuleni metropolitan municipality. In 2011, the Low-Low cluster in Tshwane was still evident, while the Low-Low clusters in the south-west of Gauteng had narrowed, mainly to Emfuleni and Mogale City. A small Low-Low cluster remained in Merafong City (in places such as Khutsong and Fochville).

Figure 8.7 shows the growth rate of divergence of ward-level median household income from 2001 to 2011. The figure shows that more wards experienced higher growth than low growth. The figure also shows higher growth in the peripheral local municipalities.

Figure 8.8 shows the spatial clustering of growth of median household income per ward from 2001 to 2011. The growth rate of divergence is significantly clustered (Moran's $I = 0.126, p = 0.001$). The figure shows that the north-west and south-west of Gauteng had clusters of higher growth rates of convergence in ward-level median household income. There were also pockets of high growth rates of convergence in central Tshwane, Midvaal, and Merafong City. Clusters of high growth rates are also visible on the map in the suburbs around Sandton, Midrand, Bryanston, and Fourways. Pockets of low growth rates of convergence are visible in the areas around Ennerdale and Poortje, south of Johannesburg. A mixed picture emerges when results in Fig. 8.8 are compared with mapping results of initial

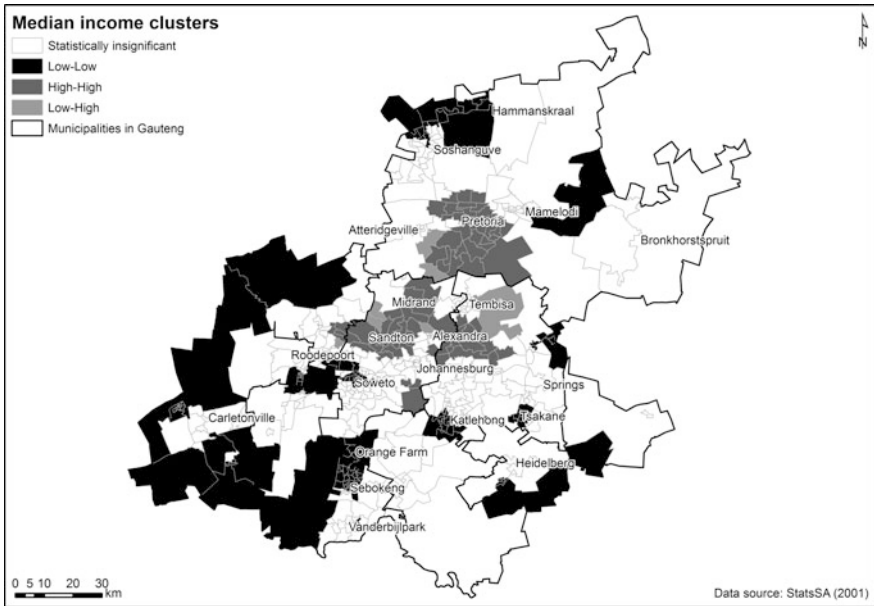


Fig. 8.5 Cluster map for median household income per ward, 2001

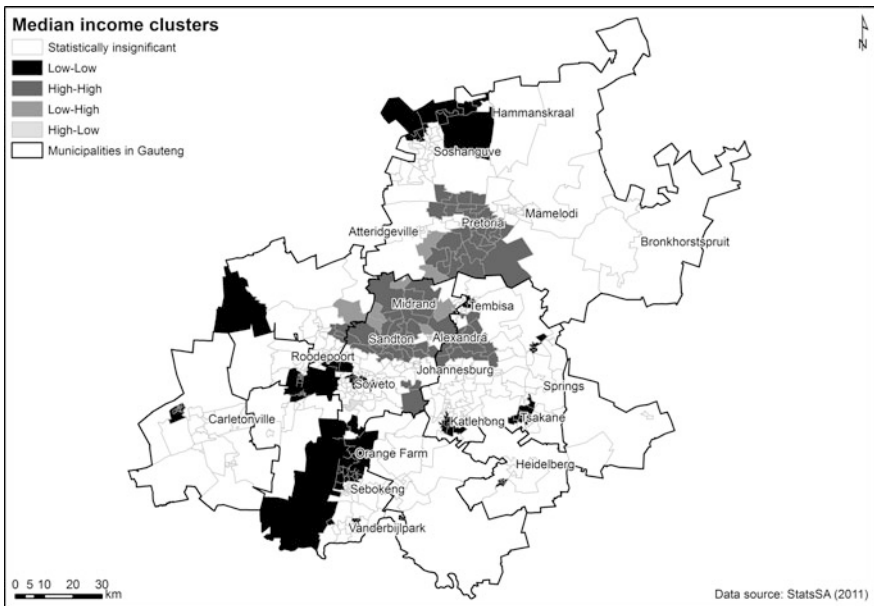


Fig. 8.6 Cluster map for median household income per ward, 2011

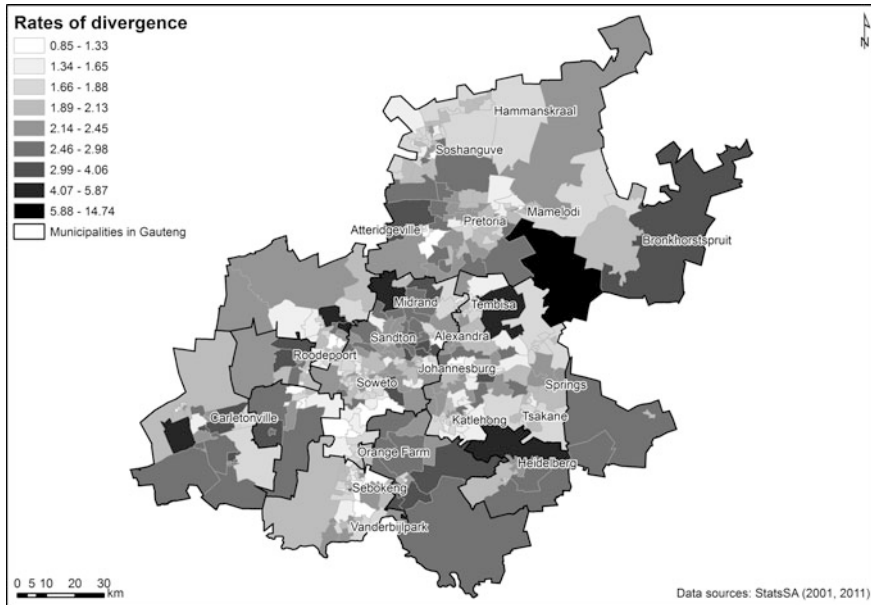


Fig. 8.7 Rate of divergence of median household income per ward, 2001–2011

median household income in 2001 (Fig. 8.3). Some areas that had higher median household income, such as areas around Midrand and Sandton, had higher growth rates in income, whereas some areas that had low median household income, such as areas in Midvaal and Merafong City, had higher growth rates in income. Given these results, it is uncertain whether unconditional convergence or divergence in ward-level median household income is evident.

Figures 8.9 and 8.10 map wards that fell in Low-Low clusters in 2001 and 2011, respectively. It is hypothesized that a move by one or more wards from a Low-Low cluster in 2001 to a High-High cluster, or one of the other quadrants, suggests unconditional convergence in ward-level median household income and vice versa. In Figs. 8.9 and 8.10, it is evident that the number of wards in the Low-Low cluster in the north of Gauteng (specifically in Tshwane) was lower in 2011 than in 2001. The pattern of the Low-Low clusters in the south-west of Gauteng had changed, but, overall, many wards in this region still fell in the Low-Low cluster. There were also pockets of wards across Gauteng that fell in the Low-Low cluster, outside the two major clusters identified above. These results suggest two things: First, it is uncertain, based on these results, whether unconditional convergence or divergence has occurred. Second, if either unconditional convergence or divergence does exist, it is very slow, given that there were 87 wards in the Low-Low cluster in 2001 and 84 wards in 2011. Slow unconditional convergence or divergence is also supported by the lack of change in the number of wards that fell in the Low-High outliers (i.e.,

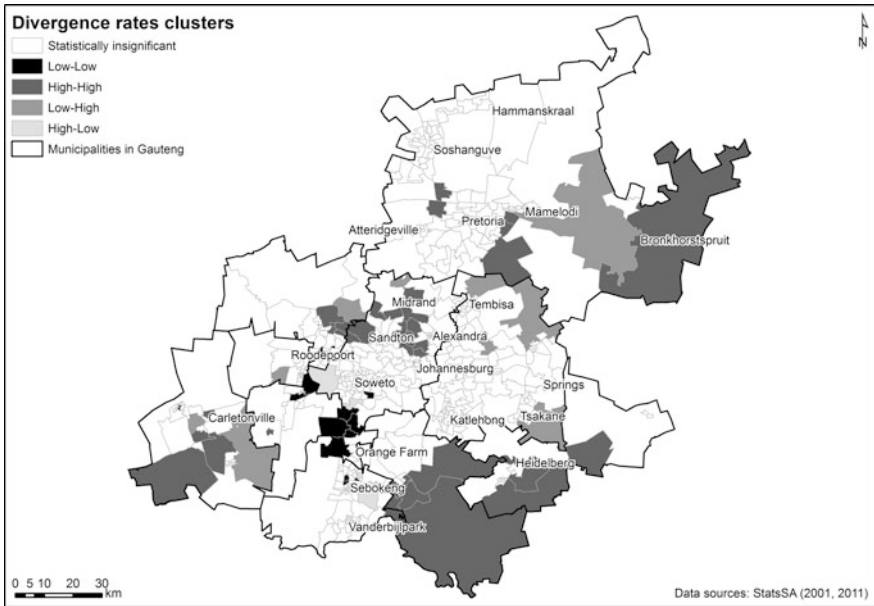


Fig. 8.8 Cluster map for rates of divergence of median income per ward, 2001–2011

wards with low median household income that are surrounded by wards with high median household income) in 2001 and 2011.

8.5.2 Quantifying Divergence, 2001–2011

As indicated in Sect. 8.4, we estimated unconditional divergence using Eqs. (8.2), (8.5) and (8.6). Unlike Eqs. (8.2), (8.5) and (8.6) incorporate spatial error and lag dependence, respectively. Equation (8.2) is estimated using ordinary least squares (OLS), while Eqs. (8.5) and (8.6) are estimated using maximum likelihood (see Rey and Montouri 1999). Table 8.4 presents the results of OLS estimation of the unconditional convergence for Gauteng’s 507 wards. The overall fit of the unconditional convergence model is low ($R^2 = 0.052$), suggesting the omission of variables responsible for regional growth rate differentials. The positive and highly significant coefficient (0.082) for the starting (2001) income levels suggests unconditional divergence, albeit at a slow rate. The annual rate of divergence associated with the above unconditional divergence estimation is 0.9%. In Table 8.4, we present diagnostics for spatial dependence, where it is evident that the results are not deterministic as to what spatial dependence exists. Table 8.4 shows the Moran’s I (error) results that are statistically significant.

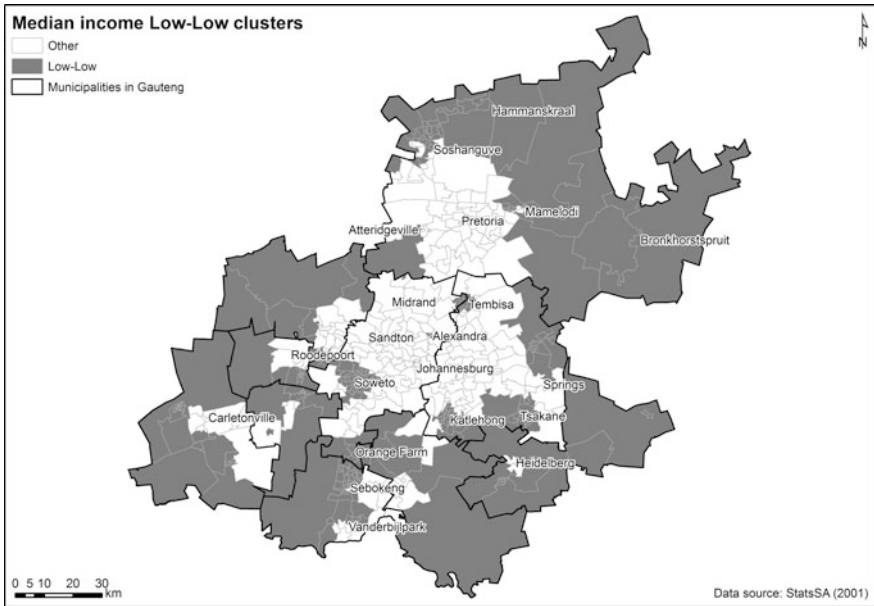


Fig. 8.9 Median household income Low-Low clusters, 2001

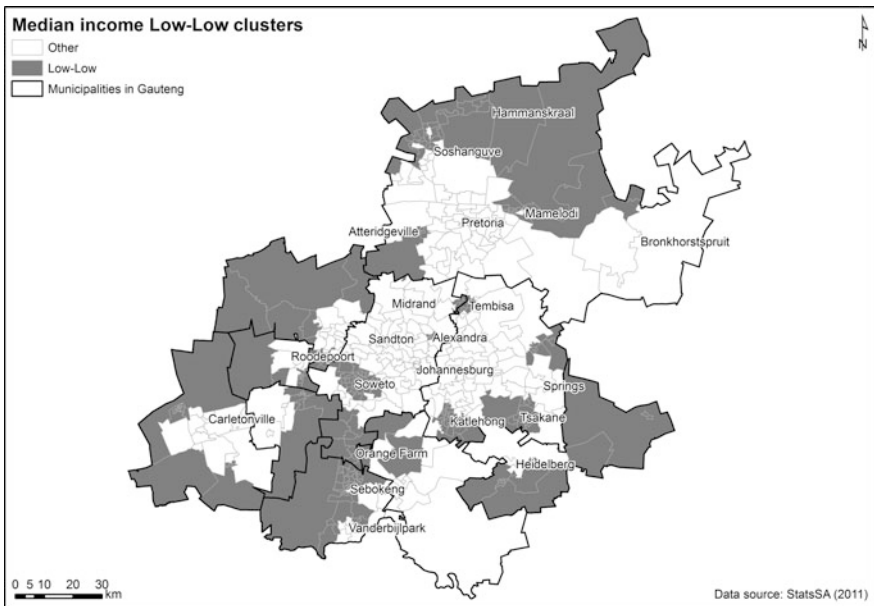


Fig. 8.10 Median household income Low-Low clusters, 2011

Table 8.4 Unconditional model OLS estimation

R^2 (σ^2)	AIC	β (p -value)	Convergence rate (θ)
0.052 (0.258)	70.939	0.082 (0.000)	0.008
Robust LM (error) p -value	Robust LM (lag) p -value		Moran's I (error) MI/p -value
0.658	0.136		0.09/0.001
<i>Diagnostics for heteroscedasticity</i>			
Breusch-Pagan test p -value 0.295			
Koenker-Basset test p -value 0.655			

