Analysis of key economic sectors promoting local economic development (LED) for strategy development in the Capricorn region, Limpopo Province

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DEDICATION

"True education does not ignore the value of scientific knowledge or literary acquirements; but above information it values power; above power, goodness; above intellectual acquirements, character. The world does not so much need men of great intellect as of noble character. It needs men in whom ability is controlled by steadfast principle." Ellen G White

DECLARATION

I declare that:

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is my own work and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation has not previously been submitted by me at any other university.

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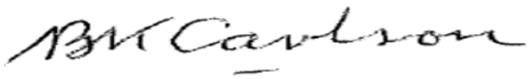

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ABSTRACT

The saga encompassing the economy of South Africa during the apartheid era finally came to an end after an expansive series of negotiations among political parties which led to the first ever free elections in the Republic in 1994. Thus, such free elections gave birth to democracy in South Africa with the introduction of local economic development (LED) to improve local economies. Despite the introduction of local economic development (LED), unemployment and poverty remain common to the majority of South Africans. This is illustrated by the fact that the majority of the people in South Africa are without jobs. As an attempt to alleviate such problems, the government has made efforts to minimise unemployment but to no avail as the unemployment rate, for example in Limpopo remained high at 38.4 percent compared to 34 percent in 1994. In addition, the poverty rate in the Capricorn District municipality is recorded at 41.1 percent which is significantly high. Thus, a combination of unemployment and poverty has harboured poor economic growth in the region. In spite of these epidemics, the key sectors are supposed to contribute to or improve local development. Therefore, the aim of the study was to analyse the contribution of key sectors to LED in the Capricorn District.

To achieve the aim of the study, the study employed a quantitative research methodology to analyse key economic sectors that contribute to local economic development. The secondary annual data of four municipalities namely Blouberg, Molemole, Polokwane and Lepelle-Nkumpi which comprise the Capricorn District Municipality was used. Notable is that, this secondary annual data was from 1996 to 2015. This gave the researcher a sample size of nineteen years. The data included the local economic development index (LEDI) economic growth (lngrowth), employment (lnemploy) and poverty alleviation (lnnon-poor) as the proxies for local economic development. Thus, the local economic development index, economic growth, employment and poverty alleviation were used as dependent variables. The productivity of all the key sectors in the Capricorn District Municipality were used as independent variables such as the community service sector, trade sector, agriculture sector, tourismsector, construction sector, finance sector, mining sector, manufacturing sector, electricity sector and transport sector. The data was obtained from the Global Insight and the statistical tests were thus used to analyse the trend analysis, descriptive statistics, correlation and a unit root test. The study further employed a panel pooled mean group (PMG) model, based on the Autoregressive Distributed Lag (ARDL) to test the short-run and long-run relationship. Therefore, four models were estimated namely the local economic development index, economic growth, employment and poverty alleviation.

The results of the first model (with LEDI as a dependent variable) showed a positive relationship between the productivity of community service sector, trade sector, construction sector, the finance sector, electricity sector and local economic development. In contrast, the productivity in the agriculture and manufacturing sectors had an inverse relationship with local economic development. The short run showed that 68% of disequilibrium in the municipality is reinstated in the next period provided these sectors improve to influence local economic development. Thus, it takes about 1.45 years for local economic development to adjust to change in the productivity of the key sectors. In the short-run analysis, the productivity in the community service sector, trade sector, agriculture sector and manufacturing sector contributed to local economic development in the short-run. The productivity of the finance sector, construction sector and electricity sector, however, were found to negatively affect local economic development.

The second model (with economic growth as a dependent variable) revealed a positive relationship between the productivity of the construction sector, community service sector, finance sector, manufacturing sector, trade sector and transport sector and economic growth in the long-run. The mining sector and tourism sector, however, revealed a negative relationship with economic growth. The short run showed that 48% of disequilibrium in the municipality is reinstated in the next period, thus it takes 2.05 years for economic growth to adjust to change in the productivity of the key sectors. In the short run analysis, the productivity of the construction sector, finance sector, manufacturing sector, mining sector and tourism sector contributed to economic growth in the short-run.

The results of the third model, with employment as a dependent variable, showed a positive relationship between the productivity of the trade sector, the tourism sector, the finance sector and employment in the long-run. On the other hand, the productivity of the construction sector, mining sector, agricultural sector, community service sector and manufacturing sector revealed an inverse relationship with employment. In the short-run, the employment model indicated a speed of adjustment of 46 percent. Thus, it takes about 2.13 years for employment to fully adjust to change in the productivity of the key sectors. The key sectors that contributed to employment in the short-run were agriculture, community service sector and manufacturing sector. In contrast, the productivity of the construction sector, finance sector, mining sector, tourism sector and trade sector influenced employment negatively.

