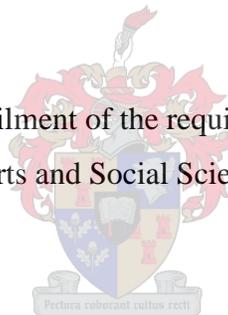


**Exploring the Population and Economic Growth Dynamics in Former Homeland
Settlements between 1996 and 2011**

by

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Philosophy in the faculty of Arts and Social Sciences at the Stellenbosch University



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Declaration

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Abstract

Former homelands were established in order to create separate self-governed states for the black population of South Africa, the epitome of the Apartheid government policy of separate development and social engineering. After 1994 these areas were integrated with the rest of the administrative regions of South Africa. These largely rural areas have developed a variety of settlement types with varying levels of economic agglomeration and population concentration that are still faced with the legacy of unsustainable settlements. These areas mostly characterised with dense rural settlements and traditional land tenure have growing towns where economic activity still does not match the growth in population and are perceived to have struggling economies, high grant dependence and low urbanisation rates. This paper examines the population and economic growth, level of urbanisation and spatial agglomeration within former homelands using the three census years (1996, 2001 and 2011) as well as the proportion of social grant recipients across settlements in order to get a better understanding of the spatial development patterns in these areas. A weighted mean growth was used to determine the relative strength of spatial agglomeration and diffusion patterns and an age cohort analysis was used to indicate population movement. A simple linear regression was used to assess the relationship between population settlement patterns and economic growth on the prevalence of social grant recipients across settlements. The results indicate firstly a growth and increased concentration of population within settlements indicating that natural increase is outpacing the outmigration. Secondly; increased urbanisation and spatial agglomeration within former homeland urban centres is accompanied by a marginal economic growth which conforms to theoretical predictions. However, the economic growth in former homelands is happening at a slower pace than in the rest of South Africa. Thirdly, although having a higher proportion of grant recipients compared to the rest of South Africa, there is a negative correlation between the proportions of social grant recipients and spatial agglomeration. This indicates that the proportion of grant recipients are declining as economic activity and population agglomerates within former homeland urban centres.

Key Words: Former Homelands, Urbanisation, Agglomeration, Social Grants.

Opsomming

Die voormalige tuislande is daar gestel om aparte en selfregerende state te vorm vir die swart bevolking van Suid Afrika. Hierdie was 'n hoogtepunt van die Apartheids regering se poging om aparte ontwikkeling vir verskillende rasse groepe af te dwing. Na 1994 is die state geïntegreer met die res van die administratiewe areas (munisipaliteite) van Suid Afrika. Die grootliks landelike gebiede bestaan uit 'n verskeidenheid van tipes nedersettings met verskillende vlakke van konsentrasie (agglomerasie) aangaande populasie en ekonomiese aktiwiteite. Daar is ook die algemene indruk dat die areas sukkelende ekonomieë het, grootliks afhanklik is van welsynstoelae, en met geen beduidende mate van verstedeliking nie. Die studie kyk na die ekonomiese en populasie groei, die vlak van verstedeliking en ruimtelike konsentrasie binne die voormalige tuislande gebaseer op die sensus data afkomstig van drie sensus jare (1996, 2001 en 2011), asook die proporsie persone afhanklik van welsynstoelae in die verskillende tipes nedersettings. Dit word gedoen om sodoende 'n beter verstaan te kry van die ruimtelike ontwikkelings patrone in die areas en of dit positief bydrae tot ekonomiese groei en ontwikkeling van die voormalige tuislande. Die geweegte gemiddelde groei is bereken om die relatiewe vlak van ruimtelike konsentrasie (of verspreiding) te bepaal. Ouderdoms groeperinge en die mate van verandering binne 'n sekere groepering is gebruik om die beweging van mense tussen plekke te bepaal. Daarna is 'n gewone liniere regressie analise gebruik om die verwantskap tussen populasie, nedersettings patrone, en ekonomiese groei te toets op die teenwoordigheid van mense wat afhanklik is van welsynstoelae. Die resultate wys eerstens groei en toenemende konsentrasie van populasie binne nedersettings. Dit dui daarop dat natuurlike populasie aanwas die tempo van uitmigrasie oorskrei. Tweedens word toenemende verstedeliking en ruimtelike konsentrasie binne stedelike gebiede van die tuislande geassosieer met ekonomiese groei. Laasgenoemde is in lyn met die teorie rondom konsentrasie (agglomerasie). Ekonomiese groei in voormalige tuislande gebeur egter teen 'n stadiger pas as in die res van SA. Laastens, alhoewel daar proporsioneel meer mense in die voormalige tuislande is wat welsynstoelae ontvang in verhouding tot die res van SA, is daar wel 'n negatiewe korrelasie tussen die proporsie van welsynstoelaag afhanklikes en die mate van ruimtelike konsentrasie. Dit dui daarop dat in stedelike sentra in die voormalige tuislande die hoeveelheid welsynstoelaag afhanklikes afneem in verhouding tot die toename in die konsentrasie van populasie en ekonomiese aktiwiteite.

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1 Introduction

Many of the most deprived areas in South Africa are located within former homeland areas. During the apartheid era ten homelands were established, four of which were established as quasi-independent nation-states (Transkei, Bophuthatswana, Venda and Ciskei) and six as self-governing regions (Lebowa, Gazankulu, kwaNdebele, kaNgwane, kwaZulu and Qwaqwa) (Geldenhuys 1981 and Henrard 1996) see Figure 1.

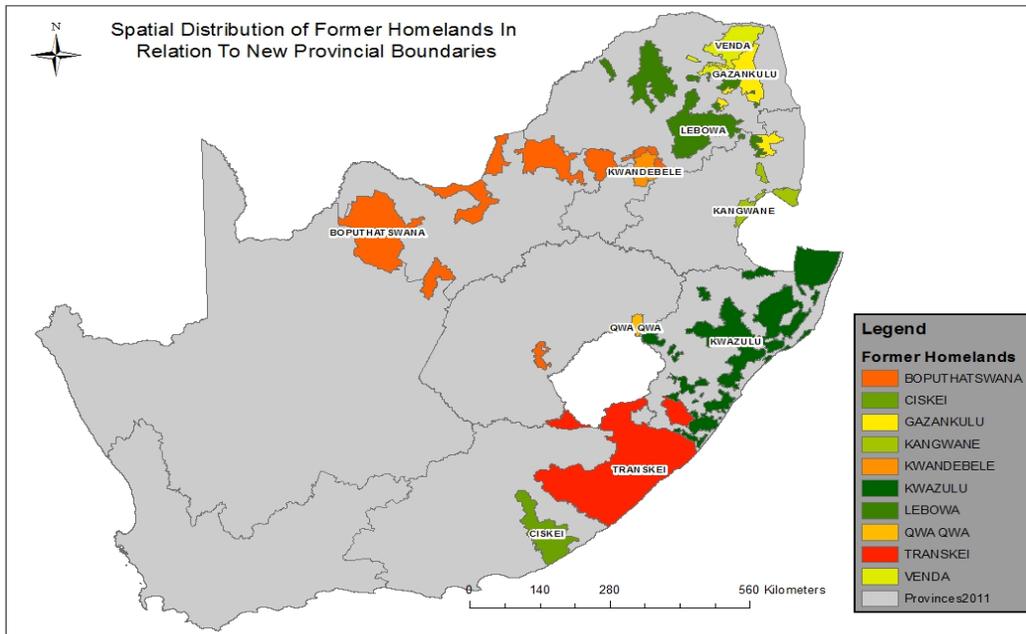


Figure1: Spatial distribution of homelands

During this period these areas, consisting of 13.5% of the South African land mass, were designated as domiciliary areas for native populations and consequently became densely populated. Urban centres within these former homeland (FHLs) areas did not form naturally; they were formed through a process of social engineering and restructuring in attempts to develop self-sustaining and independent states. The processes of urbanisation in these areas therefore often lacked the characteristics of conventional urban agglomerations with McCarthy and Bernstein (1998) referring to the urban centres and urbanisation in these areas as displaced urbanisation.

After the homelands were re-integrated into the conventional municipal structures in South Africa post 1994, urban settlements in the former homeland regions continued to struggle economically as many lost their functionality. One major factor which can be observed in urban

areas in the former homeland areas post 1994 is that economic development is stagnant whilst the population continues to grow and urbanise. This is in stark contrast to the theory which suggests that there is a correlation between urbanisation and economic development (Ottaviano and Thisse 2004, Brakman *et al.* 2004, Fujita and Thisse 2002 and The World Bank 2009).