Notes AIC = Akaike Information Criterion which is used to compare the model goodness of fit. A low AIC value implies a better model fit; LM = Lagrange Multiplier and is used in maximum likelihood estimation to find a maximum and a minimum of a given function, if such maximum and minimum exist

Table 8.5 shows the estimation results of the spatial models used. The AIC values of the respective models show that the values for the SEM and SAR models are lower than the initial unconditional model from Table 8.5, implying that SEM and SAR models (which incorporated spatial dependence) are superior to the OLS model. However, of the two, SEM, with a lower AIC value, is superior overall.⁸ In Table 8.5, the coefficients for SEM and SAR spatial variables are significant. With the SEM model as the superior model, Table 8.5 shows the implied divergence rate of the SEM model is similar to the divergence rate from the original OLS—0.7%—a low, but worrying divergence rate. These results contrast with the national-level conditional convergence rate of 1.2% found by Naudé and Krugell (2004), based on 354 magisterial panel data between 1990 and 2000.

8.6 Conclusions

Income inequality remains one of South Africa's key challenges after the advent of democracy in 1994. These inequalities are pronounced between and within racial groups, as well as spatially. While racial inequality has been relatively well studied, this chapter focuses on the less studied area of spatial inequality, and tests the level and pattern of economic convergence (or divergence) in the GCR economy, centred on Gauteng province. In spite of its small geographical size, Gauteng province exerts a significant influence on the South African economy. The province is

⁸Estimation results showed that there was residual heteroscedasticity from spatial models. Attempts to solve the residual heteroscedasticity problem using various transformations and specifications of the estimation equation were fruitless. The residual heteroscedasticity could be explained by data belonging to irregular spatial units, the existence of systematic regional differences in the data, and the presence of continuous spatial drift of parameters in the model (Matthews 2006). Nonetheless, this is not a serious issue since estimated coefficients are still unbiased.

Table 8.5 Spatial dependence models

Model specification	AIC	β (<i>p</i> -value)	λ, ρ <i>p</i> -value	LM test <i>p</i> -value
Spatial error (ML)	38.137	0.069 (0.000)	0.000	0.000
Spatial lag (ML)	38.336	0.057 (0.000)	0.000	0.000
Convergence rate (θ) based on (ML) estimate				
Spatial error	0.007			
Spatial lag	0.006			

characterized by significant spatial variations in the distribution not just of household income, but of economic activity as well, given the residual effects of apartheid. For these reasons, Gauteng province presents a very interesting case study, especially against the backdrop of the various measures taken by government since 1994 to address the challenges. The chapter uses ward-level median household income calculated from 2001 and 2011 census data to explore the level and pattern of income convergence (or divergence) in the ten-year period between the censuses.

The results are revealing in many ways. The ESDA showed that in 2011 fewer wards (205) had more than the provincial median income of R52,813, compared to the 302 wards that had more than the provincial median income of R27,081 in 2001. While this suggests some evidence of unconditional divergence of median household income, tests of spatial autocorrelation confirmed that these incomes were also spatially clustered. Municipal-level comparisons showed more positive spatial associations (either where wards with high median income have neighbours with similar high median income—a High-High cluster—or where wards with low median income have neighbours with similar low median income—a Low-Low cluster) across metros and local municipalities alike. It is evident from the municipal-level percentage change in spatial association between 2001 and 2011 (from the number of wards in each quadrant of the Moran’s *I* scatterplot) that Johannesburg metropolitan municipality and the local municipalities of Mogale City, Randfontein, and Emfuleni had increases in the number of wards in the Low-Low cluster. While these municipalities were ‘losers’, the effects of such a loss was minimal at the provincial level since there was only a 1% and 0% change in High-High and Low-Low clusters at the provincial level.

Cluster mapping for 2001 and 2011 shows the three metros of Johannesburg, Tshwane and Ekurhuleni with more higher income wards than the other smaller local municipalities. Evidence further shows an increase in the number of wards commanding higher income in the metros, especially in the cores of Johannesburg and Tshwane. Despite pockets of low income, local municipalities (i.e. Midvaal, Lesedi, and parts of Westonaria and Randfontein) had more wards with higher income in 2011 than in 2001. However, Emfuleni and Mogale City, the north-west

parts of Randfontein, and township wards in the north of Tshwane, had more wards, comparatively, with low median household income.

While the ESDA did not clearly indicate either unconditional convergence or divergence, spatial models suggested a divergence rate of 0.7% between the two censuses. The growth rate of divergence was significantly clustered, with the north-east and south-west of Gauteng, for instance, having clusters of higher growth rates of ward-level median household income. There were also pockets of high growth rates of median household income in central Tshwane, Midvaal, and Merafong City. Clusters of high growth rates were also visible in the suburbs around Sandton, Midrand, Bryanston, and Fourways. Pockets of low growth rates of median household income were visible in the areas around Ennerdale and Poortje in the south of Johannesburg.

In a nutshell, to achieve convergence of incomes, at both local and the regional scales, public policies that address factor mobility and the improvement of local/regional specific characteristics, such as technical efficiency, organizational capacity, economic resilience, etc. should be spatially target or oriented. This is in contrast to national and sectoral policies that make the estimation of their spatial incidence hard to measure, thus equally hard to address (Lall & Yilmaz 2001).

Acknowledgments Christian Hamann is thanked for median household income calculations and preparation of the accompanying maps/figures. The useful comments of the two reviewers who read an earlier version of this chapter are acknowledged.

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Chapter 9

Revitalizing Gauteng City-Region Township Economies Through Value Chain Development

Phindile Ngwenya and Precious Zikhali

9.1 Introduction

The revitalisation of township economies is increasingly seen as a strategy to enhance participation and inclusion of township residents in the mainstream economy in South Africa. This is important given the challenges that still prevail in these areas. In recent years, South African townships and informal settlements (T&IS) have had the largest increase in population in general, and of the working-age population, in particular. Unemployment is highly concentrated in townships, informal settlements, and former homelands, and poverty levels are higher in these areas than in other urban areas (Binswanger-Mkhize and Im 2014; Ngwenya and Zikhali 2014). This implies that tackling the challenges of poverty and inequality in South Africa needs to start in T&IS. Moreover, the weak growth prospects of the mainstream economy mean that township economies have the potential to be the new engines of economic growth. The growing township population is a source of cheap labour and an untapped consumer market. During the apartheid era, townships were designed as dormitory towns for labour, and economic activity within them was curtailed. Unlocking the full potential of township economies involves integrating township businesses into value chains.

In 2014, the premier of Gauteng province, Mr. David Makhura, announced the provincial government's plans to focus on the revitalisation and mainstreaming of the

The views expressed in the article are those of the authors and not those of the organizations to which they are affiliated.

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'township economy'. The *Gauteng Township Economy Revitalisation Strategy* (GTERS) (GDED 2014) provides a foundation for the revitalisation efforts and is premised on providing support to township entrepreneurs across the value chain of enterprise development. The strategy is anchored on the National Development Plan (NDP), which recognises the importance of small, medium and micro enterprises (SMMEs) for job creation. A value chain approach is identified and adopted as a sustainable approach for helping SMMEs benefit from integration into high value markets and improve their competitiveness. Value chain development involves strengthening these product-to-market systems. The objective is to increase productivity and trade, and, ultimately, economic returns for small producers and businesses.

Although global value chains (GVCs) are not a new phenomenon, the concept of integration of township businesses into value chains is still in its infancy in South Africa. To contribute to discussions around the implementation of GTERS, this chapter develops a conceptual framework for identifying the presence of both 'vertical' and 'horizontal' aspects of value chains, and the possible implications for South African township economic development processes. This framework is then used in the following ways: First, to conduct an analysis of the relationships between consumers and suppliers of goods and services, focusing on the nature of integration into the local, regional, and global value chains. Second, to examine the impact of such integration on the performance of township businesses. Third, to examine how the impact of integration into value chains is influenced by the characteristics of the enterprise as well as the community in which the enterprise operates.

The rest of the chapter is organized as follows: Sect. 9.2 provides an overview of South African townships within the broader macroeconomic context. Section 9.3 briefly reviews government initiatives, at national and provincial level, that are aimed at supporting the growth of township economies. Section 9.4 contains a brief review of the literature that highlights the importance of GVCs for the growth of SMMEs. In Sect. 9.5, a conceptual framework for GVCs in South African townships is provided. Section 9.6 discusses an adaptation of GVCs to a township setting, with Diepsloot as a case study. This section uses data from an enterprise survey conducted in Diepsloot in 2012 to highlight the level of integration into domestic and global value chains. In Sect. 9.7, econometric techniques are used to investigate the extent to which the impact of integration into value chains is influenced by characteristics of the community and the owner, as well as social relations. The chapter concludes in Sect. 9.8 with a discussion of the ways that township enterprises can be better integrated into value chains in the context of the GTERS.

9.2 South African Townships: The Growth Challenge

9.2.1 Geography

Townships were part of the formal structural urban engineering of the apartheid government. The formation of townships goes back to as early as 1901, when black

people were forcefully removed from the City of Cape Town and relocated to a state farm called Uitvlugt (Mahajan 2014). Formed along racial lines, townships were intended to be ‘dormitory’ areas, providing accommodation for black labourers working in white towns, but located an adequate distance away from the towns. In post-apartheid, democratic South Africa, townships remain overwhelmingly black—in 2011, 95.7% of township residents were black (Mahajan 2014). In the last twenty years, informal settlements on the urban periphery have proliferated, driven by rural–urban and international migration. Informal settlements are also predominantly black—in 2011, 97.1% of informal settlement residents were black (Mahajan 2014).

Figure 9.1 gives an overview of the spread of townships and informal settlements in the Gauteng City-Region (GCR). It shows the spread of township economies across the province, as well as the extent of their economic accessibility via major highways. The map also shows old and new townships, in terms of urban land cover in 1990 and 2013. Old townships typically coincide with the footprint of townships under apartheid, while new townships tend to reflect low-cost housing provided by the post-apartheid government. As is evident from the map, township economies are situated broadly within the context of informal housing. With reference to Diepsloot, specifically, the map demonstrates that this is a largely new settlement, in which informal housing is prevalent.

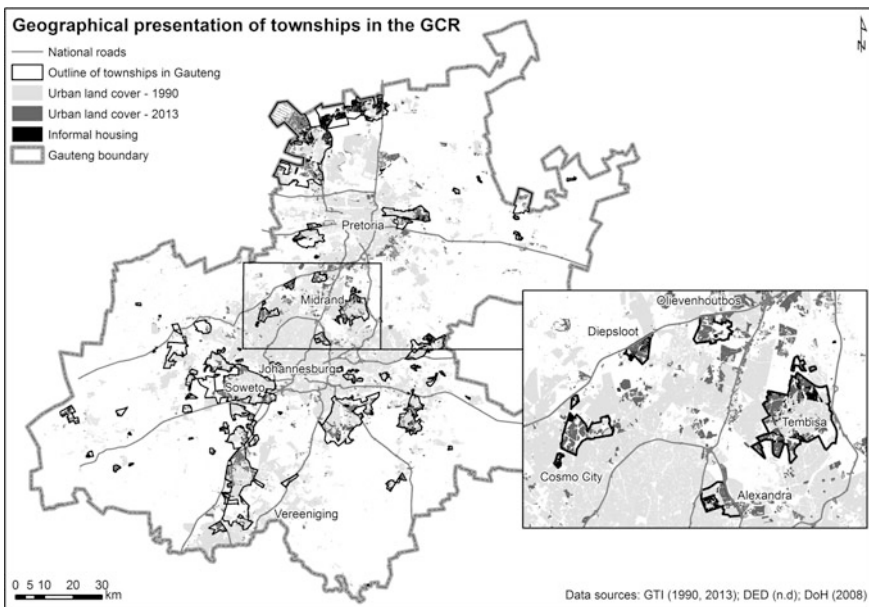


Fig. 9.1 Geographical presentation of townships in the Gauteng City-Region [Source GCRO (2016)]

9.2.2 Socio-Economy

Historically, townships served as social and economic exclusion mechanisms and were therefore not designed for economic activity. They were isolated from urban centres and were characterized by general neglect—overcrowding was typical as there was lack of investment in physical and economic infrastructure. As a result, the contribution of township economies was limited.