Furthermore, the results of the last model, with poverty alleviation as a dependent variable showed a positive relationship between the productivity of the tourism sector, finance sector, electricity

sector, trade sector and poverty alleviation in the long-run. Conversely, a negative association between poverty and the productivity of the manufacturing, agriculture and construction sectors was established. In the short run, the poverty alleviation model showed a speed of adjustment of -0.6750. Thus, it takes 1.4 years for poverty alleviation to be reinstated with the productivity of key sectors. The key sectors that contributed to poverty alleviation in the short-run were the manufacturing and finance sector.

Noteworthy is that, the manufacturing and finance sectors were the most critical sectors promoting LED in the Capricorn District Municipality since, economic growth, poverty alleviation and employment were the most important economic elements in local economic development. As a result thereof, anything that is a barrier to economic growth, poverty alleviation and employment should be eliminated. Thus, the study formulated a strategy for policy implications such as restructuring of agricultural sector, infrastructure development, ensuring capacity of all essential services, improving production methods, prioritising important projects, investing in skill development and technical skills.

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LIST OF ACRONYMS

ADF:	Augmented Dickey Fuller
Agric:	Agriculture Sector
AIC:	Akaike Information Criterion
ANC:	African National Congress
ARDL:	Autoregressive-Distributive Lag
ASDS:	Agricultural Sector Development Strategies
BEF:	Business Enabling Fund
CCI:	Canal Corridor Initiative
Comus	Community Service Sector
Constr	Construction sector
CPM:	Capricorn District Municipality
DEDEA:	Department of Economic Development and Environment Affairs
DFA:	Development Facilitation Act
DPLG:	Department of the Provincial and Local Government
DPRU:	Development Policy Research Unit
DSW:	Department of Social Welfare
DTI:	Department of Trade and Industry
ECB:	European Central Bank
ECM:	Error Correction Model
ECT:	Error Correction Term
Electr	Electricity Sector
Employ	Employment
GDPPC:	Gross Domestic Product Per Capita
GEAR:	Growth, Employment and Redistribution Strategy
Growth	Economic growth

HACOP:	Hertzog Agriculture Cooperative Initiative
HSRC:	Human Science Research Council
HQIC:	Hannan-Quinn information criterion
IDC:	Industrial Development Corporation
IDP:	Inter-American Development Bank
ILO:	International Labour Organisation
IMF:	International Monetary Fund
IPA:	Industrial Policy Action
IPS:	Im, Peseran and Shin
IUCN:	International Union Conversation Nature
LCF:	Local Competitive Fund.
LED:	Local Economic Development
LEDI:	Local Economic Development Index
LGSF:	Local Government Support Fund
LLC:	Levin, Lin, and Chu
LNAGRIC:	Logarithm of Agriculture sector
LNCOMUS:	Logarithm of community service sector
LNCONSTR:	Logarithm of manufacturing sector
LNELECTR:	Logarithm of electricity sector
LNEMPLOY:	Logarithm of employment
LNFINANCE:	Logarithm of finance sector
LNGROWTH:	Logarithm of economic growth
LNMANUFAC:	Logarithm of manufacturing sector
LNMINING:	Logarithm of mining sector
LNNON-POOR:	Logarithm of poverty alleviation
LNTOURISM:	Logarithm of tourism sector
LNTRADE:	Logarithm of trade sector

LUDS:	Land Urban Development Strategy
Manufac	Manufacturing Sector
MCF:	Marginalised Community Fund
Mining	Mining Sector
NCF:	Networking and Co-operation Fund
NDC:	National Development Commission
NDP:	National Development Plan
NGP**:**	New Growth Plan
Non-poor	Poverty Alleviation
NRDP:	National Region Development Plan
OECD:	Organisation for Economic Co-operation and Development
RDF:	Rural Development Framework
RDP:	Reconstruction and Development Programme
SALED:	South Africa Local Economic Development
SALGA:	South African Local Government Association
SIC:	Schwarz Criterion
SIC:	Sector Industry Classification
SMME:	Small Medium and Micro Enterprise
STATS SA:	Statistics of South Africa
Tourism	Tourism Sector
Trade	Trade Sector
Trans	Transport Sector
PMG:	Pooled Mean Group
PP:	Phillips–Perron
RSA:	Republic of South Africa
UN:	United Nations
VAR:	Vector autoregression