Currently, the FHLs pose a developmental challenge for South Africa (Nhlapho *et al.* 2011, Noble *et al.* 2014 and Phalatse 2000). There is a multiplicity of growth challenges within FHLs: population growth in these areas is outstripping the provision of jobs, services and physical infrastructure; there are low education rates and high unemployment rates; low service provision rates and widespread poverty; and, a high rate of dependence (Nhlapho *et al.* 2011, Noble and Wright 2012, McCarthy and Bernstein 1998, Van Huysteen *et al.* 2010, Robinson 2014, Evans 2012, Beinart 2012, Nel *et al.* 1997, Ntsebeza 1999, King 2006, Harrison *et al.* 2008, DRDLR 2013, Van Huysteen *et al.* 2014).

The principal aim of this study was to explore the dynamics of urbanisation and economic development against the backdrop of the strong welfare support provided by government, and together with the wisdom from agglomeration theory which suggests that urbanisation should stimulate economic growth and development. The aim will be realised through the following objectives: by determining, firstly, the population growth and rate of growth and, secondly, the change in the size of economic activity between 1996 and 2011 within former homeland settlements. Thirdly, the degree to which current spatial patterns (agglomeration) are influenced by the welfare system of government through social grants will be established. Lastly, a conclusion on the factors analysed will be drawn and a comparison of how the former homeland situation compares to the general theory on urbanisation and economic growth will be made.

This paper commences by giving a theoretical rationale for urbanisation, agglomeration and how it relates to growth, followed by a contextual background on the urbanisation of FHLs and the historic and current structure of the urban hierarchy found in the former homelands and, finally, a brief summary of the South African social grant system. The paper then presents the research methods and discusses the research results before concluding.

2 Literature review

2.1 Urbanisation and economic agglomeration

Numerous cross-country empirical studies support the notion that economic development drives urbanisation, with urbanisation rates correlated with per capita income and the structure of the national economy (Fox 2011, The World Bank 2009). It is also often thought that the size of urban agglomerations is correlated with the level of development in an area, suggesting that the larger the size of the settlements, the higher the income, and that the economy grows proportionally to urbanisation rates. Pacione (2009) supports this principle by suggesting that the relationship between economic growth and urbanisation is mutually reinforcing. Urbanisation and economic development are correlated, based on the principle that the spatial agglomeration of economic activity and the concentration of population stimulate development by creating economic efficiencies. These efficiencies include lower transportation cost, infrastructure development costs, input costs and the increased sharing of information, which leads to increased returns. Inversely, economic decline should produce dispersal effects and not continued population agglomeration.

The agglomeration of economic activity and population concentration has been evident in South Africa since the mineral revolution and the subsequent rapid industrialisation that begun in the 1860s. However, due to the implementation of regulations to restrict the mobility and residence of black populations in these core economic centres the population concentration process followed a different development trajectory than could be expected. Historically, the economic growth and development of South Africa was based on the systematic exploitation of abundant mineral reserves and the use of cheap migrant labour concentrated in predominantly rural areas known as homelands. The homeland system of South Africa was established by the apartheid government to create economically viable, separate and autonomous black states from the British colonial native reserves under the Bantu Authorities Act of 1951. The homelands were differentiated by their tribal affiliations and were self-governed by traditional rulers and tribal councils. These areas provided legal domicile to black populations and were administered by the apartheid government through the Department of Native Affairs (Lipton 1972, Geldenhuys 1981, Nel *et al.* 1997). Since this period the spatial economy of South Africa has remained highly polarised and unevenly distributed.

The economy of the homelands was largely dependent on developmental assistance from the South African government as the homelands had no substantial economic base and primarily engaged in subsistence agriculture. Due to restructuring, resettlement and land policies limiting land availability and tenure, these areas could not sustain their populations solely through subsistence agriculture. A large portion of the working-age population engaged in waged employment as circular labour migrants outside the homelands which effectively meant that the majority of the homelands' populations were unemployed, female or not of working age. Most of the homeland revenue was direct state funding (Geldenhuys 1981). This extreme dependence on developmental assistance from the South African government and remittances from employment in 'white South Africa' resulted in more of the homeland population migrating into 'white South Africa' to seek employment. As economic concentration and development transpired in specific (core) areas, major demographic change began as large populations gravitated from peripheral and economically marginalised areas (such as the FHLs) to mining, industrialised areas and urban areas (Turok 2012). The South African government at the time viewed this as unfavourable. In order to reduce migration from the homelands, it planned to industrialise the homelands by establishing growth centres/ points in or adjacent to the homelands through industrial de-concentration and border industry programs (Phalatse 2000).

The development of growth centres, as a strategy by the South African government to attempt to reduce the spatial inequalities between core and peripheral regions, can be linked to concepts of New Economic Geography. The intended outcome of industrial de-concentration was to accelerate the diffusion of economic activity to the FHLs. The programmes were aimed at promoting firm agglomeration and employment creation in the outer periphery, particularly in and around homelands (Kok 1993 and Gelderblom and). The theory of growth poles provides a theoretical underpinning for industrial de-centralisation policies attempting to spatially target areas for growth (Muller 1987). The synthetic stimulation of development in marginalised locations is based on the assumption that the concentration of investment in such centres will achieve economies of scale; establish linkages between various economic activities; and, that economic growth will then defuse into areas neighbouring the new growth centres, resulting in multiplier effects within and around the centre (Fair 1987, Manyanhaire *et al* 2011 and Gantsho 2008).

With the above in mind, the Industrial Decentralisation Programme and the subsequent Regional Industrial Development Programme created border industries in industrial de-concentration points in and around homelands. Areas such as Mmabatho, Giyani, Ulundi, eZakheni, Dimbaza, Taung, Butterworth, Madadeni, Nkowankowa, Kabokweni, Seshego, Ekangala and Botsobelo to King Williams Town, Newcastle, White River, Potgietersrus and Brits were developed as industrial de-concentration points [Refer to Figure 2] (RSA 1985 and DBSA 1989). To attract private sector investment, cheap land, transportation rebates, subsidised electricity, machinery and relocation allowances, tender preferences, non-taxable cash grants and support infrastructure was provided (DBSA 1989). The industrial de-centralisation programme enabled the employees to reside in the homelands whilst commuting to places of employment.