In recent years, South African townships and informal settlements have had high population growth— during the ten-year period 2000–2011, the population in urban townships and urban informal settlements increased by 3.3% and 12.8%, respectively (Fig. 9.2a)—and the working-age population has grown the most. Other socio-economic characteristics of townships include low average age, lower educational attainment, and low income levels, compared to other urban areas. This is illustrated in Fig. 9.2. The growing township population should be viewed as an opportunity for the revitalisation of township economies, however, since it represents a relatively high supply of labour and an untapped consumer market. For example, Davies and van Seventer (2014) show that the township of Diepsloot has a R2 billion economy, most of which is spent outside Diepsloot.

Unemployment is particularly high in townships compared to other areas of the national economy: in 2012 urban townships recorded an unemployment rate of 33.4%, and urban informal settlements a rate of 32.6%, compared to the national

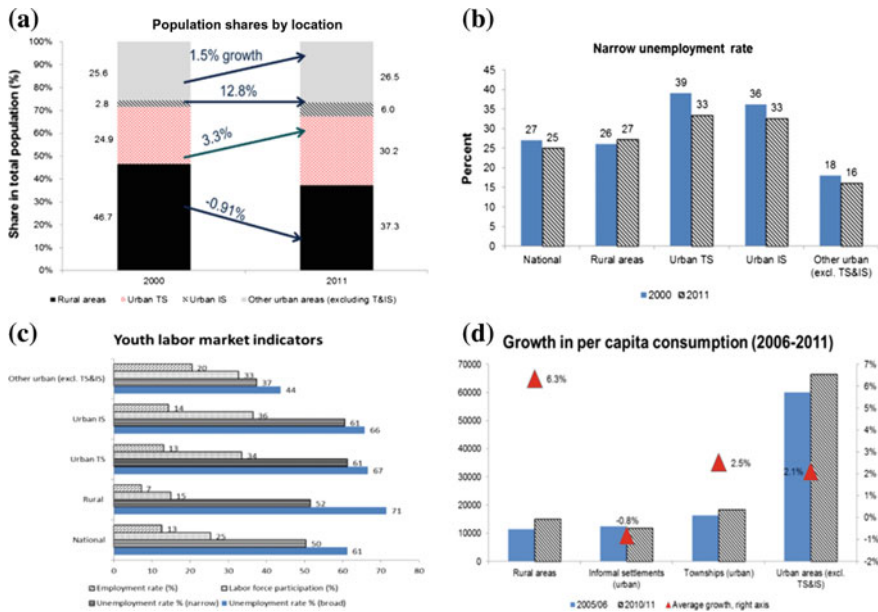


Fig. 9.2 a–d Challenges prevailing in South Africa’s townships and informal settlements [Source Authors’ representation based on Mahajan (2014)]

figure of 25% (Fig. 9.2b) (Binswanger-Mkhize and Im 2014). Similarly, youth unemployment was estimated to be 67% in townships compared to the national estimate of 61% (Fig. 9.2c). Unemployment was estimated to be 24.5% in the fourth quarter of 2015 (StatsSA 2016). This is one of the major challenges facing policymakers in South Africa.

Disparities in per capita consumption are evident when T&IS indicators are compared to other urban areas (Fig. 9.2d). These disparities have been widening over time, possibly because of the large pool of unemployed township residents. The disparities can also be attributed to the fact that as soon as township residents become better off, they are likely to move to other neighbourhoods that are perceived to offer a better quality of life.

9.2.3 The Challenge of Integration

Integration into the mainstream economy is one of the major challenges facing township structures. In the GCR, transport for township residents is characterised by long commutes—travelling to work or to search for jobs. In October 2014, the Gauteng City-Region Observatory (GCRO) released a map showing the flow of transport trips to work across the city-region, categorised by race (Fig. 9.3).



Fig. 9.3 Trips made by respondents to work, categorised by race [Source GCRO (2014)]

The map highlights the legacy of apartheid: trips made by white respondents (1048 trips) are concentrated within the central city-region, while trips made by black respondents (5423 trips) originate from a much wider area on the periphery (Wray et al. 2014). Today, travel in the city-region is still similarly patterned, with a greater percentage of white respondents having shorter trips to work, compared to the long distances travelled by black (also referred as Africans) respondents from areas on the fringe of the GCR.

The challenges posed for township residents by inadequate transport infrastructure, long distances and high costs, are demonstrated by Ngwenya and Zikhali (2014) in the case of Diepsloot. The average total monthly expenditure on transport to work was found to be approximately 17% of the average total monthly salary. Spending on transport to work, as a percentage of total spending, declines as income grows. The bottom 20% of households that paid for transport to work, spent around 49% of their total annual expenditure on transport to work. This was 40.5 percentage points higher than the 8.2% spent by the top 20%. Transport costs to work are thus a sizeable burden for households—especially poor households—and are consequently a hindrance to job finding and economic integration.

Another characteristic of townships is leakage of income generated within townships and/or earned by township residents. Research has shown that up to 75% of money generated in townships is spent outside these areas. This implies that township economies have weak multipliers: their linkages to the broader economy are weak. This is supported by the findings of Davies and van Seventer (2014), who found weak multipliers for Diepsloot. A large portion of the income injection into Diepsloot households simply ‘leaks’ out to other areas of the South African economy. Despite relatively high household purchases from inside the township, the scope for Diepsloot’s income to leak out of the township increases as income levels rise.

Figure 9.4 illustrates the challenge of integrating townships into the mainstream economy of Gauteng in terms of distance to look for work. Geographically, the legacy of apartheid is such that the black segment of the population comes from a wider area of the city-region than their white counterparts. Townships, where most blacks reside, were constructed far away from the city, that is, far from white residential areas. While Fig. 9.4 shows “looking for work” distances travelled by all respondents regardless of race, the fact that most blacks reside in townships built in the apartheid era imply that blacks continue to longer distances when looking for work (Wray et al. 2014).

The discussion above shows that, even for a township such as Diepsloot that has the advantage of relative proximity to the province’s two largest cities, there are many challenges that hinder growth and integration with the mainstream economy, including historical geographical structure, and the structure and size of the economy.

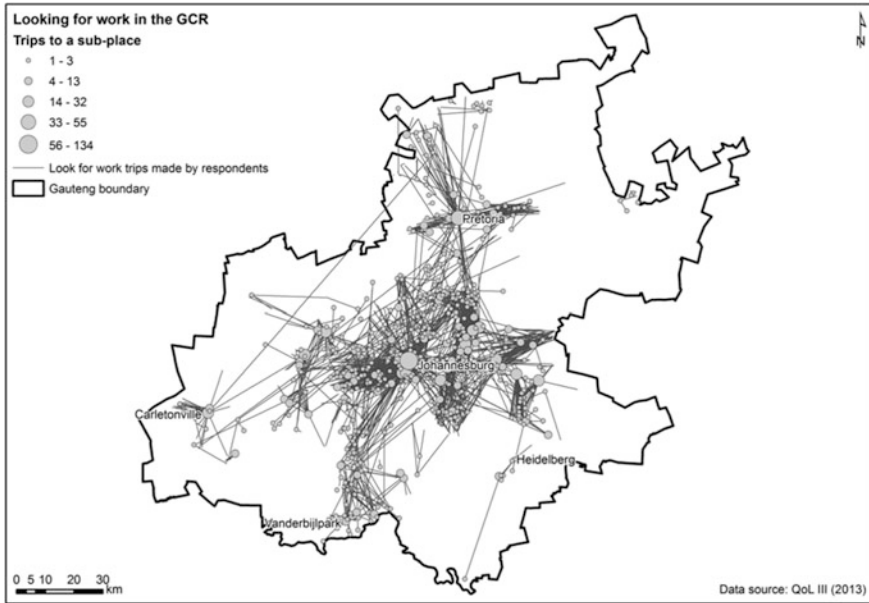


Fig. 9.4 Distance travelled to look for work [Source GCRO (2014)]

9.3 Government Initiatives to Promote Economic Activity in Townships

The various spheres of government have made some efforts to counter the challenges that townships face. One of the key priorities of the democratic government has been increasing social welfare. In *The Reconstruction and Development Programme—A policy framework* (ANC 1994), government acknowledged that poverty and inequality could only be addressed if economic growth is inclusive, sustainable, and contributes to the human resource development of the economy. Reduction of poverty and inequality were also the drivers of the later National Development Plan (NDP) (NPC 2012). Significant progress has been made in reducing income poverty in South Africa, with poverty rates¹ having declined from 42.2% in 2006 to 32.2% in 2011 (StatsSA 2014; Chitiga-Mabugu et al. 2016). Notably, in 2011, the poverty rate for Gauteng (12.7%) was the lowest in the country. Even though there has also been a reduction in inequality, it has not been as great as the reduction in poverty (Chitiga-Mabugu et al. 2016). Despite significant income poverty reduction over the years, multidimensional poverty remains a challenge across the geographical landscape of the province (Mushongera et al. 2016).

¹Using the lower bound poverty line of Rs 443 per month in 2010/11 (see Stats SA 2015).

The post-apartheid government has put measures in place over the years to promote inclusive growth, particularly of the ‘second economy’, a concept that evolved into encouraging increased economic activity in townships (TIPS 2009). This is reflected in policies and programs such as the Reconstruction and Development Programme (RDP), which sought to build infrastructure in townships; the Neighbourhood Development Programme, which uses public funding to leverage private and community investment in townships; and the National Development Plan (NDP), which emphasises the significance of job creation by small, medium and micro enterprises (SMMEs). The NDP—government’s master plan for economic growth and poverty reduction—aims to increase employment by providing support to SMMEs (NPC 2012). It proposes various initiatives, including public and private procurement, that could provide the required support and simplify the regulatory environment, thereby easing access to debt and equity finance, and consolidating and strengthening small-business support services, as well as various other initiatives aimed at closing the skills gap (NPC 2012).

At the provincial level, the *Gauteng 2055 Discussion Document* (G2055) on long-term development plans for the Gauteng City-Region emphasizes that the region’s growth path should be inclusive and equitable (GPG 2012). It further asserts that the growth path should be anchored on four ideals: equitable growth; social inclusivity and cohesion; sustainable development and infrastructure; and good governance. The province has also adopted the GTERS mentioned earlier in this chapter, with the objective of providing support to township entrepreneurs across the value chain of enterprise development. This strategy acknowledges that entrepreneurship levels in South Africa are low, as is the level of technological sophistication. Many such enterprises are survivalist in approach, and very small in size (GDED 2014). Statistics (StatsSA 2014) further prove this point: an estimated 93% of non-VAT registered businesses in 2013 were in the informal sector, and 54.4% were in the trade sector. Of those owners running informal businesses, 79.1% did not have a bank account, and over 90% had no credit facilities, asset finance or mortgage loans for their businesses. Their turnovers ranged from R1500 to R6,000 per month. Providing support to such business enterprises is imperative.

The aforementioned policies and initiatives are attempts to reduce the structural inequalities and the weak links between the informal traditional economy that characterises townships, and the urban formal advanced economy (FAE). These initiatives could allow South Africa to tap into the potential that townships represent in terms of participation in the country’s growth process, and expand it. Mahajan (2014) presents a framework for strengthening these links. He argues that this could be done via the promotion of an ‘informal modernizing economy’ (IME), which would be anchored largely in urban townships, but with strong links to the FAE. An IME can either compete with the FAE (particularly in lower-end consumer goods) or complement it. According to this argument, the GVC framework could be used as an economic development strategy, to guide efforts aimed at increasing and strengthening the links between township economies and the FAE. This would entail addressing problems such as market segmentation, which

complicates the movement of goods, services, technologies, and factors of production. In the long run, enhancing the connections between township economies and GVCs can facilitate convergence of township economies towards the FAE (Mahajan 2014).

9.4 The Global Value Chain Framework

A value chain describes the set of processes or activities that an enterprise or business undertakes to ensure its products or services reach the consumer. At the core of a value chain is the degree and nature of interactions between all the actors involved in taking a product or service from conception to the final consumer. A value chain evaluates what each activity, of value to the products and services, an enterprise creates and builds at every step in the chain. The actions and processes undertaken are linked to the competitive strength of the enterprise (Porter 1985), and range from design, production, marketing and distribution to support of the final consumer. These need not be contained within a single firm or location—they can be divided among different enterprises and/or different locations. Integration into value chains has been shown to increase competition, and spur innovation and growth of small businesses through the associated spillovers. In this manner, firms are able to improve their competitiveness. The concept of value chains is premised on independent yet interdependent businesses that cooperate to bring a product or service to the end user.

The emergence of GVCs was initially spurred by the coordinated manufacture of motor vehicle parts and components by various firms in different geographical regions. Large supermarket and retail outlets later also embraced the concept (Amador and Cabral 2014; Farole and Winkler 2014). At the leading edge of the process were multinational firms, able to take advantage of divergent countries' business environments and fragment their production processes worldwide. This has been referred to as vertical specialization (Balassa 1967), transnational production (Feenstra 1998), international fragmentation of production (Arndt and Kierzkowski 2001), global production networks (Ernst and Kim 2002), and more fittingly as factories that cross international borders (Taglioni and Winkler 2014). Unlike traditional approaches to enterprise development, value chain development emphasizes facilitating market linkages, developing business services markets, and improving the environment in which enterprises operate.