WTO**:** World Tourism Organisation

CHAPTER 1
INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 INTRODUCTION

The saga encompassing the economy of South Africa during the apartheid era finally came to an end after an expansive series of negotiations among political parties which led to the first ever free elections in the Republic. Thus, such free elections gave birth to democracy in South Africa. Notable is that the economic functioning of the apartheid policy was systematically unfair due to race-based segregation (Nel, 2001:1003). Labour market irregularities prevented people from participating in the development of the economy based on their race (Deane, 2005:7; Freidman, 2006:1; Lewin, 2000:255). The apartheid government used Keynesian policies to centralise all functions including economic activities (Nel, 2001:1009). The centralisation was done in order to gain power and control over budgets (Arora & Ricci, 2005:1; Nel, 2001:1009). This meant that, during the apartheid era, local government was limited in functionality with a focus on service delivery to a minority (De Visser, 2009:8). However, the end of the apartheid system introduced the concept of local economic development, where the local governments were given power to control the social and economic development of their communities (RSA Constitution, 1996:74). This created an opportunity for the local governments and local communities to join hands in developing the economy through regional and local economic development hereinafter referred to as LED.

Springing from a humble root, which is the period after apartheid, it is not surprising that LED became pronounced in South Africa only after the promulgation of the Constitution of South Africa in 1994. However LED in other countries such as the United States of America can be traced back to the period before South Africa's democracy. Noteworthy is that the concept of LED was implemented in the early 1970s with the aim of improving economic activity in a community and solving the economic challenges faced by a local area (World Bank, 2005:2). This concept has been defined as a process where local people from all sectors join hands in managing the resources of a community so as to initiate and stimulate local economic activities with the aim of sustaining the local economy (Trousdale, 2005:2). As a development institution, the World Bank (2003) perceived LED as a process where government and other private institutions cooperate in poverty reduction, employment creation and improved lifestyles. In addition LED ensures that basic needs such as access to water, electricity, sewerage, roads, health and education are met

(World Bank 2003:4). In summation, LED is a multidimensional process that addresses improved economic growth, poverty reduction and job creation.

Studies conducted on Canada, Italy, Spain, Brazil and the United States of America grouped LED into formal and informal components (Nel, 1999; Wilson, 1996). Formal LED is when the local and national government and the formal business sector intervene in improving the local area; while the informal LED is when the community and non-governmental institutions get involved to promote local economic development (Nel, 1999; Wilson, 1996). The initiatives undertaken by these countries are diverse and include financial support, land development, information and marketing assistance, new planning and organisational structure (Clarke & Gaile, 1993; Koeble & Bailey, 1993; Lever, 1992). This is exemplified by the LED study conducted in Italy which had its prime focus on small business promotion, while the LED study in Spain focused on marketing and infrastructural development (Brusco & Righi, 1989; Garcia, 1993). However, North America focused on entrepreneurial approaches (Reese & Fasenfest, 1996).

In the Republic of South Africa, the Constitution recognises local governments as a separate sphere of the government (Republic of South Africa, 1996:74). This shifts the jurisdiction from the national to the local government, implying that communities and local governments should join hands in local development. Moreover, the Constitution allows South Africa to engage LED in four ways, namely: formal local government initiatives, community based initiatives, Development Corporation and the top down approach policy (Republic of South Africa, 1996:74). In pursuit of those four ways, Meyer (2013:10) reported that in the Free State province the sectorial focus is on financial services, community service, corporate service and infrastructure services. The projects undertaken in this province were reported to be a success. In addition, studies done in the past decade (Binns, 2002; Mbeba, 2005: Nel, 2005; South African Local Government Association, 2010) grouped municipalities into rural and urban LED. Urban development strategies put much more weight on the provision of housing, investment and promotion of small business; while rural development emphasises economic diversification, training, service provision and tourism (South African Local Government Association, 2014:20).

Further studies done on LED identified tourism, manufacturing, community service, mining, agriculture, trade, business and finance as the key sectors that contribute to local development (Binns *et al*., 2002; Kirsten *et al*., 2010; Nel., 2005; SALGA, 2010). Binns and Nel (2002) identified tourism as a priority in alleviating poverty, creating jobs and community development. Mbeba (2005) also opines that tourism is the solution to local development. A survey on LED

done by Nel (2005) reported that manufacturing, community service, business and finance and tourism are the key sectors that promote LED in the Ingwe and Buffalo Municipalities. The study also showed that there are different perceptions of LED (Nel, 2005).

Of importance is that mobilising all the community and institutional resources will drastically improve the opportunities of South Africans (Mandela, 1995). In support, Mbekeni *et al.* (2008) subscribed to the idea that the resources should be shifted to citizens in the promotion of economic development. This implies that the identification of key sectors that promote local growth becomes more vital as the resources can be channelled to such key sectors. It is of great importance to improve local economic development and this can be done by mobilising the resources towards the relevant sectors.