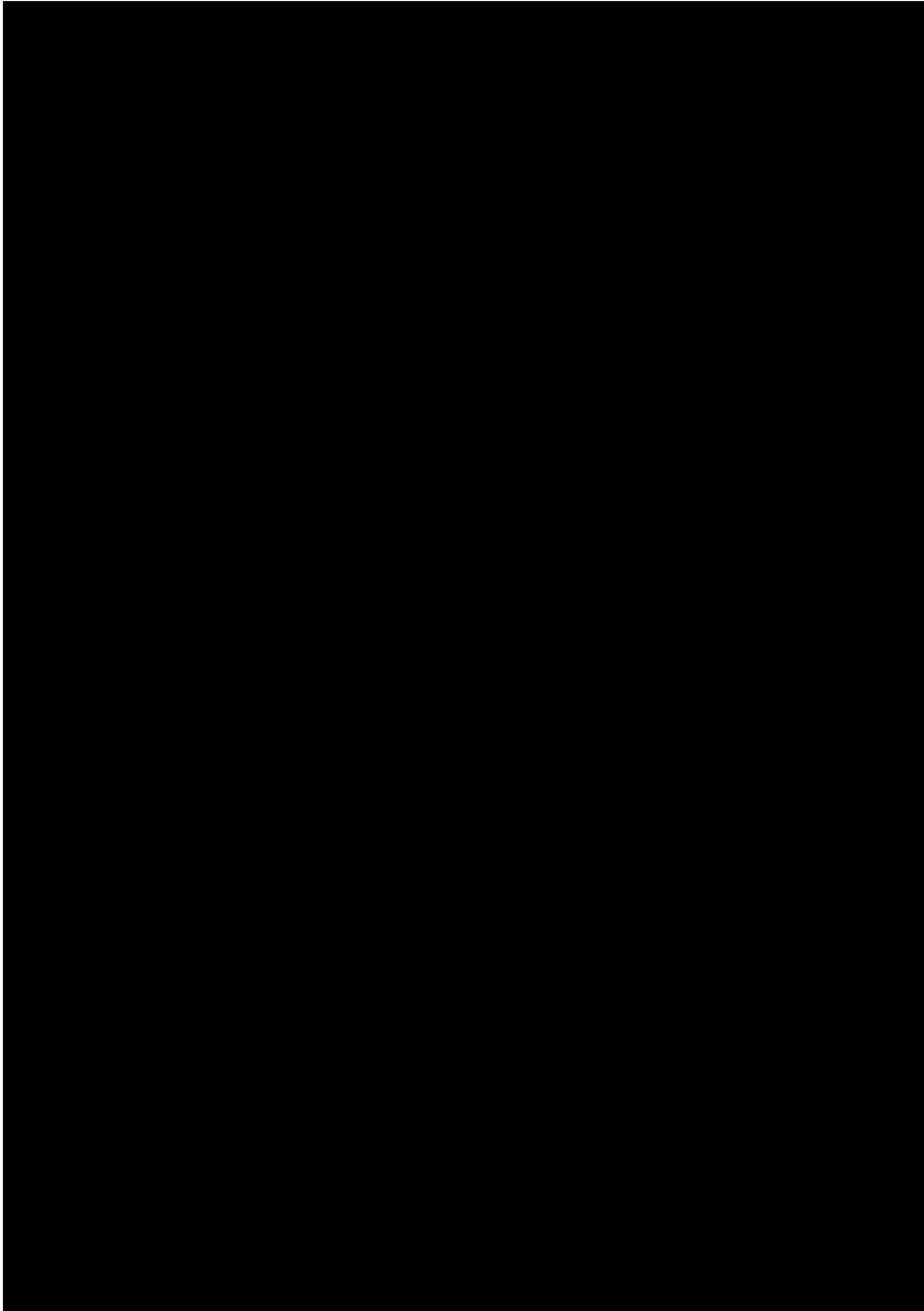
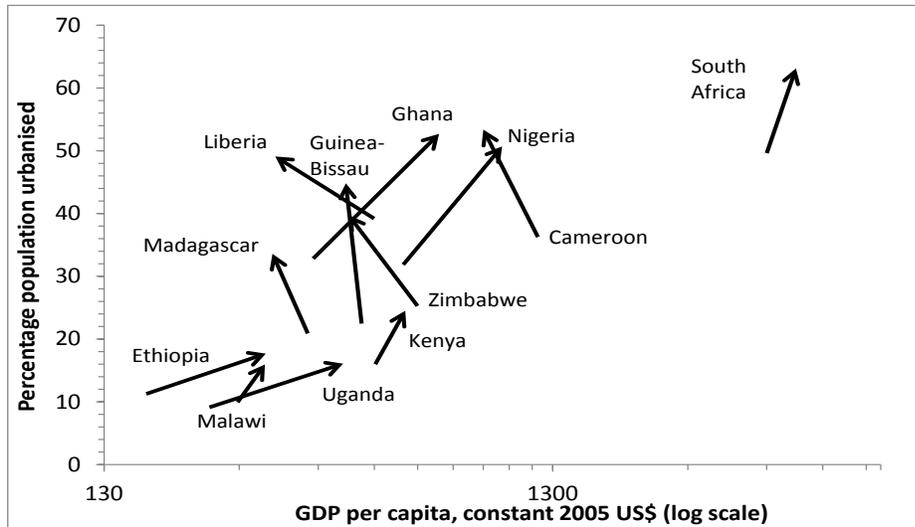


Figure 2: Distribution of urban centres in FHLs

In the case of the homelands, the industrial de-concentration programme had little impact on curbing outmigration or improving the homelands' economy. The programme failed to form sustainable economic clusters and attract permanent investment. It did, however, result in the concentration of population at these de-concentration points which had very limited economic growth prospects. The same can be observed in other African countries. There is a lack of empirical evidence to support the claims of sustained development due to growth point policy

implemented in lagging regions (Gantscho 2008). The empirical evidence of prosperity being derived from urbanisation seems to be limited and in some cases negatively correlated in African countries as seen in Figure 3 below (Fay and Opal 2000 and Turok 2012)



Source: Turok and Borel-Saladin 2013 p4.

Figure 3: Urbanisation and economic development in Africa

As the industrial de-concentration/ growth point strategy had failed to yield the expected results in the homelands, the level of incentives provided to industries was reduced from the late 1980s to the early 1990s. This led to the closure and outmigration of many industries and the economic deterioration of many of the newly formed towns in the FHLs. Consequently, many of these areas were densely populated but yet had little to no economic activity. The sparsely populated rural areas around these centres remained severely impoverished and many working-age persons continued leaving the homelands (Noble and Wright 2012, Nhlapho *et al* 2011, McCarthy and Bernstein 1998).

The issue of land tenure in homelands has continued to restrict private investment in these areas as land is held in communal trusts and administered by traditional authorities. This has at times also resulted in governance disputes between traditional and elected local authorities. This system of communal land ownership coupled with the detachment of these areas from markets often hinders infrastructure and economic development due to issues of tenure security which limits the ability for economic agglomeration.

2.2 The structure of the urban hierarchy in the former homelands

Former homeland areas pose an evolving challenge for South Africa. Though a large proportion of the homelands are rural, there are numerous economically declining urban settlements within them. Many rural settlements have high densities that could classify them as urban settlements but lack the functionality and economic diversity of conventional urban spaces. These areas, prevalent in homelands, have been termed ‘displaced urbanisation’ (Muller 1987, Egero 1991, Gelderblom and Kok 1993, and McCarthy and Bernstein 1998). Due to the blurring between rural and urban in these areas, there have been limited empirical studies on the growth of these urban centres and that measure the extent of urbanisation and agglomeration within homeland settlements (Nhlapho *et al* 2011, and McCarthy and Bernstein 1998).

The term urban may be misleading. What constitutes an urban area may differ across regions. The classification of urban should be correlated and aligned to local settlement typologies (Quadeer 2004 and Cohen 2004). Certainly in former homeland areas, there are many settlements that have large populations but when looking at factors beyond population numbers and densities cannot be classified as urban. An important point to note is that many urban areas in homelands did not develop through natural agglomeration patterns. Many of the core urban areas in homelands were induced as administrative centres, as industrial development and de-concentration points and through betterment schemes. These urban areas were developed to service their hinterlands and spatially diffuse benefits beyond these centres.

The notion of industrialisation and the creation of urban spaces in the FHLs came from the 1955 Tomlinson Commission Report. This report served as a blueprint and rationalisation for the policy of separate development and the creation of separate black and white states with the central government assisting to create ‘sustained development’ in the homelands (Geldenhuys 1981). Influx control systems have a long history in South Africa. During the period of the mid-1950s to late 1980s, these systems were intensified. The reason was mainly to curb the increasing movement/ migration and permanent settlement of black populations into white urban areas. An increasingly more proactive approach was taken by the central government in forcibly moving black populations into homelands by means of forced removals from informal settlements, moving townships on the fringe of urban areas into homelands, the removal of people in white rural and agricultural lands and creating border settlements in homelands which were rural areas with dense settlements.

The restructuring of homelands was intended to gear them for ‘independence’. The consolidation of homelands through betterment schemes was intended to densify homelands by demarcating land into arable, residential and common grazing areas. This entailed the relocation of the population away from agricultural areas to border settlements on the fringes of homelands near formerly white settlements and the creation of townships in the homelands (Henrard 1996, Geldenhuys 1981, Kok and Gelderblom 1993, Henrard 1996, King 2006, Harrison *et al.* 2008).

Various types of urban settlements were created such as:

1. New towns established through industrial decentralisation policies (such as Isithebe, Thaba Nchu, Mdantsane, and Mogwase);
2. Administrative towns developed as the homelands capitals (such as Mmabatho, Ulundi, Umtata, Thohoyandou and Phuthaditjhaba);
3. Border settlements developed on the fringes of former white cities (such as Mabopane, Umlazi and Winterveld); and,
4. High-density agrarian settlements (Gelderblom and Kok 1993).

Although these urban areas had very little economic activity outside of government services, they did however provide urban functionality in the homelands. However, due to the limited employment opportunities and dependence on state grants they failed to develop into vibrant economic centres. A large proportion of the FHLs population continued to depend on state pensions and migrant remittances as their primary sources of income (Kok and Gelderblom 1993)

Currently the typology of settlements in the FHLs has evolved to consist of a combination of regional centres, service, local and niche towns (small urban centres) and high density and sparsely populated rural areas. Certain areas also fall within city regions although no city regions are located in the FHLs (Van Huysteen *et al.* 2014). Evidence presented in the results of this study indicates increasing population growth within urban areas in the FHLs, indicating the continued urbanisation of these areas. Table 1 below offers an outline on the selection criteria for the classification of current settlements in South Africa, providing insight as to which kind of settlements can be considered urban based on population and their urban functionality index (UFI).