9.4.1 *Approaches to, or Models for, GVC Analysis*

There are two broad models that can be used to illustrate how the GVC phenomenon promotes economic development across countries: the flying geese model, first developed in 1935 by Japanese economist Kaname Akamatsu (1961),

and the gateway model (Draper et al. 2016). The flying geese concept was used to model how developing countries could use their interrelationships with advanced economies to grow their economies and facilitate economic convergence with their developed counterparts. The flying geese model has one country serving as the ‘growth pole’ and leading the development process. This country ‘flies’ into neighbouring countries, establishing production processes there. The spillover effect of this process results in technology transfer, skills upgrading, and job creation in the other countries. Thus a regional ‘factory’ is established, and the structural transformation of neighbouring countries takes place. Contemporary theorists (Kasahara 2013; Draper et al. 2016; Engel et al. 2016) use this model to discuss the Japan-led East Asian growth experience. Japanese companies, which imported advanced technology from the US and Europe, promoted regional integration when they invested in neighbouring countries—Taiwan, initially, and then South Korea, Singapore and Hong Kong. The Southeast Asian nations, including Indonesia, Malaysia, Philippines and Thailand were drawn in later. China, Vietnam and India are more recent participants in the phenomenon. Investment in other countries occurred through licensing, joint ventures, and foreign direct investment (FDI). Godfrey (2015) shows the web of value chains coordinated by South African retailers that symbolises the growing South-South trade and highlights concerns with social implications of participation in value chains.

The second GVC model is the gateway model, first developed by Cohen (1982). This is a development paradigm in which a country serves as a ‘node’ for regional development. The nodal country is the leading area for development and economic processes, which tend to ‘polarize’ around that country. The leading area is identified by the concentration of economic activities around it. In this model, the location of the other countries and their ‘economic distance’ are important. Infrastructure, including transport and services, are therefore important components in the gateway model. Economic activities tend to concentrate at the gateway and trigger growth impulses in the peripheral countries (Draper et al. 2016).

9.4.2 Measuring the Contribution of GVCs

Increasing recognition of GVCs’ contribution to growth has come about with the expansion of international trade, and has been measured through Foreign Direct Investment (FDI) flows, in particular, but also through value added (Farole and Winkler 2014; Amador and Cabral 2014; Ali-Yrkkö and Rouvinen 2015; Weilin et al. 2015). Factors that have supported the growth in GVCs include technological progress and lower trade costs, as well as economic and trade liberalization (Amador and Cabral 2014). GVCs have a transformative impact on global development and are increasingly being recognized as particularly important for developing countries (Farole and Winkler 2014). Enterprises in developing countries can grow by joining GVCs instead of building their own value chain from scratch. GVCs have accelerated the flow of knowledge and technology from developed to

developing countries, and more than half of global trade is now facilitated by GVCs (Backer and Miroudot 2013).

Multinational firms, through FDI, are able to increase their markets and exploit resource opportunities and activities abroad by using global production networks. The macroeconomic gains include increased employment, foreign exchange earnings, and tax revenues. At the microeconomic level, gains might be skills development, infrastructure and business environment improvement, increased competition, price advantages, more efficient resource allocation, and higher productivity. Other, less obvious, spillover effects of FDI accrued through domestic investment might relate to transfer of knowledge—technological, codified and tacit production-related knowledge, including managerial and organizational practices. Spillovers can be intra-industry (horizontal) or inter-industry (vertical). Furthermore, the local industry can benefit from backward spillovers, such as with suppliers in upstream sectors, as well as local customers in downstream sectors (forward spillovers) (Farole et al. 2014).

Spillovers described in GVC literature occur in three main channels: the supply chain (backward and forward linkages); labour turnover (horizontal and vertical); and changing market forces. Vertical linkages in the supply chain occur when domestic firms become suppliers of inputs in the production process of multinational firms (backward), or when goods supplied by multinational firms are used as inputs in local industries (forward). They also occur when large firms subcontract part of their production to local firms in the same industry. Spillover effects through labour turnover occur when intra- and inter-industry exchanges happen. This also leads to productivity gains—more firms participating in the market leads to increased competition. This in turn benefits downstream sectors. The source of investment, the FDI parent country, also influences production strategy, managerial practices, cultures, and attitudes towards skills development.

Studies have been undertaken to test the claim that benefits from FDI-generated horizontal and vertical spillovers exist (Caves 1974; Görg and Strobl 2001). Using cross-sectional data, Görg and Greenaway (2004) find positive spillovers, but panel studies tend to give ambiguous results (Paus and Gallagher 2008). Javorcik (2004) uses input–output data to measure spillovers and finds positive horizontal and backward spillovers but no evidence of forward spillovers. FDI spillovers can be negative when firms lose market share in the face of increased competition (the competition effect). Generally, the extant literature seems to support evidence of the existence of positive vertical and horizontal intra-industry spillover effects (linkages) and labour turnover. The mixed results indicate that while spillover effects should theoretically be positive, they do not always materialize automatically. The impact of spillovers is moderated by the spillover potential of foreign investors, the absorptive capacity of local agents (firms and workers), and the interaction of these two factors. This interaction is determined by host country characteristics, institutional frameworks, and transmission channels (Farole et al. 2014).

It has been argued that while FDI is a significant catalyst for trade and subsequent economic growth, the role of domestic investment cannot be overlooked (Firebaugh 1992; Berman 2011). The promotion of small businesses through

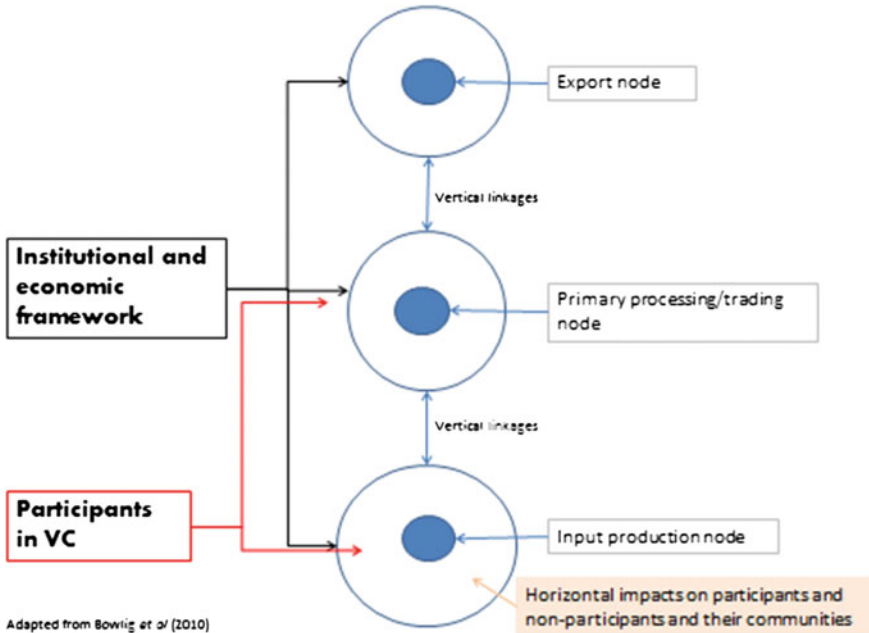
domestic and domestically-bound value chains is pertinent to this argument. Although domestic value chains are similar to global value chains, they have advantages that underscore their crucial role in the growth and development of small businesses. GVCs are usually export-oriented whereas domestic value chains are not. Importantly, domestic participants are not necessarily subject to global competition, international trade agreements and restrictions, tariffs or sanctions (Berman 2011), even where domestic producers supply the domestic market under the direction of global corporations. Domestic producers might have knowledge of local market channels and greater understanding of local norms and practices, by virtue of being imbedded in the local market. They might also, therefore, have greater negotiating leverage.

The value chain approach can be used as a tool to facilitate the process of market integration and so the integration of domestic enterprises into GVCs is a policy priority in most emerging and developing economies. The success of GVCs has also promoted the use of domestic value chains as an economic development strategy. This is particularly important in developing countries that have a relatively large informal sector. In South Africa, there were at least 1.5 million people operating non-VAT registered businesses in 2013 (StatsSA 2014). Peberdy (2015) found that, in 2013, 65% of respondents in the Gauteng Quality of Life Survey operated informal businesses (Ibid). Informal businesses typically have weak linkages with other buyers and sellers, as well as producers. They have difficulty establishing direct commercial relationships with formal markets because they often deal in small quantities and do not always keep records. Integrating township businesses in South Africa into value chains is therefore a priority, since townships house such a notable urban informal sector.

9.5 Conceptual Framework for GVCs in South African Townships

The positive contribution of GVCs to the development process, for example, through transfer of skills from one region to another, productivity gains, and increased trade between countries, is well documented (Min 2011; Amador and Cabral 2014; Farole and Winkler 2014). Advocacy for GVCs as an economic development strategy stems from their spillover effects, which promote supplier upgrading when multinational manufacturing companies source their inputs from local suppliers. The trade and industrial policy requirements of domestic sourcing often force multinational corporations to work with domestic producers and processors, which in turn helps the development of a domestic supply base that conforms to international standards.

GVC analysis entails examining the typologies and locations of participants, the linkages between them and the dynamics of inclusion and exclusion. An illustration is provided in Fig. 9.5.



Adapted from Bowring et al (2010)

Fig. 9.5 A stylized map of GVCs

In its simplest form, a GVC traces the steps a product goes through from production to consumption, with each step constituting a value chain *node*. A value chain node is a point where the product is exchanged or it goes through a transformation such as some form of processing. There are various economic agents operating and interacting at different nodes of the value chain. The movement of goods, information, inputs and finance between nodes represents linkages or relationships among agents. These linkages indicate the extent of integration between the different agents. They can be classified into two broad categories, vertical and horizontal integration, as mentioned earlier. *Vertical integration* describes the links between agents at the lower node (in terms of value addition) and others at a higher node. The various stages involved in the production of a commodity—the quantity, quality and timing of the product—through to its marketing, are synchronized among the various agents involved (Min 2011). The relationship between buyers and suppliers, for example a farmer acquiring seed and fertilizer, can be referred to as backward or upstream linkages. The movement of goods from producers to consumers can be referred to as a forward or downstream linkage.

There are two aspects of *horizontal integration*. On the one hand, it describes relationships between agents operating within the same value chain node—meaning that they offer the same or similar products. Spaza shop (small convenience shops in townships) or operators forming a *stokvel* (a savings or investment club) are examples of horizontal integration. When would-be competitors pool their

resources, they can reduce transaction costs of inputs, acquire market information, access new technologies, and even have access to higher value added markets (Min 2011). In the food value chain, various farmers coming together to form a cooperative to enhance bargaining power and improve access to markets by reducing costs can be referred to as horizontal linkage. The extent and impact of vertical relations are moderated by horizontal elements, including poverty, gender, and labour, which are influenced by the prevailing policy and institutional environment (Bowlig et al. 2010).

It is generally considered an advantage to move upwards in the value chain, a process referred to as *upgrading*. A firm acquires a set of skills and capacities that enable it to 'move up' the value chain, thus capturing a larger share of added value. Upgrading can be functional (increasing skill content), or related to process (increasing efficiency in production), product (for example, diversification), or inter-chain (applying competencies acquired in one product to another value chain) (Bowlig et al. 2010). During this process, a firm is able to increase its production efficiency, produce higher value commodities, enhance its skills, increase competitiveness in part of the production process, and access new market segments (Bowlig et al. 2010). For example, in the food value chain, agricultural inputs such as seed and land are at bottom of the chain, the next node is crop production, followed by processing, while distribution and marketing are at the top of the value chain.

Small businesses in developing countries face constraints that make it difficult to take advantage of integration into GVCs and derive the benefits. These constraints include the small size of the enterprise, a limited skills base to draw on, and limited access to resources, information (for example, about prices), technology and other business services. Their connections to other market participants are weak, they have credit constraints, and face high transaction costs (Min 2011). These factors make it difficult for a business to compete in the global market. To counter these disadvantages, the various market players in developing countries need to strengthen linkages—be they vertical or horizontal.

A wide range of data sources can be used to measure the impact of GVCs on the local economy. At the sector level, relevant data can include international trade statistics, customs statistics, and input–output (I–O) tables. Data at this level is easy to use, but is not always very accurate. For example, when using Standard Industrial Trade Classification (SITC), commodities may not be classified accurately. More recently, firm-level data has been used. This is more accurate than sector-level data, but it is also more complex to use (Amador and Cabral 2014). Farole and Winkler (2014) used firm-level data that has a wide range of indicators, including the business environment, the firm's characteristics, workforce, skills innovation and technology. This data was merged with output, value added and capital stock from another database. Alfaro et al. (2015) combined firm-level data with input–output (I–O) data to investigate the impact of different characteristics of stages in the production process on the integration of these stages. Econometric analysis of

inputs in the production process was used to investigate determinants of a firm's propensity to integrate upstream (from consumers to producers) versus downstream (from producers to consumers).