1.2 PROBLEM STATEMENT

Over the years, the stereotyped notion that unemployment and poverty remain common to poor households, blacks and the youth of South Africa has become accurate and undeniable. This is illustrated by the fact that the majority of the people in South Africa are without jobs and the unemployment rate is recorded at about 27 percent (Stats SA, 2016). As an attempt to alleviate such problems, the government has made efforts to minimise unemployment but to no avail. The Limpopo Province, just like any other province in South Africa, is not exempt from this challenge of unemployment. Regrettably, Stats SA (2015) confirms the Limpopo Province as one of the worst provinces in terms of creating jobs since democracy. In 2016, the unemployment rate in Limpopo remained high at 38.4 percent compared to 34 percent in 1994 (Stats SA, 2016). This creates an economic problem as the number of skilled people keeps on escalating yet few sectors are creating more jobs (Stats, 2016). On the other hand, the poverty rate in the Capricorn District municipality is recorded at 41.1 percent which is significantly high. Thus, the region is associated with a lack of basic commodities such as food, clothes, shelter and transport. Furthermore, a combination of unemployment and poverty has harboured poor economic growth in the region. World Insights (2015) reported an average economic growth rate of 0.5 in the Capricorn region which hindered local development.

Despite these epidemics the key sectors are supposed to contribute to or improve local development. Thus the current researcher submits that key sectors are a vehicle to facilitate LED. However, the sectorial output has been fluctuating since independence. There has been an increase and a decrease in sectorial output and employment. For instance, the mining sector was the highest employing sector from 2003 till 2012 while in the 2013/2014 year manufacturing and finance were

the most employing sectors in the Limpopo Province. However, finance, trade, construction and agriculture contributed more to local development for 2015/2016 as compared to other sectors (Provincial Review, 2016). The sectorial fluctuations gave the researcher the leeway to analyse how the key sectors improve unemployment, poverty and economic growth.

On the other hand, the South Africa mainstream literature on LED has grown since its introduction and the main findings were that economic growth, employment and poverty reduction were promoted by tourism, community service, mining, government service, manufacturing and the agricultural sector (Gardeyne, 2005; HSRC, 2003; Mahlatsi, 2006; Nel, 2005; Netshakhuma, 2006; Parker, 2004; SALGA, 2006). Most of the studies done on LED were based on surveys. A national study done by Nel (2005:8) on sectors that influence LED found out that trade, manufacturing, community service, government service, mining and agriculture were the main sectors that improved growth, employment and poverty reduction in South Africa. Furthermore, in Ethikwini and Cape Town, tourism, community service and agriculture were major sectors that contributed to job creation, economic growth and poverty reduction (Human Sciences Research Council, 2003). Gardeyne (2005:6) identified agriculture, tourism and social services as the sectors contributing to employment in Ingwe municipality.

From the studies done on LED in Limpopo, there is no consensus on what measures LED. Some subscribe to the number of projects undertaken in a local municipality and others to the number of people employed and people living above the poverty datum line (Machaka, 2012; Nghonyana, 2011). The success of LED was based more on these measurements. However, this study used a different measurement/approach. It developed a new LED measurement to measure development at a local level. Of the studies in the Capricorn District, no LED measure has been developed to analyse the key economic sectors and LED. In order to differentiate the current study from previous studies, this study tested a new Local Economic Development model. Furthermore, there is no study that made use of the panel Autoregressive lag model in analysing the LED. Therefore, the current study also covered the literature gap by analysing LED using a panel Autoregressive lag model.

1.3 OBJECTIVES

The study divided the objectives into primary, theoretical and empirical objectives.

1.3.1 Primary objective

The primary objective of the study was to analyse the contribution of key sectors to local economic development in the Capricorn District.

1.3.2 Theoretical objectives

In order to achieve the primary objective, the following theoretical objectives were formulated:

- To provide a theoretical contextualisation of LED;
- To review the literature that explains the link between sectorial economic growth, job creation and LED and
- To review the empirical studies on LED in the South African context (case studies).

1.3.3 Empirical objectives

In accordance with the primary objective of the study, the following empirical objectives were formulated:

- To identify the key sectors that contribute to LED in the Capricorn District;
- To compare how different sectors contributed to employment, economic growth and poverty reduction in the Capricorn District;
- To develop and test the new measure for measuring development at a local level; and
- To formulate LED strategies/recommendations for Capricorn District municipalities.

1.4 RESEARCH DESIGN AND METHODOLOGY

The study used a literature review and the statistical analysis method to achieve the study's objectives. The study made use of the quantitative research design to analyse the key economic sectors on local economic development (LED).