Category and number	Classification criteria	Examples	Percentage share of RSA	
			Pop ^a (km)	EA ^b (km)
City regions (4)	<i>UFI value</i> : above 40; <i>Size of population</i> : above 1 million; <i>Size and nature of the economy</i> : high level of economic activity in a diversified range of sectors; <i>Settlement structure</i> : multinodal	Gauteng, Cape Town, eThekweni, and Nelson Mandela Bay	38	64
Cities (5)	<i>UFI value</i> : between 11 and 40; <i>Size of population</i> : between 400 000 and 1 million, <i>Size and nature of the economy</i> ; medium-high level of economic activity in a diversified range of sectors; <i>Settlement structure</i> : one dominant node	Bloemfontein, Nelspruit, East-London, Polokwane, and George	6	5
Regional Service Centres (41)	<i>UFI value</i> ^c : between 2 and 10; <i>Size of population</i> (three subclasses): (1) 300 k–400 k, (2) 100 k–300 k; (3) below 100 k; <i>Size and nature of the economy</i> : medium level of economic activity in a diversified range of sectors; <i>Settlement structure</i> :	Upington, Rustenburg, Thohoyandou	14	15
Service towns (44)	<i>UFI value</i> : between 1 and 2; <i>Size of population</i> ^d : between 10 k and 100 k; <i>Size and nature of the economy</i> : medium-low level of economic activity mostly in the service sectors; <i>Settlement structure/function</i> : the principal node of a strong, predominantly agricultural or subsistence-focused local region	Estcourt, Malmesbury,	4	3
Local and niche settlements (600)	<i>UFI value</i> : between 0.1 and 1; <i>Size of population</i> ^e : under 100 k; <i>Size and nature of the economy</i> : medium-low level of economic activity mostly in the service sectors; <i>Settlement structure/function</i> : nodes that provide: (1) a limited range of services to a small or sparsely populated hinterland; or (2) specific niche services (such as tourism)	Acornhoek, Clarens, Prince Albert	9	5
Clustered and dispersed settlements	<i>UFI value</i> : zero; <i>Population density</i> : (two subclasses): (1) above 150 persons per km ² ; (2) between 40 and 150 persons per km ² ; <i>Size and nature of the economy</i> : mostly low-level subsistence activity; <i>Settlement structure/function</i> : non-nodal areas with a significant spatial footprint	Sub-places such as Mapate, Sinakaraka, Tamboekievlei	21	2
Total of all settlements (excluding farms, nature reserves and other areas with no urban functions or less than 40 persons per km ²)			92	94
^a Population				
^b Economic activity				
^c A few nodes with UFI values of less than 2 (e.g., Thohoyandou) were included in this category because of their large population hinterlands (more than 130 000 people)				
^d Applicable to 95% of settlements classified as service towns				
^e Applicable to 95% of settlements classified as local and niche settlements				

Source: Van Huysteen *et al.* 2009 p.207

Figure 4: Settlement classification criteria

2.3 Social Grants in South Africa

It is speculated that the reason why homeland populations remain in these areas despite the limited economic and employment opportunities is due to state grants substituting for waged employment. The post-apartheid South African government has extended grants to reduce poverty amongst economically inactive persons including children, the elderly and the physically disabled (Samson *et al.* 2005). Grant beneficiaries in South Africa rose from two million to fourteen million between 1996 and 2010, with approximately 80% of this increase due to the introduction of child support grants. As there are more people on social grants than there are employed, South Africa is one of the largest welfare states in the world (Samson *et al.* 2006).

The South African social welfare (grant) system is seen as a key element that offers relief to many that suffer from poverty (DSD *et al.* 2012, Hagen-Zanker *et al.* 2011 and Noble *et al.* 2014, Williams 2007). However, others view it as creating dependency, de-incentivising people from seeking employment and incentivising teenage pregnancy (Meth 2008 and Leubolt 2014)

Many households in South Africa subsist through intra-family grant pooling strategies (Leubolt 2014, Noble *et al.* 2008 Meth 2008 and Turok 2012). One third of rural households are dependent on social grants as their main source of income (Turok 2012). Spatially this implies that the poorest, most isolated households can potentially have no income derived from employment yet be able to survive. This artificial inflation of household income could potentially influence population growth without there being any concomitant economic development.

2.4 Summary of literature

Based on the reviewed literature, increased urbanisation and agglomeration has been correlated to economic development or increased economic output. This should be the case if increased urbanisation is evident in homeland areas. It has also been suggested that the welfare system of South Africa may de-incentivise populations from engaging in formal employment which would hinder economic development and decrease local production. Considering that more than one third of South Africans are social grant beneficiaries, it could have adverse spatial implications. Overall, this paper will provide a descriptive overview of the relationship between urbanisation, agglomeration, economic growth and welfare recipients in the FHLs. Concluding deductions will be made based on the observed results.

3 METHODOLOGY

The study takes a positivistic approach using statistical methods of analysis. The questions that this analysis will address are: firstly, to validate whether there is continued population growth in the FHLs and the level of urbanisation and agglomeration in the FHLs; secondly, to evaluate whether there is economic growth and agglomeration within the different settlement types in the formal homelands; thirdly, to evaluate the proportion of social grant recipients in the FHLs; and, finally, to investigate the relationship between economic growth, population growth and the proportion of social grant recipients within the ten FHLs.

Secondary datasets of different years and assigned to varying spatial units were used in the analysis which included the following.

Spatial population data based on the three census years (1996, 2001 and 2011) were sourced from Statistics South Africa, with each of the years' data assigned to different spatial units. The 1996 spatial units were enumerator areas, 2001 spatial units were StatsSA sub-places, whereas 2011 spatial units were electoral wards.

Gross Value Added data (GVA) for 1996, 2001 and 2011 was sourced from Quantec, with all data aligned to current local municipal demarcations

Social grant recipient data was sourced from the South African Social Security Agency and is available at a ward level.

Due to varying demarcations, all the datasets were aligned to the same analysis units to allow spatial comparability. All data was reassigned spatially to the CSIR Meso-Frame which is an almost equally sized ($\pm 7 \times 7$ km) polygon demarcation of the entire country, with polygon demarcations considering key physiographic features like height contours and rivers, resulting in an irregular geo-frame of 25001 polygons (Van Huysteen *et al.* 2009 and Mans *et al.* 2013).

In order to package the spatio-temporal aligned data into functional units for a descriptive study, the data was re-aggregated to the different settlements, as defined by the CSIR's settlement typology which consists of 9 settlement types on a continuum of urban to rural (refer to Figure 5), and re-classified into 3 urban classes and 2 rural classes as follows.

Urban classes:

- Higher order – Settlements in City or City Region Functional areas;
- Middle order – A combination of Regional Centres; and,
- Lower order – A Combination of Service and Niche towns.

Rural classes:

- High density Rural – High Density Rural Settlements; and,
- Rural – Dense and Sparse Rural Settlements.

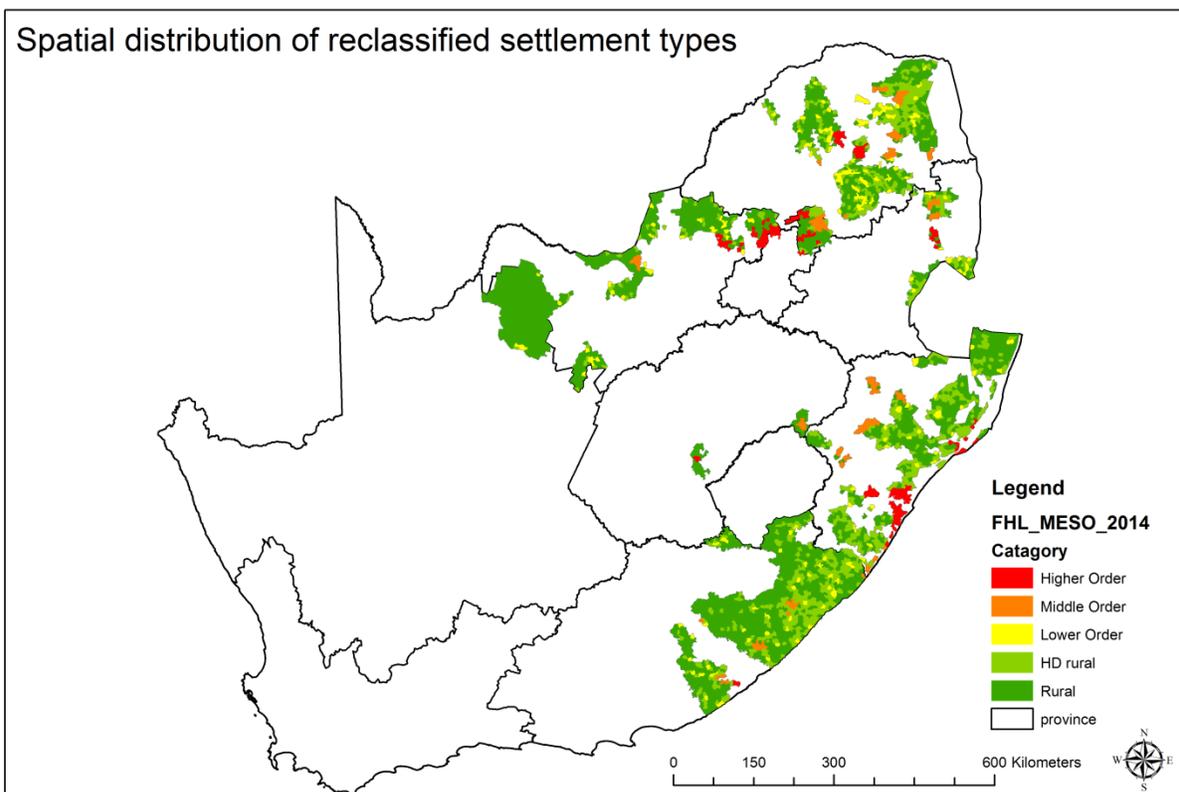


Figure 5: Spatial distribution of reclassified settlement types in the FHLs

The various datasets were disaggregated and reassigned to the meso-frame using a process developed by Mans (2012a, 2012b), in a procedure based on dasymetric mapping and aerial interpolation. The population data was disaggregated based on the ESKOM SPOT Building Count. Indicative household weights per point were calculated for each of the census years. These weights were then used to redistribute values from the census demarcations to the