9.6 An Application of the GVC Framework to Diepsloot Township

9.6.1 Background

Diepsloot is not a typical township, it is one of the newer settlements in Gauteng province, having been established in 1995, only after the end of apartheid. Nevertheless, it exhibits the major economic characteristics of South African townships, including high levels of poverty and unemployment, and lack of infrastructure. It is more informal, and has a higher proportion of (foreign) migrants than other townships in Gauteng. It is considered to be a prime location, given its proximity to Gauteng's economic powerhouse—the Johannesburg–Midrand–Tshwane corridor, yet despite this, Diepsloot is far from being integrated into the urban economic or social map.²

Availability of suitable data presented an opportunity to use this township as a case study and investigate empirically the existence of GVC linkages in a township setting. Draper et al. (2016) surmise that the flying geese model would be difficult to replicate in the southern African region because of the lack of a favourable demographic dividend. The opinion is, rather, that the gateway model would be more realistic. Accordingly, the gateway model is used in our analysis of the potential of localized value chains in the case of Diepsloot.

Figure 9.6 below shows that the economy of Diepsloot is very small, constituting only about 0.4% of the Gauteng economy. This is to be expected considering that the population of Diepsloot was estimated in 2011 to be only approximately 200,000 (Harber 2011), whereas the population of Gauteng as a whole was estimated to be 12.2 million. The economy of Diepsloot is driven largely by the tertiary sector, which makes up 68% of the total economy (Fig. 9.6a). The largest component of the tertiary sector is wholesale and retail, followed by the finance, real estate and business services sector (Fig. 9.6b).

Data from the enterprise survey conducted in Diepsloot in 2012 by the World Bank (Mengistae 2014) was used for this analysis. The data collection was part of a study whose primary objective was to develop a systematic understanding of the structure of the township economy. The survey was conducted in two phases, the first of which was a business census that found 2509 businesses operating in

²For example, an extensive network of minibus taxis connects Diepsloot to the economic centres nearby. This means of transport is too expensive and time-consuming to bridge the geographical divide in a meaningful way. No train or bus service exists that offers a less expensive alternative.

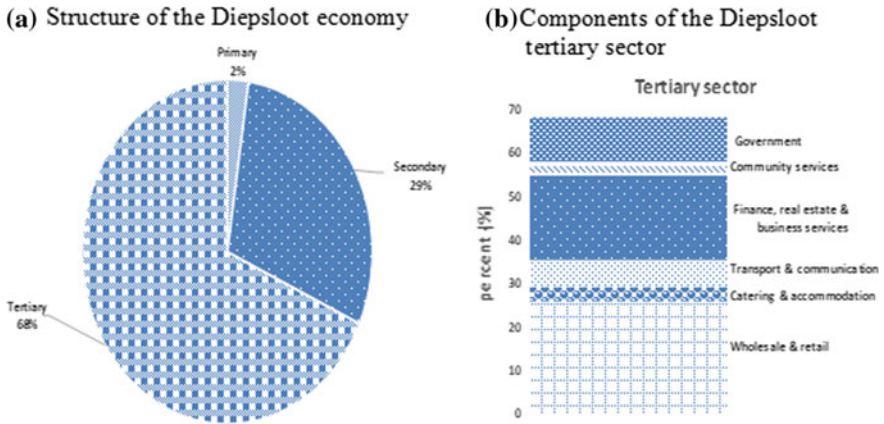


Fig. 9.6 Structure of the Diepsloot economy and components of the tertiary sector (Source Authors’ calculations based on EasyData)

Diepsloot in 2012. All operating enterprises were registered, and then stratified random sampling was used to select 450 firms for further data collection (Mengistae 2014, pp. 179–180).

As in other townships, retail businesses dominated in Diepsloot. Overall, 78% of businesses in Diepsloot were found to be of a retail nature (Mahajan 2014). The dominant activity was food retail (49%), followed by other retail (24%), and other activities including hairdressing, shoe repair, and tailoring services. Production activity, which includes welding, construction, and furniture manufacturing, constituted only about 2%. The GVC framework for Diepsloot adopted in this chapter, using the retail value chain (RVC), is illustrated in Fig. 9.7. In the figure, Johannesburg and Tshwane are shown as ‘nodal’ cities, with Diepsloot forming part of the periphery. The framework acknowledges that even though the conventional application of value chain analysis is export-oriented and applies to cross-border trade, there are also many value-chain relationships that occur within the borders of one country (Berman 2011).

9.6.2 Integration of Diepsloot Businesses into Local and Global Value Chains

There are several ways that levels of integration into GVCs can be measured empirically. Previous research typically applied methodological approaches using data from three main sources: international trade statistics, customs statistics, and input–output tables (Amador and Cabral 2014). International trade statistics have been used to measure levels of integration using ratios of values of parts and components to values of final products (Athukorala and Yamashita 2006; Jones

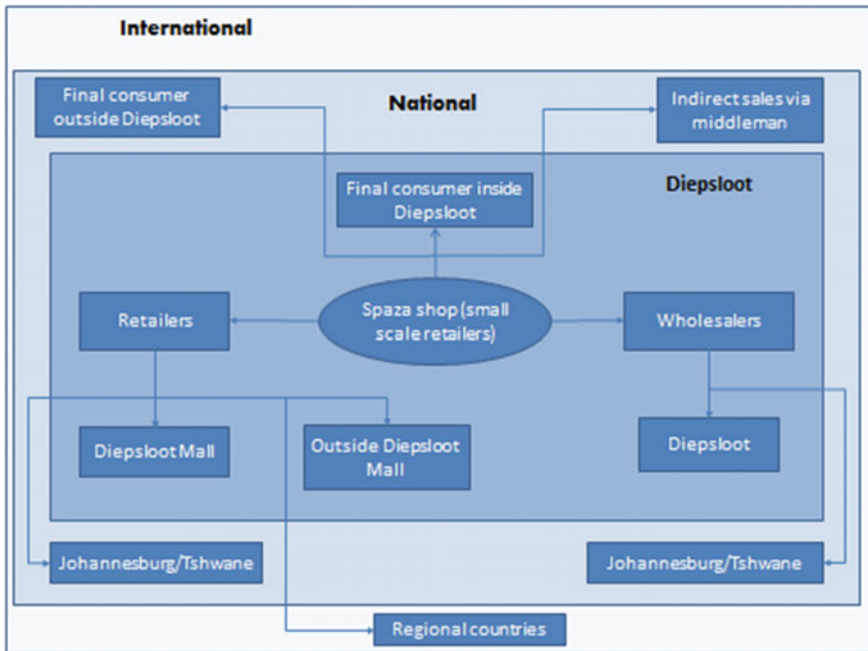


Fig. 9.7 An illustration of the Diepsloot retail value chain (Source Authors' representation)

et al. 2005). The main advantage of this approach is that a wide spread of countries and products can be considered, and it allows for comparability across countries. In addition, the data is fairly simple. The disadvantage is that it relies heavily on product classification of trade statistics, and the measure is relatively imprecise. Customs statistics include detailed information on tariff exemptions or reductions granted on the basis of the domestic input content of imported goods, and have been used to test empirically the level of inward and/or outward processing trade (see, for example, Görg 2000; Egger and Egger 2005; Swenson 2013). Input–output tables are used to measure imported input shares of gross output, total inputs or exports. Approaches using I–O tables consider either the proportion of value of direct imported inputs used in production, or the import content of exports (Hummels et al. 2001; Hijzen 2005).

More recently, the use of firm-level data to measure the level of integrations in GVCs has been growing. Given that this body of research is still in its infancy, no standardized methodology has yet been developed. Some research projects rely on qualitative survey data, while others make use of international trade data to quantify the relevance of offshoring (Ebenstein et al. 2014; Ottaviano et al. 2013; Becker et al. 2013). Ali-Yrkkö and Rouvinen (2015) used the share of the company's value of activities in the country's GDP, whereas Weilin et al. (2015) used foreign value-added as an indicator of the extent of integration into the GVC. The main

advantage of using firm-level data is improved accuracy of the measure, although the complexity of the data is relatively high.

The innovation of this chapter lies in its use of firm-level data from township businesses. The data covers both formal and informal businesses in Diepsloot and therefore gives a more realistic picture of township economies, which are typically dualistic in nature (Ligthelm 2010). In addition, the data contains information on where businesses source their supplies, which presents an opportunity to examine the extent of upstream linkages between retailers and suppliers. The type and diversity of suppliers are used here as indicators of the extent to which a business is integrated into the domestic value chain. GVC literature also usually uses values of products, but such detailed information was not available in the enterprise survey, and therefore sources of supply have been used as a proxy for integration. This measure gives an indication of the relationships and business networks that businesses in Diepsloot have with other businesses inside and outside the township.

Table 9.1 shows the various types of suppliers used by business enterprises in Diepsloot. The leading sources of supplies was retailers in Johannesburg and Tshwane (34.9%). This finding is surprising, since the expectation is that businesses are most likely to source supplies from wholesalers, given that buying in bulk from such establishments is usually the cheapest option. In Diepsloot, 56% of business operators indicated that they sourced their supplies from either Johannesburg or Tshwane, while 44% of operators sourced their supplies from within Diepsloot, 23.6% from wholesalers. One of the businesses sourced supplies from Zambia.

Table 9.1 reveals interesting patterns with regard to sources of supplies for Diepsloot businesses. First, the likelihood of businesses sourcing supplies from within Diepsloot is almost the same as sourcing supplies from either Johannesburg or Tshwane. This could be explained by Diepsloot's relative proximity to the two cities, which allows businesses to take advantage of the fact that Johannesburg and Tshwane offer more variety than Diepsloot does. Some integration exists, therefore, between Diepsloot and its proximate cities of Johannesburg and Tshwane. The links to other regional countries are limited, however, and could be promoted.

In addition, data revealed the existence of both horizontal and vertical linkages. It showed that around 65.5% of retail business sourced their supplies from other retailers, either within Diepsloot or Johannesburg and/or Tshwane. These are horizontal linkages in the value chain as they reflect the level of integration or interaction among businesses in the same node. It is also consistent with retail being the most prevalent type of business in Diepsloot. The advantage of having strong horizontal linkages is that businesses are able to pool resources when sourcing their supplies. Vertical linkages, on the other hand, were revealed in that 34.5% of retail businesses used wholesalers as their source of supplies. Vertical linkages were thus revealed to be weaker than horizontal ones.

Table 9.2 gives further insight into the number of sources enterprises used to source supplies. This is important because it gives an indication of the diversity of choices but also of the breadth of relationships or connections businesses had with suppliers. The assumption here is that the higher the number of suppliers a business used, the more integrated it was with domestic value chains. It should be noted,

Table 9.1 Sources of supplies

Supplier	%
Retailers in the Diepsloot Mall	22.44
Retailers in Diepsloot, excluding in the Mall	22.00
Wholesalers in Diepsloot	23.56
Wholesalers in Johannesburg and Tshwane metro municipalities	33.33
Retailers in Johannesburg and Tshwane metro municipalities	34.89
International (one from Zambia)	0.22

(Source Authors’ calculations based on the Diepsloot enterprise survey 2012)

Note Businesses frequently source their supplies from more than one source, therefore the percentages shown in Table 9.1 do not add up to 100%

Table 9.2 Number of sources, out of 6, the enterprise uses

	%
Zero	2.00
One	66.67
Two	24.67
Three	6.22
Four	0.44

however, that this measure does not capture the quality of such integration. The majority (91.3%) of enterprises used a maximum of two sources for their supplies.

Investigating the breadth of connections for businesses shows that about 76% of businesses in Diepsloot interacted only with suppliers in Diepsloot. The advantages of having a connection from Diepsloot to Johannesburg and Tshwane included transfer of skills and availability of resources, among others.

A point of interest is the growth in the number of employees since startup. The selection is determined largely by data availability. Figure 9.8 shows that 41.3% of businesses reported growth in the number of employees since startup, 26.9% reported a decline, and for the rest (31.8%), the number of employees remained the same.

Box 9.1 Characteristics of the business that had links to another country in the region

Only one enterprise had links to another country in the region, Zambia. This was a sole-owned business, managed by the owner, who was a 31-year-old non-South African female. This business therefore fell within the 32% of business with female owners in the enterprise survey, and the 54% of businesses with owners aged between 20 and 34. This owner completed secondary school, placing her within the estimated 30% of the sample who had completed secondary school.

The enterprise operated in the services sector, in hairdressing. An estimated 18% of business enterprises in Diepsloot were in the services sector.

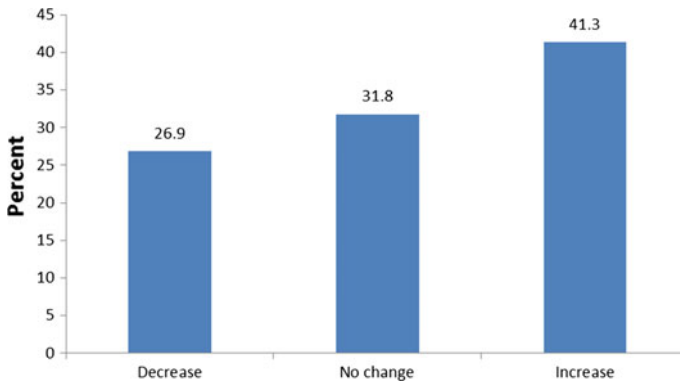


Fig. 9.8 An illustration of growth in number of employees since startup (*Source* Authors' calculations based on the Diepsloot enterprise survey 2012)

Premises used for the business were rented and had a connection to electricity. Encouragingly, business records were kept and advertising was done.