1.4.1 Literature review

The literature available on local economic development provides a plethora of knowledge on how best key economic sectors can be used to promote local economic development in the Capricorn region. As such this theoretical review on the analysis of the key sectors of LED on employment was conducted using textbooks, journal articles, government publications, dissertations and

previous studies. There are a number of theories supporting poverty alleviation, job creation and economic growth at a local economic development level such as the traditional theories, the classical theories and the location theories to mention but a few. The traditional theorists prescribe the sentiment that agriculture is the major sector that contributes to economic development (Smith, 1976). Thus, it is submitted that all the local governments should specialise in the sector(s) they have an absolute advantage in for local economic development (Slowman, 1994:918). A local municipality should export a product it has an absolute advantage in and import a product it has an absolute disadvantage in.

Diverging from the traditional theorists are the classical theorists of economic development who focus more on a notion of equilibrium of economic systems and mobility of capital. The classical theory thus affirms that all the economic systems should come to an equilibrium point if capital flows without restrictions. Accordingly, capital will migrate from high wage to low wage due to the high return of investment. In the event that this assumption is achieved, all local areas will reach a point of equilibrium.

Also providing a different aspect on the theories supporting job creation and economic growth at a local economic development level are the location theories. These theories argue that industries in a municipality should be located near raw materials, transport and labour for better sectorial output. A growth in the sectorial output should further lead to a growth in other areas. For a good sectorial output all the economic activities in a local municipality should be coordinated and all the market failures should be corrected and investment should be promoted for sectorial growth. To achieve this a municipality should have good policies coupled with good skills, knowledge of the business, and knowledge of other institutions and rivals.

1.4.2 Sample selection and study period

The study focused on all the municipalities in the Capricorn District. It used secondary data from 1996 to 2016 due to its constant results from the popularity it gained after South Africa`s independence. Significant is the Capricorn District as the area of focus of the study because there is no study that has been conducted in the area on the key sectors contributing to LED using a panel quantitative approach. The district is dominated by a rural area that has experienced absolute poverty, unemployment and stagnant growth. Therefore, the researcher avers that key economic sectors should play a vital role in the Capricorn District Municipality in improving absolute poverty, unemployment and stagnant growth.

1.4.3 Nature of data

The study used annual secondary data to analyse the key sectors promoting LED. The data was obtained from the Global Insight (2015) and it is a balanced panel data. A balanced panel data contains a combination of time-series and cross-sectional observations. Thus, panel data observations include two dimensions: the first being the cross-sectional dimension and the second being the time-series dimension (Hauser, 2016:5; Hsiao, 2007:1). The data is comprised of four cross-sectional dimension that is for local municipalities and about twenty time-series dimension. This adds up to eighty observations. The panel data analysis was deemed fit for the study due to data availability, as well as due to the fact that it allows for better capacity in modelling complicated human behaviour and it provides more precise conclusion of parameters (Heckman *et al*., 1998; Hsiao et al., 2006).

1.4.4 Model specification

The panel regression model was used to analyse the impact of key economic sectors on local economic development (LED). There are three types of analysis on panel data, namely pooled, random and fixed effects. However, the researcher chose the pooled mean group model as it fits the nature of the data of the study. The study estimated the local economic development index and the productivity of key economic sectors. The main objective was to identify key sectors that contribute to the local economic development index, which is a measure comprised of three variables or indicators that define LED, namely economic growth, employment and poverty. The researcher attached a score or weight to each indicator. The first indicator was economic growth that was weighed 0.4. The second and third indicators were employment and poverty alleviation (non-poor) weighing 0.3 each. Economic growth was weighed more because it is regarded as the most important indicator in economics (Meyer *et al*., 2016:12). To achieve the aim objective the study employed a pooled mean group model and a local economic development index was used as a dependent variable while key sectors in the Capricorn District municipalities were used as independent variables. Equation 1.1 illustrates the local economic development (LEDI).

Local Economic Development Index (lnLEDI)

= f (lncomus, lnconstr, lnfinance, lnmanufac, lntrade, lnelectr, lnagric) 1.1

where lnLEDI = log of local economic development index, lncomus is the log of community service sector in a municipality, lnconstr is log of construction in a municipality, lnfinance is log

of finance sector in a municipality, lnmanufac is log of manufacturing in a municipality, lnagric is log of agriculture in a municipality, lnelectr is log of electricity in a municipality and lntrade is log of trade in a municipality. The variables in this study are put in logarithm form. The logging of variables is a vital process as it eliminates misspecification and hetereskedacity problems as a majority of these variables contain strong trends (Mongale, 2012:28). Furthermore, it allows the researcher to analyse using percentages.

Of importance is that the local economic development index is composed of economic growth, employment and poverty alleviation. The results show how the productivity of key sectors influence economic growth, employment and poverty alleviation combined (LEDI). However, the study further estimated how these key sectors influence each component of local economic development index. Thus, how do productivity of key sectors influence economic growth, employment and poverty alleviation as separate models? This is in line with the empirical objective number two that pertains to economic growth and productivity of key sectors; employment and productivity of key sectors and poverty alleviation and productivity of key sectors.