mesozones. GVA values were distributed using 2009 proportional GVA contribution per mesozone as a weight based on CSIR's Geospatial Analysis Platform (GAP) values (Mans 2010).

To calculate the relative strength of spatial agglomeration and diffusion patterns in both GVA and population, the following equation abstracted from Geyer and Geyer (2014) was used:

$$NM_j = \sum_{j=1}^n (PA_j [PB_n/PA_n]) - PB_j$$

Where Geyer and Geyer (2014:9) describe NM_j as “*the rate of change in the population group in municipality j, controlling for natural national population group growth/decline. PA_j is the size of a population group in municipality j in the analysis year, and PB_j is the size of the same population group in municipality j in the base year. The controlling weight for the population group, PB_n/PA_n for the base year and analysis year for the country nationally, n, minimises the natural growth/decline in the population group in the municipality between the base year and the analysis year. This equation allows the measurement of relative changes in the distribution of the population group between municipalities to indicate the strength of the spatial agglomeration or diffusion patterns*”.

The same process was performed for GVA and population figures within the reclassified settlement to indicate relative spatial agglomeration and/or diffusion.

To analyse migration patterns a shift in age cohorts over the three census periods was used as this provides insight into population in- or out-migration (Pieterse *et al.* 2014). For instance, a comparison of the age cohorts of 0-9 years in 1996 with the age cohorts of 15-24 years in 2011 would indicate whether the population in that age group had grown or declined in an area. If the number is more than that of 1996 this would indicate a net population concentration in that age group.

The study utilises a range of verified datasets. The temporal data and scale that the data has been disaggregated to allows for detailed settlement analysis and temporal analysis. The inability to obtain temporal social grant beneficiary data meant that it was not possible to conduct a temporal analysis on social grants. Therefore, social grant recipient data was utilised as a proxy for the

quantity and spatial distribution of grant recipients. Based on the large sample size, the data was considered to be sufficient to conduct the analysis and produce valid results.

4 Analysis results

4.1 Population Change and Urbanisation

The 2011 population distribution in South Africa is represented in Figure 6 below. It shows that 38% of the total South African population is found within FHLs. Within the FHLs, 54.9% of the population is within urban centres, 27.5% within high density rural settlements and the remaining 17.6% is found within rural settlements.

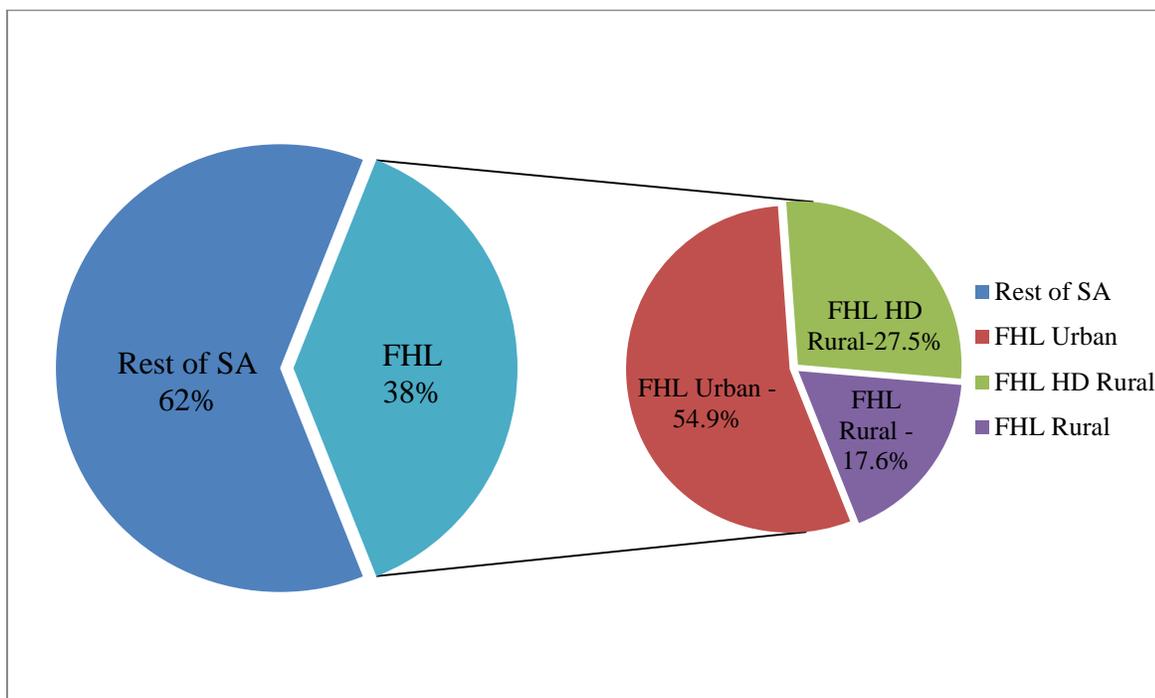


Figure 6: 2011 population distribution in South Africa and FHL settlements

To verify population growth and the nature of the change in former homeland settlements, several analyses were undertaken. Table 1 indicates that between 1996 and 2011 the population in areas demarcated as FHLs grew by approximately 10%, the rest of South Africa's population increased by 42%, a significantly lower average per annum growth (0.66) compared to the rest of South Africa (2.79) over the 15 year period.

Absolute Population Change					
	1996	2001	2011	Difference 1996 - 2011	% Difference
FHLs	17 868 590	18 947 283	19 637 183	1 768 593	9.90%
Rest of SA	22 652 181	25 857 865	32 132 914	9 480 732	41.85%

Table 1: Population change and growth in South Africa and the FHLs between 1996 and 2011.

Urbanisation was defined using the Pu/P, where Pu represents the urban population and P represents the total Population as defined by Fay and Opal (2000). Within FHL settlements, the trend of growth (represented in Figure 7) appears to be a growth within urban settlements and a decline in rural settlements within FHLs. This indicates a pattern of urbanisation within these areas which make up approximately only 14% of the total area of the FHLs.

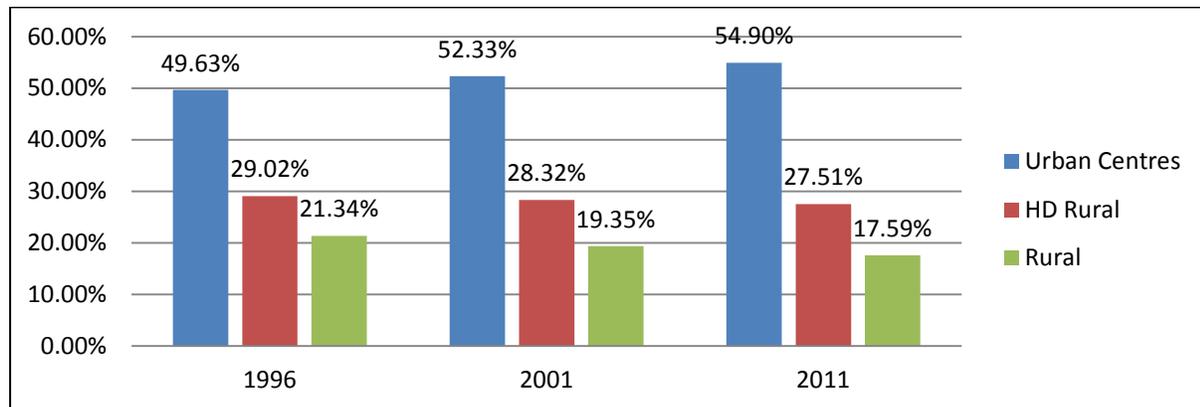


Figure 7: Population distribution and change within FHL settlements between 1996 and 2011

This trend was further affirmed by the results (Table 2) of the analysis looking at the relative spatial distribution of the total population in the different category settlements while controlling for the natural population increase for the FHLs (weighted mean population growth), which was used as a proxy to indicate relative population agglomeration and diffusion. Although there is declining positive growth in all the different urban settlements, there is positive growth within the urban areas and a negative growth within the rural settlements indicating population agglomeration within urban settlements.