The owner belonged to a *stokvel* (savings club) and had owned other businesses before. Her parents/grandparents ran a business.

In terms of business outcomes, the enterprise had not experienced a change in the number of employees. The owner had never employed anyone other than herself since startup. The monthly sales were Rs 6000, which was below the Rs 7500 sample average. The business used only one source for its supplies, which was in Zambia.

(*Source* The Diepsloot Enterprise Survey 2012)

9.7 Econometric Analysis

9.7.1 *The Estimation Framework*

This section outlines the econometric methodology used and presents econometric analysis results. The analysis is twofold: First, the factors that affected an enterprise's level of integration into GVCs were examined. The factors included characteristics of the owner, the firm, and the environment in which the business operated. Second, the ways in which the level of integration impacted the performance of the business were examined, specifically, its ability to grow over time, as reflected in the growth in the number of employees since the business was set up.

Index functions or latent variables, $Integration_i^*$, and $Employees_i^*$, which are ordinal measures of the level of enterprise i 's integration into the value chains, as well as growth in the number of employees, respectively, are assumed. These

indices are fully known to the respondent, but unknown to others, that is, they are systematic unobservable variables or factors. These latent variables are assumed to be a linear combination of the enterprise's observed and unobserved socio-economic characteristics in the following manner,

$$Integration_i^* = \beta_1 X_{1i} + \varepsilon_{1i} \quad (9.1)$$

$$Employees_i^* = \alpha_1 Integration_i^* + \alpha_2 X_{2i} + \varepsilon_{2i} \quad (9.2)$$

where subscript i denotes enterprise-level observation. The parameters to be estimated are denoted by β_1 , α_1 and α_2 . The error terms are denoted by ε_1 and ε_2 and are assumed to be independently, identically, and normally distributed (Wooldridge 2002). The vectors X_1 and X_2 comprise socio-economic characteristics of the enterprise. Their inclusion is based on existing empirical literature and theory. The same set of variables might affect both dependent variables—integration and employee growth—and these might also affect each other directly. Specifically, and in line with examining the effect of integration on enterprise performance, an assumption is made that integration levels affect the employee growth of the enterprise. Thus, *Integration* is included as an explicative variable in Eq. (9.2). Given that $Integration_i^*$, and $Employees_i^*$ are not observable, the following set of equations are estimated,

$$Integration_i = \beta_1 X_{1i} + \varepsilon_{1i} \quad (9.3)$$

$$Employees_i = \alpha_1 Integration_i + \alpha_2 X_{2i} + \varepsilon_{2i} \quad (9.4)$$

where $Integration_i$ and $Employees_i$ are the observed dependent variables. The underlying rationale with this formulation is that the latent continuous metrics, $Integration_i^*$, and $Employees_i^*$, support the ordinal responses observed by the researcher, $Integration_i$ and $Employees_i$, respectively. For model identification purposes, Eqs. (9.3) and (9.4) are to be estimated without an intercept.

Constructing the dependent variables The number of sources an enterprise used for its supplies is used as a proxy for the extent to which the enterprise was integrated into value chains.³ This measure gives an indication of the relationships and business networks that Diepsloot businesses had with other businesses inside and outside Diepsloot. As shown in Table 9.1, respondents indicated whether or not they used the following suppliers: retailers in Diepsloot Mall; retailers in Diepsloot but not in Diepsloot Mall; wholesalers in Diepsloot; wholesalers in Johannesburg and Tshwane metro municipalities; retailers in Johannesburg and Tshwane metro municipalities; international suppliers. A dummy variable was created for each of

³The choice of using sources of supplies is determined largely by data availability. Data on where sales from the enterprise end up would have enabled us to examine the extent to which township enterprises are producers rather than consumers of some external supplies. While this would have been a better proxy for integration, information on this was not collected, unfortunately.

these sources whereby the variable takes the value of one if a respondent indicates using that source, and zero otherwise. An aggregate measure of the number of sources is constructed by adding up the dummy variables, meaning the minimum possible score is zero, and the maximum is 6. A score of zero means no indication of source of supplies was given (this is possible, for example, in the case of home production), and a score of six indicates the enterprise used all six options to source their supplies. We refined this aggregate proxy for integration further by capturing the diversity (in terms of geographical spread) of the sources used. This variable, $Integration_i$, is thus constructed as follows:

$$Integration_i = \begin{cases} 0 & \text{if no suppliers used} \\ 1 & \text{if only suppliers in Diepsloot used} \\ 2 & \text{if suppliers in Diepsloot, Johannesburg, and Tshwane used} \\ 3 & \text{if suppliers in Diepsloot, Johannesburg, Tshwane and other countries used} \end{cases} \quad (9.5)$$

It turns out that 3.6% of Diepsloot enterprises did not use any suppliers, 73.5%—the majority—used only suppliers located within Diepsloot. The rest (23.8%) used suppliers in Diepsloot as well as in Johannesburg and/or Tshwane. No enterprise used Diepsloot, Johannesburg/Tshwane, and international suppliers, concurrently. This means the resultant integration variable takes on three categories: zero, one and two.

Since $Integration_i^*$ is an ordinal index, it can be scaled so that a one-to-one correspondence exists between $Integration_i^*$ and $Integration_i$. Accordingly, we specify the following,

$$Integration_i = \begin{cases} 0 & \text{if } \mu_0 \leq Integration_i^* \leq \mu_1 \\ 1 & \text{if } \mu_1 \leq Integration_i^* \leq \mu_2 \\ 2 & \text{if } \mu_2 \leq Integration_i^* \leq \mu_3 \\ 3 & \text{if } \mu_3 \leq Integration_i^* \leq \mu_4 \end{cases} \quad (9.6)$$

where μ_j 's represent thresholds or arbitrary cut-off points in the individual's preference space such that $\mu_0 \leq \mu_1 \leq \mu_2 \leq \mu_3 \leq \mu_4$. Larger cut-off points correspond to larger values of $Integration_i^*$. These cut-off points are estimated along with the parameters and the vector of parameters. We adopt the additional notation that $\mu_0 = -\infty$ and $\mu_4 = +\infty$.

A second dependent variable used is the change in the number of employees the business has had since startup. This is constructed as follows:

$$Employees_i = \begin{cases} 0 & \text{if the number of employees has decreased} \\ 1 & \text{if the number of employees has not changed} \\ 2 & \text{if the number of employees has increased} \end{cases} \quad (9.7)$$

As Fig. 9.8 illustrates, 41.3% of enterprises in Diepsloot registered growth, 26.9% reported a decline in the number of employees, while the rest (31.8%) remained constant.

Similarly, since $Employees_i^*$ is an ordinal index, it can be scaled so that a one-to-one correspondence exists between $Employees_i^*$ and $Employees_i$. Accordingly, we specify the following,

$$Employees_i = \begin{cases} 0 & \text{if } \varphi_0 \leq Employees_i^* \leq \varphi_1 \\ 1 & \text{if } \varphi_1 \leq Employees_i^* \leq \varphi_2 \\ 2 & \text{if } \varphi_2 \leq Employees_i^* \leq \varphi_3 \end{cases} \quad (9.8)$$

where φ_j s represent thresholds or arbitrary cut-off points in the individual’s preference space such that $\varphi_0 \leq \varphi_1 \leq \varphi_2 \leq \varphi_3$. Larger cut-off points correspond to larger values of $Employees_i^*$. These cut-off points are estimated along with the parameters and the vector of parameters. We adopt the additional notation, $\varphi_0 = -\infty$ and $\varphi_3 = +\infty$.

The assumption that the error term is independently, identically, and normally distributed, with zero mean, allows us to make probabilistic statements that relate the enterprise’s index on integration levels as well as employee growth to selected independent or explanatory variables. Given the ordered nature of the dependent variables, modelling the probability of an outcome (i.e. integration or employee growth) results in an ordered probit specification. We accordingly estimate Eqs. (9.3) and (9.4) using an ordered probit framework.

Estimation strategy The main challenge associated with estimation of Eqs. (9.3) and (9.4) is the presence of self-selection. Specifically, there could be systematic differences between enterprises at different levels of integration into value chains. This could result in differences in enterprise performance. Failing to correct for the possibility of self-selection in the sample might lead to biased estimates. An additional estimation challenge is that integration and employee growth might be interdependent. That is, the two could be linked through unobserved or unmeasured variables. Disregarding this and estimating Eqs. (9.3) and (9.4) separately via ordered probit models would give inefficient estimates.

The econometric strategy, given the aforementioned challenges, is to start by testing for interdependency between integration and employee growth. To do this, estimation of Eqs. (9.3) and (9.4) is done using the simultaneous bivariate ordered probit (BIOPROBIT) procedure developed by Sajaia (2008). The software used is Stata. This specification allows interdependency between the errors terms of Eqs. (9.3) and (9.4), that is, integration and employee growth is determined jointly. A correlation coefficient is estimated and, if it is non-zero and statistically significant, then the use of the BIOPROBIT model is justified, otherwise estimating Eqs. (9.3) and (9.4) separately would be more appropriate. In this case, the correlation between the error terms was found to be negative and statistically insignificant. This means the null hypothesis of independency of the two equations is not rejected. This suggests the simultaneous bivariate ordered probit specification is not supported by the data.

Given this and the challenge of self-selection with respect to integration, the estimation strategy employed is that of common practice two-stage estimation, in

which output from the first stage is used as an explanatory variable in the second stage. In this case, the first stage estimates Eq. (9.3) and uses predicted probabilities as an input in the second stage, which involves estimation of Eq. (9.4).

The increasing nature of the ordered classes means that the interpretation of the model's parameter of primary interest, α_1 , is as follows: a positive sign indicates that the enterprise is more likely to experience growth in the number of employees as their level of integration into GVCs increases, while a negative sign suggests the converse. Similarly, positive signs for the set of parameters in β_1 and α_2 suggest the particular variable positively influences integration and employee growth, respectively.

Explanatory variables Table 9.3 presents descriptive and summary statistics of the variable used in the econometric analysis. The choice of variables is guided by existing studies as well as data availability. The current number of employees per business is included in the estimation of Eq. (9.3) but not in Eq. (9.4), because one follows from the other. It is assumed that the number of years an enterprise has had a relationship with its primary supplier affects integration levels and not performance directly. Thus it is included in Eq. (9.3) and not in Eq. (9.4).

Who owns a business in Diepsloot? Table 9.3 shows that, in 2012, 32% of businesses were owned by women, and only 46% of business owners were South Africans, the rest being migrants from other African countries. This is a striking result, given that foreign nationals made up only about 19% of Diepsloot's population. The average age of a business owner was 35 years, and in terms of educational attainment, an average owner started but did not finish secondary school.⁴

In terms of the nature of businesses, Table 9.3 suggests that the majority of businesses in Diepsloot were survivalist, mostly informal and operated at a micro scale. Only 35% kept any financial records (books). Data indicated that only 9.4% were registered for tax purposes and only 13% held a business licence. Only 32% advertised.

Business operations in Diepsloot were closely integrated into the household ecosystems: 41.6% were run from the owner's home and 35% from rented premises (typically another person's residence). Close to 46% of business had an electricity connection and 15% of owners used their own transport to ship products to customers.

Lack of diversification is evident in Table 9.3. Close to 79% of businesses were in retail although processing/manufacturing was found to present more growth potential (in terms of growth in the number of employees) than retail trading and personal services.

⁴The variable education is a categorical variable with the following values: 1 = no formal education; 2 = enrolled in primary school but did not finish; 3 = completed primary school; 4 = started but did not finish secondary school; 5 = completed secondary school; 6 = vocational training; 7 = some university education.

Table 9.3 Descriptive statistics

Variable	Description	Mean	Std. Deviation
<i>Dependent variables</i>			
Integration	Index for integration into value chains	1.194	0.478
Employees	Index for changes in number of employees since startup	1.144	0.814
<i>Explanatory variables</i>			
Labour	Number of employees	1.14	1.380
Sole owner	1 if sole ownership, 0 if otherwise	0.824	0.381
Owner female	1 if owner is female, 0 if otherwise	0.320	0.467
Owner South African	1 if owner is South African, 0 if otherwise	0.462	0.500
Age of owner	Age of owner	35.46	9.424
Education of owner	Highest level of education attained by the owner	3.900	1.281
Business experience	Years of experience owner has in business inside and outside the sector	5.111	6.629
Years in operation	Number of years business has been operating in Diepsloot	4.489	4.189
Primary supplier	Years of relations with primary supplier	4.489	4.189
Retail sector	1 if business is in the retail sector, 0 if otherwise	0.787	0.410
Keeps records	1 if business keeps accounting books, 0 if otherwise	0.353	0.479
Days business open	Number of days per week the business is open	6.402	1.606
<i>Stokvel</i>	1 if owner belonged to a <i>stokvel</i> , 0 if otherwise	0.153	0.361
Business networks	Number of relatives and friends in same line of business, in and outside Diepsloot	8.147	31.886
Premises rented	1 if premises rented, 0 if otherwise	0.351	0.478
Own transport	1 if business uses own transport to ship to customers, 0 if otherwise	0.154	0.361
Electricity	1 if business has own electricity connection, 0 if otherwise	0.458	0.499
Business advertises	1 if business advertises, 0 if otherwise	0.324	0.469

(Source Authors' calculations based on the Diepsloot enterprise survey 2012)

9.7.2 Estimation Results

Prior to the estimation, diagnostic tests were conducted to ensure model estimation and results were robust. As indicated above, one of the tests was the test of independence of the two equations, which suggested that the two equations were independent. In addition, we tested for multicollinearity using the variance inflation factor (VIF). The VIF measures the extent to which the variance is inflated, possibly as a result of multicollinearity. While there is no widely accepted threshold, using the rule of thumb that is used by most analysts (Chatterjee and Hadi 2012), multicollinearity would be evident if either the largest VIF was greater than 10, and/or the average of all the VIFs was considerably larger than 1. In this case study, VIFs ranged from 1.03 to 2.11, which suggests there was no multicollinearity.