Model 2: Growth model (lngrowth)

= f (lncomus, lntrade, lnmanufac, lnconstr, lntrans, lnfinance, lnmining, lntourism)..... 1.2

Model 3: Employment model (lnemploy) = f (lncomus, lntrade, lnmanufac, lnconstr, lnagric, lnfinance, lnmining, lntourism)..... 1.3

Model 4: Poverty alleviation model (lnnonpoor) = f (lntrade, lnmanufac, lnconstr, lnfinance, lnmining, lntourism)..... 1.4

Where lngrowth represents log of economic growth in municipality, lnemploy is log of employment in municipality, lnnonpoor is log of poverty alleviation in municipality, lncomus is log of community service in municipality, lntrade is log of trade in municipality, lnmanufac is log of manufacturing in municipality, lnconstr is log of construction in municipality, lnfinance is log of finance in municipality, lntourism is log of tourism in municipality, lnmining is log of mining in municipality, lnagric is log of agriculture in municipality and lntrans is log of transport in municipality. The variables in this study were put in logarithm form. The logging of variables is a vital process as it eliminates misspecification and hetereskedacity problems as a majority of these

variables contain strong trends (Mongale, 2012:28). Furthermore, it allows the researcher to analyse using percentages.

1.4.4.1 Description of variables

The researcher motivated that all the main key sectors should be investigated to assess which sectors influence economic growth, employment and poverty. These sectors include: manufacturing, mining, agriculture, utilities, construction, trade, transport and communication, financial and business services and social and community services.

- **Dependent variables**

The dependent variables used in this study were the local economic development index (LEDI), economic growth, employment and poverty alleviation. The local economic development index is composed of three sets of variables, namely economic growth, employment and poverty. These three variables were chosen because they define local economic development (Akah, 2008; Kotz, 2000:2; World Bank, 2003). The researcher attached weights to each component of the LEDI. When measured with Gross Domestic Product per capita, economic growth weighed 0.4 while employment and poverty weighed 0.3 and 0.3 respectively. Economic growth has taken a bigger share compared to other components because it is a measure that improves economic development. Furthermore, the study estimated the individual components of local economic development separately: economic growth, employment and poverty alleviation. This was to check how the key sectors were contributing to economic growth, employment and poverty alleviation.

The Gross Domestic Product per capita was used to measure economic growth. This constitutes the final goods and services produced within a specific region measured at the market price divided by the total population of a region. A number of studies have used Gross Domestic Product per capita as a proxy of economic growth such as Boulhol (2008), Easterlin (2013) & James *et al.* (2015). Furthermore, employment was used as a dependent variable, that is, the number of individuals employed in both the formal and informal sectors within these four municipalities. This proxy is supported by studies done by Belle & Bullock (2011) as well as studies done by Sari *et al.* (2008) who have used this proxy. For poverty alleviation the study used the logarithm of nonpoor to measure the number of people who are above the poverty line in each municipality. This was motivated by other researchers such as Deininger and Squire (1996) and Lundberge and Squire (1998) who used the headcount data.

- **Independent variables**

Independent variables used in this study include community service, trade, tourism, construction, agriculture, finance, and mining. All the key sectors were in thousands of rands and then converted to logarithms to make the analysis easier. The community and social service sector in this study was measured by gross value added output of general activities in health, education, government, defence activities, social work, cultural, hairdressing, recreational activities, sports, trade unions, funerals and related activities and sewage and refuse disposal. Other studies that have used the same proxy are Statistics South Africa and World Insights (StatsSA, 2015; World Insights, 2015). The trade sector in this study was measured by the gross value added of imports and exports of the Capricorn District Municipality. Based on the empirical analysis, the trade sector is measured by the gross value added of imports and exports in a region (OECD, 2010; Stehre, 2010; World Insights, 2015).

Based on the literature review, the tourism sector was measured using the productivity of the tourism sector (Bezic & Radic, 2017; Frechtling, 2013; Vieira & Santos, 2017; World Tourism Organisation, 2013). This study adopted this approach in the literature review and measured the tourism sector using the productivity of tourism through the gross value added of the tourism sector. For the construction sector the study used the gross value added output in all the activities in construction. This included the demolition of equipment, civil engineering and building installations (Stats South Africa, 2016). The gross value added measure was suggested by other researchers such as Bringezu & Bleischwitz (2009), Hoffman (2004) & Voet et al. (2005).

The literature review measured the agricultural sector by the share of expenditure on agriculture government budget, share of government expenditure on Gross Domestic Product and the agriculture gross value added (Ceylan & Ozkan, 2013; Elias, 1981). The current study used the agriculture gross value added as a proxy of the agriculture sector. This measure is consistent with Statistics South Africa (2015), Global Insight (2015) and Elias (1981). The study measured the finance and business sector using the gross value added value of all investments, insurance, banking, computer, legal, bookkeeping, architectural, auditing, engineering, research and development and other business activities that are not mentioned. This measure is consistent with the Johannesburg Stock Exchange (2012).