Most of the agglomeration appears to be centred on higher order urban centres (around city regions and cities) revealing that many populations from homelands are continuing to concentrate

around the edges of major urban agglomerations (predominantly former border/commuter towns). This is in line with the fact that the city and city regions are still the dominant economic centres which is to be expected based on agglomeration theory and the historic development of the major economic hubs in South Africa. There also appears to be higher concentrations in the lower order urban centres (service and niche towns). These smaller urban centres usually offer key government services and urban functions to their surrounding rural hinterlands. This could indicate that there is substantial economic activity in the lower order urban centres compared to their surrounding areas and hence the concentration of people in these areas. This key point is important to note as, if we see populations are agglomerating in these areas, these could be key areas to target for support in order to further uplift the surrounding areas.

Settlement type	1996-2001	2001-2011	Comment
Higher order Urban Centres	8.22%	8.05%	Relative agglomeration
Middle order Urban Centres	1.96%	1.02%	Relative agglomeration
Lower order Urban Centres	5.07%	4.19%	Relative agglomeration
HD Rural	-2.41%	-2.89%	Relative diffusion
Rural	-9.35%	-9.07%	Relative diffusion

Table 2: Weighted mean population change in FHL settlements

Migration patterns observed using a comparison in the change of population totals in the different age cohorts as a proxy for migration indicated an overall outmigration (negative values in the age cohorts) pattern from the FHLs. At a detailed settlement level, variations in the patterns are visible. A number of urban settlements reflect positive values, which is assumed to indicate in migration from surrounding rural settlements predominantly in the age cohorts of 0-4 and 5-9 in 1996 (15-19 and 20-24 in 2011). This is an indication that the internal shifting/ migration of people within homelands is in most cases directly to urban centres. The results also indicate what appears to be an increase in the age cohort that was 50+ in 1996 (65+ in 2011), indicating a pattern of return migration to these areas and it is assumed that they are returning from larger cities outside of the homelands after being employed. The growth of this age cohort is concentrated in lower order and rural settlements.

The pattern of negative values, indicating an overall negative growth of the 15+ population of the 2011 population implies that a large proportion of the growth in FHLs has been due to births

since 1996 (0-15 in 2011) replacing and increasing the population, as opposed to migration from outside homeland areas.

4.2 Economic growth in the former homelands

Table 3 indicates the absolute changes in GVA comparing the FHLs and the rest of South Africa. GVA values are used to indicate economic output and are used as a proxy to evaluate economic growth between 1996 and 2011. The results indicate that in absolute terms the GVA in South Africa has grown by 61% with an average of 4.09% per annum. FHLs reflect a 0.15% less average growth to the rest of South Africa and 0.13% less average growth when compared to South Africa as a whole.

GVA (Millions Rands)						
	1996	2001	2011	Difference	% Change	Average p.a. Growth
Rest of SA	898 896	1 026 104	1 457 854	558 958	61.66%	4.11%
FHLs	136 345	150 966	229 654	93 308	59.37%	3.96%
National	1035241	1177070	1687508	652 266	61.35%	4.09%

Table 3: Change in GVA (Rands in Millions) in South Africa and FLS between 1996 and 2011

The GVA contribution of the FHLs is extremely low, reflecting low production in these areas. Although these areas only make up approximately 13.5% of the total land surface of the country, nearly 40% of the population resides in these areas in 2011. Figure 8 (on the following page) is an approximation of the proportion of the FHLs economic output compared to the rest of South Africa. These regions continue to lag in economic production, contributing less than 14% to South Africa's production. These figures are in line with the population migration analysis. That is, seeing evidence of a large number of the working age groups leaving the homelands as indicated previously in the migration discussion. The implication of this is that the low production of these areas is reflective of the fact that the productive or economically active proportion of the population is declining.

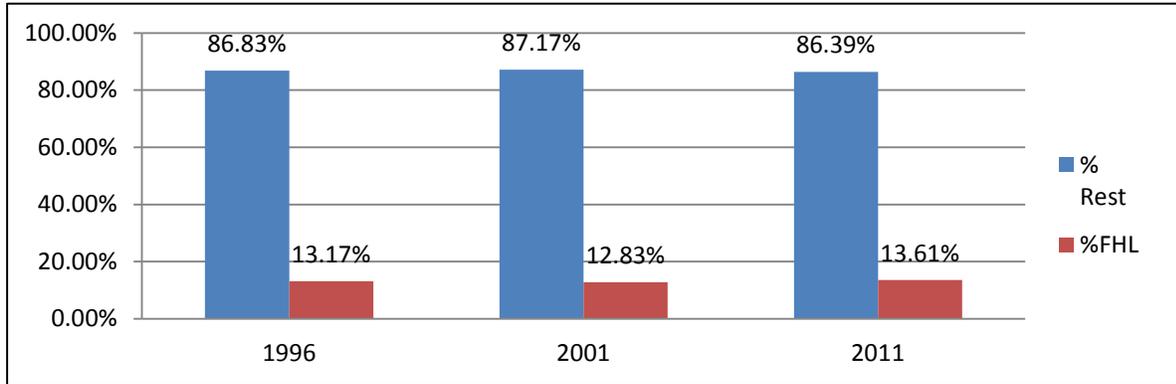


Figure 8: Comparison of GVA output between the rest of South Africa and FHLs between 1996 and 2011

Figure 9 shows the percentage contribution of the settlement types to the economic output of the FHLs. While the higher and middle order urban settlements remain the highest contributors to the production of these areas, they do reflect a declining market share, while the lower order and rural settlements reflect a slight increase. The results, when looking at the lower order urban settlements, are similar to what is indicated in the weighted mean population growth as these areas seem to be experiencing population agglomeration, there also appears to be a positive impact on the market share in production. The rural areas appear to be remaining the same with very low fluctuations in their GVA contribution, while there is a notable growth in the high density rural areas between 2001 and 2011; although, a higher rate of population diffusion is reflected between this period when compared to the 1996-2001 period.

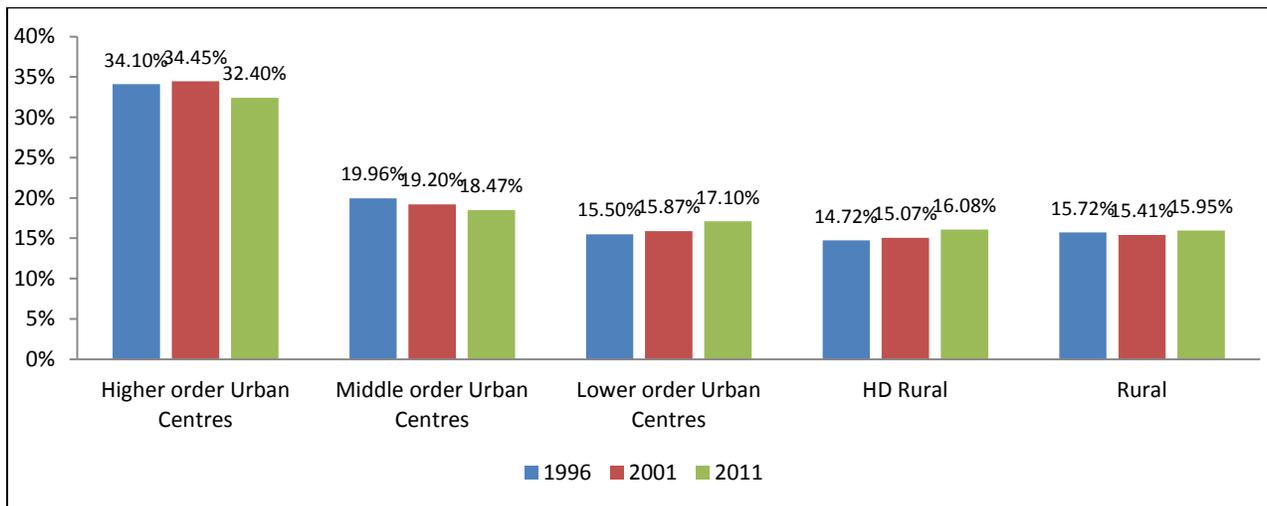


Figure 9: Change in the GVA production between the FHL settlements between 1996 and 2011

Figure 10 below serves as an illustration of GVA production in the FHLs for 2011. If the reader refers to Figures 2 and 5 it is evident that GVA production is concentrated in the urban areas. More specifically, in the areas demarcated as former capital towns, the de-concentration and industrialisation points, also around the eThekweni and Gauteng City Regions.