An additional test, for heteroscedasticity or non-constant distribution of errors, was also done. The Breusch–Pagan/Cook–Weisberg test for heteroscedasticity failed to reject ($p = 0.290$) the null hypothesis of homoscedasticity/equal variance for Eq. (9.3). However, for Eq. (9.4), the null hypothesis was rejected ($p = 0.024$) at 5% level of significance. The p -value associated with Eq. (9.3) was 0.290, while it was 0.024 for Eq. (9.4). To deal with this data challenge, we estimated Eqs. (9.3) and (9.4) with robust standard errors. Doing this allowed for robust estimation results in the presence of heteroscedasticity. The results are shown in Table 9.4.

Correlates of integration

- The results provide interesting insights into determinants of integration value chains, as represented by the geographical spread of suppliers used. A U-shape relationship was found between the age of the owner and the extent to which the enterprise was integrated into value chains. This means that the integration level was lower at younger age levels and rose after a certain threshold. The relationship is non-linear. Older owners have had more time to build and, hopefully, maintain business relationships.
- The more experience a business owner had, both inside and outside the sector in which the enterprise operated, the higher the level of integration. Experience could be seen as a proxy for learning, not just in terms of how business is actually done, but also in the development and management of diverse relationships with stakeholders, including suppliers. Thus, the more experience the owner had, the higher the integration level.
- Interestingly, the longer an enterprise had maintained a relationship with its primary supplier, the higher the integration level was. This could indicate the social capital that comes with such a relationship. The primary supplier might, at times, have been able to open some of its own networks and connections up to the enterprise.
- Enterprises in the retail sector tended to be more integrated into value chains than those in other sectors. This could be because retail, particularly in Diepsloot, is not a specialised industry. Enterprises within this sector tended to deal in a number of products that are often survivalist. This means they had to source their wares from a fairly diverse set of suppliers, hence this finding.

Table 9.4 Two-stage ordered probit estimation of *Integration* and *Employees*

Variable	Integration		Employees	
	Coefficient	Robust std. error	Coefficient	Robust std. error
Integration (predicted)			1.443***	0.347
Labour	0.044	0.058		
Sole owner	0.020	0.252	0.544***	0.167
Owner female	-0.271	0.196	0.658***	0.157
Owner South African	-0.020	0.194	-0.014	0.123
Age	-0.191***	0.063	0.260***	0.075
Square of age	0.002***	0.001	-0.003***	0.001
Education	-0.047	0.074	0.049	0.046
Business experience	0.029**	0.014	-0.061***	0.014
Years in operation	0.010	0.035	-0.099***	0.022
Primary supplier relationship	0.075*	0.044		
Retail sector	0.451*	0.237	-0.767***	0.211
Keeps records	0.234	0.200	-0.593***	0.150
Days open	-0.068	0.054	0.046	0.042
<i>Stokvel</i>	-0.034	0.222	-0.129	0.153
Business networks	0.001	0.002	-0.004	0.002
Rented	0.476**	0.211	-0.974***	0.229
Own transport	-0.006	0.300	-0.485***	0.187
Electricity	-0.605***	0.205	0.965***	0.247
Business advertises	0.095	0.188	-0.157	0.127
Wald chi2	38.15		72.79	
Log pseudo likelihood	-148.70856		-429.03972	
Observations	242			

Notes *, **, *** show statistical significance at 10, 5, and 1, respectively

The number of observations is determined by the number of enterprises that answered questions related to their sources of supplies

- Businesses operating from rented premises were likely to be more integrated into GVCs.
- Businesses with an electricity connection were less integrated than those without a connection. This result needs to be interpreted with caution in light of existing evidence that access to electricity generally has a positive impact on economic processes. In this case, the negative result could be a reflection of the sub-optimal level at which township businesses operate. Enterprises with no electricity could have been using diversification of suppliers as a way to compensate for lack of electricity.

Correlates of employee growth

- The results underscore the importance of integration into GVCs for firm's outcomes, which, in this case study, were represented by growth in the number of employees. Businesses that were integrated were more likely to have had an increase in the number of people employed since startup.
- Sole ownership of a business was associated with increased likelihood of growth in the number of employees after the business was set up. This suggests that, in contrast to individuals in partnerships, sole owners might have greater need for help and be more likely to get this from employees.
- The finding that female-owned businesses were more likely to have experienced growth in the number of employees than businesses owned by men, needs to be interpreted within the particular context of Diepsloot. One of the primary constraints that business owners referred to during data collection was crime. This was stated more strongly by women than by men. Some women indicated that fear of crime sometimes limited what they could do as a business. These results suggest that the fear of crime could, for instance, have been driving women to employ someone (possibly male) to assist them.
- An inverted U-shaped relationship was found between the age of the owner and employee growth. Older owners were likely to have added more employees since startup than younger owners, but after a certain age threshold the likelihood of employee growth reduced.
- The more years of experience a business owner had, and the longer the enterprise had been operating in Diepsloot, the less likely it was that the business employed more people than it had at startup. This could suggest that experience is some of kind of substitute for labour: an experienced owner might not feel the need to add more employees.
- Enterprises in the retail sector were less likely to have grown in terms of the number of employees. This is consistent with the fact that, although most enterprises in Diepsloot were in retail, the growth potential in this sector was low.
- Connection to electricity was also associated with an increase in the number of employees. Electricity could be viewed as a factor of production that affords an opportunity to create jobs.
- Keeping financial records, renting business premises, and having own transport to use for getting products to customers, were associated with less likelihood of growth in the number of employees.

9.8 Conclusions and Policy Implications

Integration into global and/or local value chains is increasingly being recognised as a way to promote the growth of small, medium and micro enterprises in South Africa. By strengthening linkages between the largely informal township economies and the advanced formal economy, value chain development presents an opportunity for unlocking the potential of township economies for contributing to the country's growth process. This chapter developed a conceptual framework for identifying the presence of both 'vertical' and 'horizontal' aspects of value chains, and the possible implications for township economic development processes. Diepsloot, a township in Gauteng province, was used as a case study.

The analysis found some level of integration of township enterprises that policymakers can leverage or build on. The results suggest that, in order to do this, policies meant to encourage integration into value chains, specifically the Gauteng Township Economy Revitalisation Strategy (GTERS), should take into consideration not only the characteristics of the owner, but also the environment in which the business operates. An analysis of data from an enterprise survey conducted in Diepsloot in 2012 suggested that the age of the owner mattered for integration: new or young businesses with younger owners tended to be less integrated and have challenges penetrating value chains. The extent of integration tended to rise with the age of the owner—owners with more business experience tended to have accumulated more social capital and be more integrated into value chains. From a policy perspective, and given the need to tackle the challenge of youth unemployment in townships, young entrepreneurs need to be targeted and assisted, not only in terms of physical resources, but also with respect to integration into value chains.

Policymakers need to factor this into their policies and initiatives. Part of the focus for the 'one stop' offices that provincial government has been pushing in helping new businesses set up should be on overcoming bureaucratic hurdles, and putting in place initiatives that help new businesses navigate the value chain. For instance, provincial and local government can support partnerships and information sharing among firms and suppliers.

Township enterprises seem to be concentrated in the retail sector and integration levels within this sector were found to be high. This could be, in part, because with a number of business in the same sector, they were able to share information. At the same time, the high level of participation in this sector could create competition, which forces businesses to explore alternative suppliers in an effort to maximise their profit margins. However, given the low growth potential of the retail sector in townships, policymakers need to create incentives for township entrepreneurs to explore opportunities in other sectors.

The results suggest that integration into value chains has an impact on performance, represented by the growth in the number of employees. In this particular case, businesses that were integrated were more likely to have increased the number of people employed since the business was set up. This means that facilitating integration of township enterprises and economies into value chains can be strongly

motivated as part of job creation and tackling the challenges of unemployment, as envisaged by the GTERS.

Policy debates in South Africa have largely been at macro or industry level, and while these are important in identifying opportunities for economic development, they are often not informed by interactions that take place in the value chain. The value added in the value chain is often shared among heterogeneous economic agents and their position in the chain can be important. In countries where GVCs have been successful, they were supported by policy that creates an enabling environment for entrepreneurs. South Africa can attempt a similar strategy.

In terms of future research, one suggestion is to investigate the factors behind the prevalence of other retailers as a source of supplies. There is a need for systematic data and information collection on value chain participation of township enterprises, detailing not only sources of supply, but also destinations of sales, in order to examine the extent to which township firms are producers as well as consumers of external supplies.

Acknowledgements Christian Hamann is thanked for the preparation of the figures in this chapter. The useful comments of the two reviewers who read an earlier version of this chapter are acknowledged.

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Chapter 10

Dualisms in the Gauteng City-Region: Summary and Implications

Koech Cheruiyot

10.1 Introduction

This volume offers new research and fresh insight into city-regions and changing space economies in the Global South. The research presented in this volume focuses on the largest agglomeration in a country and on a continent bedevilled by a myriad development challenges. The space economy of the Gauteng City-Region, which contributes 34.7% to the South African national economy and 10% to Africa's gross domestic product (GDP) (EasyData 2016; Makhura 2015), has been interrogated in this publication by various authors through an economic geography lens in order to make sense of the spatial dualism that exists in Gauteng's regional economy. Using Storper's (1997) conceptualisation that recognises the world as characteristically dual, the authors addressed the various features of a space economy that, in a nutshell, brings both prosperity and despair in equal measure. Agreement on this in the chapters is broad, covering both academia and the political/policy realms.

The changing space economy of the Gauteng City-Region has been impacted by radical changes in the policy environment in South Africa since the democratic transition that occurred in 1994. In the political/policy realms, the in-coming democratic government recognised the evident dualism inherited from the previous apartheid regime. Government developed the Reconstruction and Development Programme (RDP) in an attempt to ensure sustained socio-economic growth and provide for basic needs in response to this legacy (ANC 1994). Other policy statements/declarations have galvanised efforts to address the need to grow the

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economy, create jobs, bridge the dichotomy between ‘first’ and ‘second’ economies, and deal with racial, gender, and spatial inequalities, among others (see, for example, ANC 1994; Mbeki 2000; NPC 2012; Presidency 2006; Republic of South Africa 1996, 2003, 2004, 2006, 2010).

A list of key development processes is explored in the chapters of this publication. While not exhaustive, these discussions contribute substantially to informing policy debates around the Gauteng City-Region. The findings also offer potential learning experiences for policy development in other city-regions, especially in the Global South. The various chapters contribute, therefore, in a number of different ways, such as:

- Highlighting theoretical, conceptual, empirical, and methodological issues about the space economy in Gauteng and its surroundings;
- Contributing to economic geography debates relating to economic regions/city-regions;
- Identifying and empirically interrogating several internal and external drivers of change in the context of global-economic dynamics; and
- Presenting necessary lessons regarding which economic drivers the GCR should focus on going forward.

10.2 Lessons for the Regional Economy

This publication’s contribution to addressing the above issues is significant in many ways. In Chap. 2, by focusing on economic drivers of urban change in the GCR, Sihlongonyane demonstrates that economic history is important not only because it sheds light on the economic past, but also because it provides an analytical framework that enables us to understand economic change (North 1994). He shows that the history and geography of urban change in the city-region is influenced by the location, growth, and distribution of labour and capital. The spatial form of the city-region has been shaped by the apartheid legacy, national economic policy, provincial interventions, and spatial mobility of people, as well as the vicissitudes of political and economic dynamics on the African continent. It is remarkable that the concurrent spatial manifestations of these development forces contribute to forming *multiple* landscapes for the city-region. These landscapes can be loosely differentiated into nine historical formations: metropolitan landscapes, suburban landscapes, peri-urban landscapes, black township landscapes, RDP landscapes, informal settlements landscapes, old small town landscapes, African village landscapes, gated community landscapes, and mega-project landscapes.

Various scholars (see, for example, Castells 2004; Graham 1999, 2002; Sassen 1991; and Scott and Storper 2015) have focused on how, especially from the late twentieth century, advancements in information and communication technologies (ICTs) heightened globalisation. While discussions of the ‘end of geography’ or the ‘death of distance’ encompass a wide range of divergent views, most scholars agree that advancement in ICTs has affected cities at all scales, however unevenly, through

the reconfiguration of international divisions of labour, for instance (Cheruiyot 2011; Graham 2002). The development trajectory of contemporary African cities is increasingly shaped by dynamics beyond traditional areas of influence—the work of Grant (2015), among others, underscores the importance of ICTs in reshaping urban Africa. This means that cities must look for new ways of competing (with other cities) to attract, secure and retain global social, economic, cultural, and knowledge capital. Wall (2016) aptly states that, in the present era, a city’s development is not only determined by local urban characteristics, but also, increasingly, by its position within regional and global flows of investment. This broad understanding of the interdependence of the three scales, Wall continues, is crucially needed for effective urban development policy (see also UN-Habitat 2017).