Based on the literature review, the mining sector was measured using the gross value added of the mining sector (Koitsiwe & Adachi, 2015; Sheehan, 2007; Statistics South Africa, 2015). This study further adopted the approach in the literature review and measured the mining sector using

the productivity of mining through the gross value added of the mining sector. Lastly, the manufacturing sector in this study was measured by the gross value added of all mining activities. The gross value added proxy was suggested by Friedman (2006), Sheehan and Sun (2007) and Statistics South Africa (2015).

1.4.5 Data analysis

The study used four statistical tests before estimating models. These tests were the trend analysis, descriptive statistics, correlation and the unit root tests. The trend analysis provided the trends of all the variables used in the study while the descriptive statistics provided the summary of economic variables in a quantitative manner (Mongale, 2012). Pindyck and Rubinfeld (1998) state that mean, median, maximum and minimum and standard deviation are the most frequently used components to be analysed in panel data analysis. Furthermore, a correlation analysis was done to check the degree of interaction among variables. Freeman and Young (2009:31) mention that the association between variables can either be positive or negative. A positive and closer to 1 signifies a strong relationship between variables while a negative coefficient closer to 1 signifies a strong negative linear relationship (Brooks, 2014:151). The last statistical test used was the panel unit root test. This test was used to determine the best estimation to use.

To test for panel unit root test, the literature suggested the Levin, Lin and Chu (2002), Breitung (2000), Perasan and Shin (2003), Maddala & Wu (1999) and Hadri (2000) tests. Based on the panel unit root test results, a panel ARDL model was used to analyse key economic sectors contributing to local economic development.

1.5 ETHICAL CONSIDERATIONS

It was the researcher's responsibility to carry out this study in line with the ethical standards of academic research. The researcher maintained the highest level of integrity at all times in data collection. He collected data from World Insight and referenced all the tables, trends and figures. Furthermore, the researcher adhered to the guidelines and procedures of North West University by referencing all the work.

1.6 CONTRIBUTIONS TO THE STUDY

The study provides information regarding the key sectors that promote LED in a local economy. Thus, the findings benefit community members, policy makers and researchers. Firstly, the study introduces a new model/index that can be used to measure development at a local level. The

model/index contributes to the existing research literature of Economics. Furthermore, it creates more avenues for new research topics. Secondly, the research identifies key economic sectors that are beneficial to both community members and policy makers and it paves the way for job creation, poverty alleviation and economic growth. The LED strategies are of importance to local managers, entrepreneurs and policy makers to improve the local economy. The findings of this study can be used by future researchers as literature and they create more avenues for research.

1.7 CHAPTER CLASSIFICATION

Chapter 1- Introduction and Background to the Study

The research comprises of six chapters. The first chapter is mainly a diligent attempt to focus on the introduction and background of the study. It also includes the problem statement, objectives and the research methodology used.

Chapter 2- Literature Review

The chapter further includes an in-depth analysis of LED including the theories that govern it. The chapter also explains the dynamics of development economics and economic development as concepts and the how they link with LED.

Chapter 3- Local Economic Development Policies and Case Studies in Developing South Africa

This chapter provides a structure of the national government, provincial and local governments and their functions. The chapter mainly tackles the review of local economic development policies. Furthermore, the chapter provides case studies of municipalities engaging in projects to improve job creation.

Chapter 4- Research Methodology and Profile

This chapter bridges the gap between the theory and practical world by explaining the socioeconomic analysis of the Capricorn District municipalities and research methodology. The profile includes the key economic sectors, the unemployment rate, gender composition and the poverty rates. It further explains the quantitative methods used in the study.

Chapter 5- Empirical Results and Discussion

This chapter provides a detailed analysis of results found. The results are in quantitative form. The study presents results using statistical tests and panel quantitative approach.