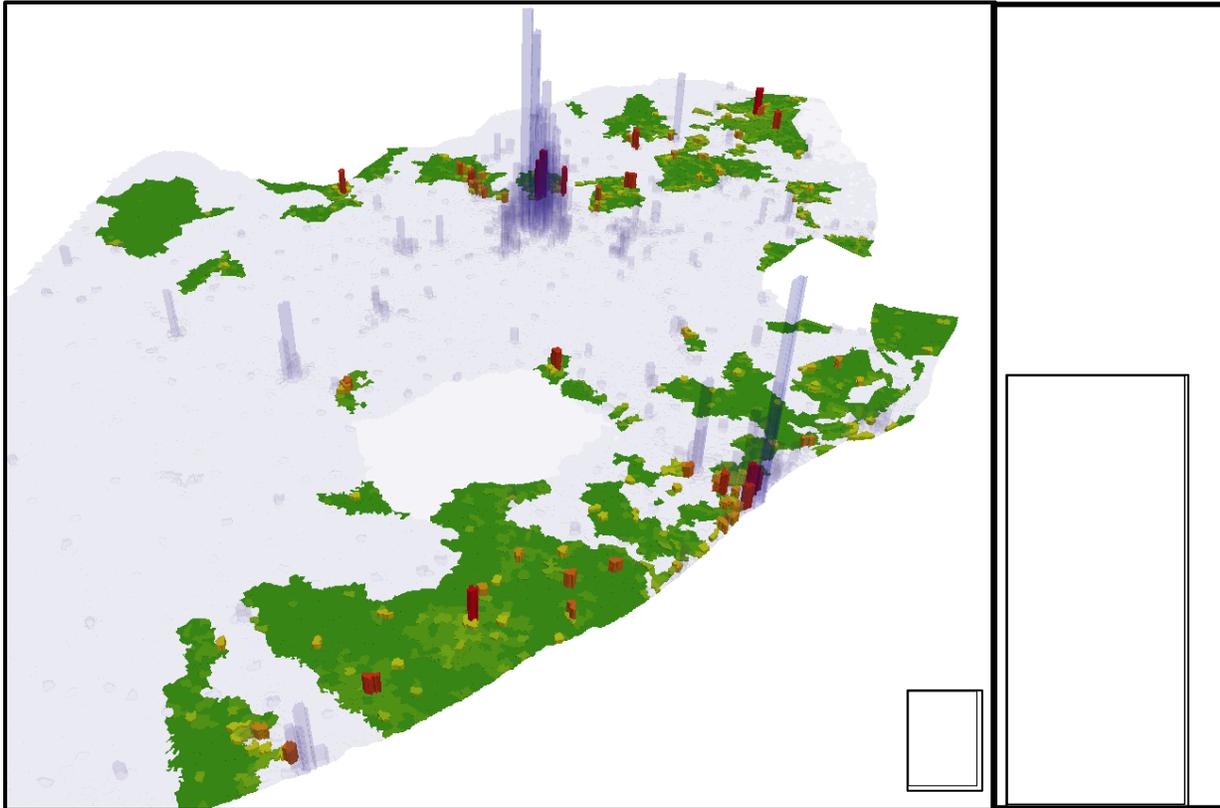


Figure 10: 2011 GVA (Rands Millions) production FHLs compared to SA

Table 4 analyses the relative change in the distribution of GVA. The results show what appears to be a diffusion of economic activity in the former homeland settlements between 1996 and 2001. This correlates with the literature. Prior to 1996 these areas saw a decline of industrial activity when incentives for industry to locate within and around FHLs were retracted resulting in a flight of industrial activity from these areas and leading to a further economic decline.

There does however seem to be a rapid increase in the concentration or agglomeration of economic activity in these areas between 2001 and 2011. The cause of this is unclear but it does indicate a re-emergence of economic activity concentrating in these areas. The most significant change is reflected in the middle and lower order urban settlements as well as within the rural settlements. There is what appears to be an agglomeration/ concentration of economic growth

within all areas besides the higher order urban centres. The data reflects that in rural areas there has been a concentration of economic output through a diffusion of population; this seems to not be in line with literature and counter to the agglomeration theory. This may be the result of a change in the South African policy, in terms of the drive for rural development and the extension of the grant system. This could predict more populations returning to these areas, as literature on economic growth and agglomeration suggests that, more often than not, an increase in economic agglomeration is followed by population growth in those areas. This may also indicate that as more people receive social assistance through grants they are able to supplement lagging incomes with these grants and have the ability to use this income as expenditure within the areas they are located, therefore the local economies of these areas are able to expand. If this is true, it may have adverse impacts on the labour markets as people would not need to be employed to earn incomes; therefore, there will be a continued growth in populations while the real economic production is not growing and developing.

	1996-2001	2001-2011	Change
Higher order Urban Centres	-1.61%	-0.22%	1.40%
Middle order Urban Centres	-6.32%	2.09%	8.41%
Lower order Urban Centres	-0.26%	14.29%	14.55%
HD Rural	-0.35%	13.23%	13.58%
Rural	-4.54%	9.86%	14.40%

Table 4: Weighted mean GVA growth in FHL settlements

4.3 Social grants in the former homelands

As previously mentioned, social grants are cash payments made to qualifying citizens by government. It is intended to be a form of social assistance initiative by government to promote poverty alleviation. The grant data supplied by SASSA indicated the number of grant recipients per ward based on IEC data linked to the recipients via ID numbers in 2013. Recipients are the grant collectors, and one recipient may be collecting the grants on behalf of more than one beneficiary. This data was intended to indicate the spatial distribution of social grant beneficiaries.

The data was disaggregated nationally and re-aggregated using the same technique applied to the population and was redistributed to the mesozones. Due to varying levels of completeness of the data per province, the data was proportionally added to current figures based on the relative percentage of completeness of each province. Working with the assumption that the distribution of the missing percentage is even across each province, the missing percentage was added to the result (at mesozone level) to bring all provinces to 100%. Keeping the above assumption in mind, the adjusted recipients per mesozone was calculated by:

$$(n/x) * 100$$

n = recipients currently per mesozone;

x= percentage completeness per province.

On this basis, there are a total of 9 680 970 recipients in the country and based on the 2011 population figures this amounts to 19% of the total population.

Figure 11 shows the proportion of grant recipients for the former homeland settlements compared to the rest of South Africa. There is a significantly higher proportion of grant recipients in the FHLs than in the rest of South Africa, this suggests a higher dependency on grant income in FHLs. There also appears to be a higher proportion of grant recipients across the settlement types in the FHLs as opposed to the rest of South Africa as indicated below.

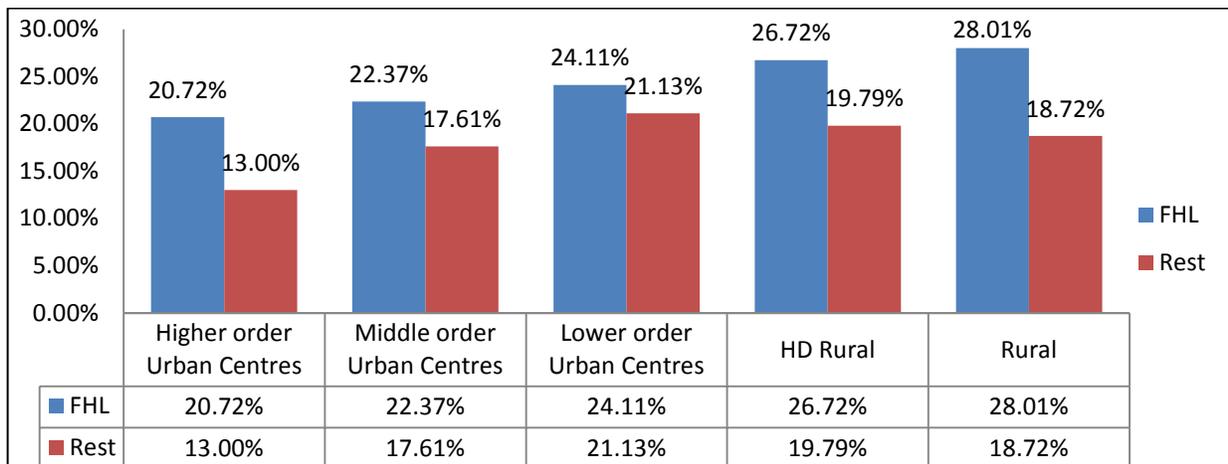


Figure 11: Proportion of social grant recipients in South African and FHL settlements (2013)

4.4 Relationship between the proportion of grant recipients, population growth and economic growth in the former homelands.