In Chap. 3, it is evident that, as the African city most frequently ranked in international rankings, Johannesburg (a proxy for the GCR) is regarded as a gateway to Africa (see Bassens et al. 2012; Otiso et al. 2011; Parilla and Trujillo 2015; Rogerson 2005; and Rogerson and Rogerson 2015). The city has a stake in global financial flows and is a key player in the geography of the world economy (Scott 2001). But, we are cautioned, city rankings are, in many cases, ambiguous. It is argued in Chap. 3 that, not only are the methods and techniques of some rankings ambiguous, but the purpose of such measures is also not always clear. For example, in the Good City Index (GCI), Johannesburg’s ranking was based partly on the city’s use of owls to eradicate rats, which begs the question of which criteria are of the appropriate calibre to validate a city’s placement in the index, and which should be regarded as a virtue to be ranked at all. Leff and Petersen argue that such measures, when “read correctly, ... can be an important tool for cities wanting to strengthen their ability to compete globally. Read incorrectly, they are little more than fodder for civic bragging rights” (2015, p. 3).

The interrogation of internal development dynamics within the GCR’s economy reveals startling results, often confirming the dualistic character of this specific economy. Future research could perhaps focus on other, also often dualistic, manifestations of various global factors and the impact they have upon people and places at the regional and local urban scale in the GCR, specifically, on the “social geography of global city-regions” (Scott et al. 2001, p. 18) (see also Burgers 1996; Graham 2002; Hamnett 1994; James 1998, 2002; Madon 1997, 2004; and Sassen 2007). This research challenge may include, but not be limited to, the multiple landscapes identified by Sihlongonyane in Chap. 2.

Chapters 4–9 draw on extensive empirical research, encompassing various sources of data and a range of techniques, and present necessary lessons regarding economic drivers that could be used to inform the policies the GCR adopts going forward. In Chapt. 4, Vom Hofe and Cheruiyot show the dualism that characterises Gauteng’s regional economy by theorising on (1) the importance of clusters as building blocks of regional economies, (2) the importance of cluster analysis for enabling economic development specialists to understand and monitor structural economic changes and adopt new, appropriate approaches, and (3) the importance of cluster analysis for providing a background to regional economic growth discussions and/or theory (Economics Center 2004). The clearest evidence of such

dualism is in the dominance of the identified Service and Trade cluster (which includes the Trade, Transport, Business Services, Real Estate, Communication, Accommodation, Insurance, Community, Social and Personal Services industrial sectors) over all other identified clusters. Its dominance is illustrated by its 68.5% and 55.9% shares of regional employment and GVA, respectively.

When the GCR economy is viewed through the lens of the broad economic resilience concepts of equilibrium, path dependence, and evolutionary tendencies, it is evident that, should the leading sectors decline or face some form of crises, major challenges will have to be faced (Martin 2010, 2012; Simmie and Martin 2010). In the context of equilibrium, specifically in the presence of exogenous shocks, if the economy has little ability to avoid the shock altogether or withstand it with little or no adverse impact, it is likely that the regional economy may not return to its pre-existing state. In terms of path dependence, the regional economy may not return to its past trajectory as it is likely to be constrained by past decisions, chance events, and accidents of history (Hill et al. 2008; Wolfe 2010). Hill et al. show that evolutionary tendencies have to do with the long-term, systemic perspective embodied in “the structure of relationships among macroeconomic variables that persists over a long period of time and the economic, political, and social institutions that condition this structure” (2008, p. 2). The resulting processes can lead to uneven development (Tonts 2011). In addition to the areas discussed in Chap. 4, several issues around the economic resilience of the GCR’s economy also merit further investigation.

In Chap. 5, Ashman and Newman show that although economies change structurally from agriculture to manufacturing to service industries, there is a strong argument to be made for upgrading the position of the manufacturing sector as it has specific properties important to economic growth and development (Dasgupta and Singh 2006; Haraguchi and Cheng 2016). Consequently, premature deindustrialization in developing countries such as South Africa, and in the GCR in particular, is cause for alarm, especially for government. The prioritisation of reindustrialization by the Gauteng provincial government is therefore something to be welcomed. The role that small industrialists, as well as large foreign investors, including from China, could potentially play in future re-industrialization is one of many issues that require further examination. Because of the central importance of industrialization, the Gauteng provincial blueprint that aims to ‘transform, modernize, and reindustrialize’ (TMR) has prioritized 11 sectors that fall broadly into manufacturing (Food and Beverages; Furniture and Timber; Pharmaceuticals, Plastics and Chemicals; Machinery and Equipment; Automotive and Components) and services (Finance and Retail; Information and Communication Technology; Tourism and Hospitality; Transportation and Logistics; Business and Professional Services; Business Process Outsourcing) (Gauteng Province 2015). While lauding these strategic initiatives, Ashman and Newman, question whether, in the presence of ‘premature’ deindustrialization, the services sector should be a focus of policy at all.

In Chap. 6, Rogerson draws on existing data sources to show the geographical unevenness of the formal tertiary sector within the GCR, where Johannesburg is the

overwhelming focus. He draws our attention to the fuzziness of the services sector, noting that it represents a highly diverse array of activities including security guards, cleaning services, design and engineering activities, legal services and architects. Dualism is evident in the structure of the regional economy (see Chap. 4). The Service and Trade cluster, for example, provides ‘elitist’ formal employment (2,478,977 jobs) with high wages, as well as informal employment (1,113,498 jobs) with low wages. This cluster alone contributed 68.5% to Gauteng’s employment and 55.9% to GVA in 2015. Following the 2008 global crisis, of the 102,906 jobs lost in the regional economy, almost half (46%) were Service and Trade cluster jobs. As a critical key sector driving the GCR’s economy—the formal tertiary sector contributes 75% of the GCR economy (EasyData 2016)—its spatial unevenness across the region should be of real concern to policymakers. There is also a need to settle the debate about whether the manufacturing sector, despite its decline in the GCR, is a better potential ‘engine of growth’ than the service sector, or vice versa, or whether the role of policy should be to focus on both sectors (see Dasgupta and Singh 2006; City of Johannesburg 2011; CSID 2010; Gauteng Province 2012; Haraguchi and Cheng 2016; Mohamed 2010; as well as Sect. 5.2 in this volume). In common with other observers, Rogerson points to potential growth and employment opportunities in the GCR in the finance, creative industries and tourism sectors (Gregory 2016; Rogerson and Rogerson 2017). There is also work to be done related to whether the GCR is ready to strive to become a knowledge-, a green- and even a blue-based economy.

In Chap. 7, Peberdy explores the distribution, role and penetration of the informal sector’s entrepreneurial activity and employment in the spatial and economic landscapes of the GCR and beyond. The chapter focuses on an aspect of informal economy research that has previously been neglected to a large extent (Rogan and Skinner 2016). The informal economy contributed an estimated 5.9% of GDP to the national economy in 2013, with own final-use production contributing a further 5.1% (StatsSA 2014, p. 11). Peberdy debunks the myth that the informal sector is only survivalist, localised, and in some way separate from the formal economy (the ‘first’ economy). Instead she shows that informal-sector entrepreneurs in Gauteng buy supplies for their businesses from the formal sector, as do international migrant entrepreneurs, who also contribute to the GCR economy in this way. Peberdy argues that informal-sector cross-border traders from other countries in sub-Saharan Africa, who travel to the GCR to buy goods for their informal businesses in their home countries, link the formal retail and wholesale sector of the province to the informal sectors of the region and other parts of the continent.

Until recently, however, government policies in South Africa had failed to assist the informal sector as part of the development of the broader SMME economy (Rogerson 2016). Despite the recognition of the informal sector as part of the focus on SMMEs in the National Small Business Act of 1996, and most recently, with the creation of the Department of Small Business Development, the emphasis in government strategies has been to encourage formalization (Rogerson 2015). While the National Development Plan (NDP) acknowledges that SMMEs have the

capacity to generate jobs, it pays virtually no attention to the informal sector in its analysis of the economy and employment possibilities (Fourie 2016). Overall, the research produced by Peberdy underscores the necessity of further research aimed at understanding the changing dynamics of the informal economy in the GCR to be undertaken, so that appropriate and supportive policies can be put in place (Skinner 2016).

In Chap. 8, Cheruiyot and Mushongera observe that, despite the implementation of several policies by post-1994 South African democratic government administrations, economic inequalities persist in the GCR. Adding to the limited scholarship on spatial inequality, they use ward-level median household incomes calculated from census data from 2001 and 2011. Cheruiyot and Mushongera provide strong evidence of spatial autocorrelation, suggesting that, while wards might demonstrate relative income divergence, they do not do so independently. They tend, rather, to display movements similar to those of neighbouring wards (Rey and Montouri 1999). Using a standard empirical growth model modified to account for significant spatial autocorrelation present in the income data, the authors measure unconditional (also beta) convergence. Their results suggest a divergence rate of 0.7% between the two censuses—representing ongoing spatial inequality. Importantly, the rate of divergence is significantly spatially clustered, with the north-east and south-west of Gauteng, for instance, having clusters of higher growth rates of ward-level median household incomes. The results strongly suggest that policies intended to narrow or eliminate spatial inequalities must, in future, incorporate a spatial targeting element (see, for example, suggestions by Lall and Yilmaz 2001; Nel and Rogerson 2009; NPC 2011, 2012; and the Presidency 2006).

In Chap. 9, Ngwenya and Zikhali identify several characteristics of South African townships and informal settlements. Their high population growth rates, in general, and of the working-age population, in particular, are arguably of the greatest significance for policymaking. These areas also have high unemployment rates and, consequently, high poverty levels (Binswanger-Mkhize and Im 2014; Ngwenya and Zikhali 2014). Growing populations nevertheless represent cheap labour and an untapped consumer market. Recent government policy initiatives such as the revitalisation strategy for the Gauteng township economy (GDED 2014), aimed at providing support to township entrepreneurs across the value chain of enterprise development, are to be welcomed as this is one of the ways of unlocking the full potential of township economies. Ngwenya and Zikhali use a global value chain approach to show how South African township economies could be integrated into global and/or local value chains. Placing special emphasis on townships in Gauteng, and using Diepsloot as a case study, Ngwenya and Zikhali demonstrate the evident relationships between suppliers and consumers of goods and services, which highlight the nature of integration into the local, regional, and global value chains. The authors discuss the impacts of integration into value chains on the performance of township businesses, and richly detail how these are influenced by the characteristics of the enterprise, as well as of the community in which the enterprise operates. The authors conclude by exploring the policy implications of value chain development, and the role and responsibility of both the public and

the private sectors, as a strategy to revitalize South African township economies. They stress that policies such as GTERS should take into consideration the age of the business owner and the challenge of youth unemployment, specifically, as well as the need to improve bureaucratic processes, encourage partnerships and information sharing among firms and suppliers, and encourage entrepreneurial diversification (as most businesses are in the retail sector). Overall, the need for an expanded research agenda to explore issues of enterprise development in townships is apparent.

10.3 Looking Forward

So far this chapter has contextualised the structural building blocks of the regional economy and highlighted the lessons that have emerged. In this section, some of the factors that may shape the magnitude and direction of economic growth and development in the GCR are presented. Beyond the usual malaise of generalities—equitable and inclusive growth, social inclusivity and cohesion, sustainable development and infrastructure, good governance, etc.—there is also the need to recognise that few public policy issues have any definitive formulation. Rather, they try and anticipate all possible questions, a difficult feat in itself (Rittel and Webber 1973). Industrial development, for example, “is a complex process and industrial policies are notoriously difficult to get right”, according to Szirmai et al. (2013, p. vii). This is potentially equally true for all development policies. Crosby (1996) notes that the organization of implementation generally has a direct correlation on whether policy implementation succeeds or not. He notes that once policy dialogues produce agreements and decisions about what policies are to be adopted in order to derive which benefits, policy implementation may slacken, or not happen at all, since the required ingredients of policy change, such as “difficult changes in stakeholder coalitions, shifts in the structures and rules of implementing agencies, and new patterns of interaction” (Crosby 1996, p. 1403), are sometimes lacking. Cerna argues for the concurrent consideration of policy change and policy implementation, noting that “passing policies does not guarantee success on the ground if policies are not implemented well” (2013, p. 17). These issues are beyond the scope of this publication, but they nevertheless need to be contextualised for any policy formulation process to be successful.

The new scale of urbanization, “integrated by global economic relationships, by transportation infrastructure and, increasingly, by new communications technologies”, as discussed in Chap. 3, means that the stakes for the GCR, with its many spheres of government and governance structures, are now higher (Teitz and Barbour 2007, p. 7). Evidence shows that city-regions have local, national, and global ties that determine their internal and external dynamics. With the number of city-regions growing, and as they assume greater roles as key players in the geography of the world economy, the need to understand city-regions and their space economies becomes ever more crucial. This is particularly important in the

Global South where rapid urbanization is coupled with burgeoning un- and underemployment, overcrowding and inadequate housing, as well as inadequate provision of infrastructure and persistent dualism. However, with the presence of necessary but often untapped agglomeration economies, city-regions in the Global South, such as the GCR, have much room to grow their economies and improve the living standards of their residents. This volume focusing on the GCR is therefore timely as it provides a much-needed snapshot of the sort of research and learning experiences that can be applied to city-regions and their space economies throughout in the Global South.

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