In order to test the relationship between the factors analysed, a regression analysis was conducted. A regression analysis is a statistical process for estimating the relationship among variables. The input variables selected were:

- Proportion of grant recipients;
- weighted mean population growth;
- weighted mean GVA growth; and,
- GVA per person 2011.

In order to increase the reliability of the regression, the outliers (extremely high or low values in the data, usually 3 standard deviations above or below the mean in each variable) were removed. The first regression using population growth as a dependent variable and the other variables as independent variables (GVA growth, GVA/pp and Proportion of grant recipients) showed that the independent variables were not (in a statistically significant manner) correlated with population growth. Therefore, the dependent variable was altered to explore other relationships.

A second regression analysis was undertaken to test the relationship between the proportion of grant recipients (dependent variable), weighted mean population growth (independent variable 1), weighted mean GVA growth (independent variable 2), and GVA per person 2011 (independent variable 3). Three different scenarios, with grant recipients as the dependent variable, were undertaken. The first investigated the FHLs as a whole, adding 'urban' as an indicator variable (segmenting urban from non-urban areas). The second investigated only the urban settlements and the third investigated only the rural areas. The results are represented in the summary tables below. The P values are all well below 0.05 indicating the strong statistical significance of the independent variables on the dependent variables.

The main point that is evident is the negative relationships between the proportion of grant recipients with the weighted mean population and GVA growth variables. As the proportion of grant recipients increases in the FHLs, there is a negative growth in population and GVA. That is, as population and GVA increases, statistically the proportion of grant recipients decreases. It is also evident (regression 1) that based on growth the proportion of grant recipients is 0.3% lower in urban areas than in rural areas. The regression shows that the weighted mean population and

GVA growth which an increase of represents a relative spatial concentration of the two variables in an area as indicated earlier should statistically lead to a decline in the prevalence of the proportion of the population in those areas receiving social grants.

On the other hand, when looking at the first and third regression tables that have the urban variable, it also has an inverse relationship with the proportion of grant recipients. This could statistically indicate that grants act as a disincentive to urbanise within the FHLs leading to lower urbanisation rates.

An interesting result is the relationship between the proportion of grant recipients and GVA per person, where the regression shows a positive relationship. That is, as the prevalence of grant recipients increases, so does the GVA per person. The reasons for this are unclear.

Regression 1 Summary for Dependent Variable: Prop_Grants (FHL) R= .43100692 R²= .18576697 Adjusted R²= .18456159 F(4,2702)=154.12 p<0.0000 Std.Error of estimate: .04091

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Weighted_POP_Growth	-0.110337	0.018042	-6.1157	0.000000
Weighted GVA growth/pop	0.229226	0.022231	10.3113	0.000000
Weighted GVA growth	-0.292964	0.021434	-13.6684	0.000000
Urban (Dummy variable)	-0.299187	0.017920	-16.6954	0.000000

Regression 2 Summary for Dependent Variable: Prop_Grants (Rural FHL) R= .29461347 R²= .08679710 Adjusted R²= .08557678 F(3,2245)=71.127 p<0.0000 Std.Error of estimate: .03960

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Weighted_POP_Growth	-0.094365	0.024113	-3.9135	0.000094
Weighted GVA growth/pop	0.182234	0.029095	6.2633	0.000000
Weighted GVA growth	-0.297405	0.026271	-11.3207	0.000000

Regression 3 Summary for Dependent Variable: Prop_Grants (Urban FHL) R= .49214282 R²= .24220455 Adjusted R²= .23719709 F(3,454)=48.369 p<0.0000 Std.Error of estimate: .04350

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Weighted_POP_Growth	-0.117022	0.042740	-2.7380	0.006424
Weighted GVA growth/pop	0.523064	0.050758	10.3051	0.000000
Weighted GVA growth	-0.347008	0.049205	-7.0523	0.000000

5 Discussion and conclusions

This study has quantified the population growth, rate and urbanisation in FHL settlements, which are regarded as rural. It has found that there is increasing concentration in FHL urban areas. It has also been able to quantify the relative growth in the FHL economy using GVA as an indicator for economic growth. As populations within former homeland urban areas continue to grow, the economy is seemingly declining. This contradicts concepts proposed in agglomeration economics. Increased urbanisation is often linked to economic agglomeration; therefore, urbanisation that does not coincide with economic development and agglomeration presents a paradox that contradicts conventional knowledge and creates spatial and economic distortions.

Based on the analysis results, there is evidence of absolute population growth in many of the FHLs with a high proportion of this growth occurring in urban and high density rural settlements. This is however lower than the growth rate of the rest of South Africa. There appears to be a trend of increased urbanisation and a declining rate of populations in rural areas indicating a concentration and agglomeration of people in urban settlements in line with the overall trend experienced in South Africa and internationally. There is also evidence of outward based migration shown through the decline in the main working age cohorts (2011 20-60 years) over time. Across the settlements this may indicate limited employment opportunities in the FHLs as in the past; therefore, the workforce continues to leave these areas in search of employment externally.

However, some urban settlements seem to be drawing populations of predominantly the younger age categories. There is also evidence of growth of the aged populations (particularly 2011 65-69 years) in predominantly the lower order urban settlements and the rural settlements. This could be an indication that these populations work in areas outside FHLs and return to these areas when they are too old to work and can access pensions as well as to reduce their costs of living. This trend of population dynamics and movements resemble the same patterns as in the apartheid era as evident in the literature. Also, it has been established that the absolute growth counterbalancing the loss of populations in FHLs is possibly due to births from 1996.

The results also reveal what appears to be marginal growth of the economy in FHLs. The results show a declining economic contribution of the higher and middle order urban settlements, although these settlement types have a continuous increasing proportion of population residing in

these urban settlements; this is also in contradiction to agglomeration theory. The lower order urban and rural settlements reflect a slight increase in their market share of the economic contribution although the rural areas appear to be declining in population share.

As previously noted, there appears to be a de-concentration of economic activity between 1996 and 2001, which is in line with the literature and assumed to be caused by the retraction of incentives to industry to locate within FHLs and the removal of influx control systems. The period between 2001 and 2011 reflects a rapid concentration of economic activity, the cause of this is unclear. The sectorial contribution of government services to economic activity in many FHLs remains high as they are still dependent on government investment and employment (Nhlapho *et al.* 2011 and DRDLR 2013). This coupled with expansion of the social grants and remittances that households use to sustain themselves, re-enforces the past economic patterns.

The weighted mean economic growth reflects that GVA shows the highest increase in growth in the lower order urban settlements and the high density rural and rural settlements. A much slower growth is recorded for the higher and middle order settlements. This situation is also counter to the agglomeration theory, as it seems that economic concentration/ agglomeration is happening in areas of population diffusion and population agglomeration is taking place in areas of economic diffusion (refer to Table 2 and Table 4). Therefore, it cannot be concluded that economic agglomeration, population agglomeration and urbanisation have led to growth in these areas.

Although a slightly higher number of social grant recipients are recorded outside of FHLs, when normalizing the grant recipients with population totals the results indicate a higher proportion of the former homeland population receives social grants than the rest of South Africa. Evidence of the regression indicates that there is a negative correlation between economic and population concentration with the prevalence of social grant recipients. This indicates that growth in the economic output and agglomeration decreases the prevalence of grant recipients. The regression also indicates negative correlations between urban populations and social grant recipients which may indicate that people are less likely to urbanise if they are grant recipients. This is supported by the data that indicates bigger proportions of the younger (0-14 years) and older (65+ years) age groups, which are the groups most eligible for receiving social grants, reside outside urban areas.

The result showing a negative correlation between the proportion of grant recipients and GVA and population concentration within urban spaces could seemingly stand to support the agglomeration theory. However as previously mentioned, GVA (economic) agglomeration is happening in areas where there is population diffusion and vice versa. This point implies that there is no correlation between economic agglomeration and population concentration particularly in the FHL urban areas.

Evidence from this study shows that while these areas face many developmental issues, and contribute very little in terms of total production in South Africa, there is a marginal growth in the overall GVA. These areas however continue to lag and contribute very little economically compared to the rest of. It suggests that the high increase in economic activity in lower order urban and rural areas may be due to government policy increasingly targeting Rural areas for development and/or; The extension of social grants allowing people to have income to spend within the local economies of these lower order urban and rural areas. This point is speculative and further studies should investigate why this odd pattern of economic concentration is occurring in areas of population diffusion and economic diffusion is occurring in areas of population concentration. This would assist in further understanding the economic dynamics of the FHLs.

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