Chapter 6- Summary, Conclusions and Recommendations

This chapter recapitulates the study and gives recommendations to the policy makers. The researcher recommends policy guidelines that can be used in Limpopo Province and other provinces. This helps policy makers in making informed decisions**.**

CHAPTER 2
LITERATURE REVIEW

2.1 INTRODUCTION

Having briefly examined in the previous chapter the available literature on local economic development and how best key economic sectors can be used to promote local economic development in the Capricorn region, it is only prudent that an in-depth analysis of the nature and scope of LED be conducted. Thus, it has been noted previously that LED is a multifaceted discipline that entails a range of activities that stimulate local economies. It involves many disciplines such as developmental studies, development economics, public management, politics, geography and urban studies. Although LED is a multifaceted concept, it involves meeting people's needs and these needs can be addressed through the aforementioned disciplines, specifically the development economics. Due to the multifaceted nature of LED, development economist researchers lack consensus on what it entails (Sebugwawo, 2012; Trah, 2004). Some researchers perceive LED as a poverty alleviation strategy (Akah, 2008; Bond, 2003; Rogerson, 1999) while Pieterse (1998), Swinburn (2006) and Nel (2001) regard LED as a strategy for improving economic growth and creating jobs. However, it is more appropriate to describe LED as a practical concept that builds the economies of a local area and shapes the future generation (Akah, 2008:4; Bond, 2003:57). It further entails employment creation, coming up with new opportunities, improving infrastructure and warranting economic stability.

The objective of this chapter is, therefore, to discuss the nature and scope of LED and to review the literature on this discipline. This chapter further links development economics theories with LED since this phenomenon involves different disciplines. The chapter also discusses the sources of economic development, the objectives of economic development and the economic development theories used in the study. Furthermore, the chapter analyses the sectorial employment in South Africa. The discussion is based on formal and informal sectorial employment in South Africa and the approaches to sectorial employment. The chapter further discusses the nature and scope of LED. This includes the aspects, objectives and theories of LED. The chapter further analyses and reviews the literature on LED and the key sectors contributing to LED and employment.

2.2 CONCEPTUALISATION OF LED IN THE CONTEXT OF DEVELOPMENT ECONOMICS

Development economics and local economic development (LED) are intertwined and cannot be overemphasised. Development economics entails meeting basic needs for everyone in the society while LED is improving the living standards of the society (Peet & Hartwick, 2009:1). Thus, LED fits well into development economics as it shares the same goal of developing local economies. Seers (1969) shares the notion that development economics should drive LED through poverty reduction, unemployment reduction and improved economic growth. Therefore, the economic development sources should be promoted to ensure improved living standards of all society members. The ensuing discussion thus heralds an exploration on the nature of development economics. This includes an examination of the sources of economic development, objectives of economic development, dynamics of economic development and the economic development theories thereof.

2.2.1 Sources of economic development

It is pivotal and of paramount importance to note that economic development takes place in an environment that is free from poverty, stagnant growth and unemployment. On this note, economic development is influenced by factors such as increased production, structural transformation and foreign trade. The subsequent section discusses these sources of economic development.

2.2.1.1 Increased production

For economic development to actualise, an increased production of goods and services needs to be developed and accomplished. Increased productivity acts as a catalyst of economic development as it allows industries to produce more output. This will in turn reward the factors of production in the form of wages and salaries as well as improve economic growth and ultimately improve economic development (Slowman, 1994:1). Mohr (2004:468) outlines two channels that can be used to improve productivity as savings and investment. Savings is the income not spent while investment is the process of buying capital goods such as cars, machines, equipment, stocks and structures with the objective of making a profit (Mohr, 2004:468; Slowman, 1994:14). Savings and investment increase the productivity through capital accumulation (Hogendorn, 1996:57). As the savings and investment increase, more jobs are created and the local gross domestic product will increase. This will motivate the local municipalities to better their standards of living.

2.2.1.2 Structural transformation

It should be highly noted that structural transformation is the transfer of factors of production from low performing sectors to high performing sectors (Szirmai, 2005). Herrendorf *et al.* (2013:3) defined structural transformation as a process of relocating the economic activities across agriculture, services and manufacturing sectors. From the above definitions, it can be deduced that structural transformation involves moving the resources from a low output sector to a high output sector. For economic development to materialise, municipalities should identify low performing sectors and transfer resources to these sectors for improvement. For instance, if the agricultural sector is struggling, the local government can shift the resources from the performing sectors to the agricultural sector. This will shift the factors of production such as labour from high to low productive sectors. Subsequently, there will be a growing share of economic activity that will change the human standards of living (Timmer, 2007).

2.2.1.3 Foreign trade

It is beyond the bounds of possibility for a country/region to have all the resources it requires, hence the need for trade becomes apparent. Without trade countries, regions, and local governments will be prejudiced. Each region is equally important in a world of trade and such trade thereby benefits every region involved (Slowman, 1994:916). In foreign trade, a country/region should channel most of its resources to firms that export goods and services. This means that a country should specialise in a product in which it has an absolute advantage and export that particular product (Mohr, 2004:420). It is vital for each and every local government to specialise in goods in which it has an absolute advantage. This will improve its current balance and create employment for local residents. In the event of scarcity, a country can prudently resort to imports. Thus, the process of acquiring a product that is not locally produced is fundamental and of central importance to economic development. The following section discusses the objectives of economic development.

2.3 OBJECTIVES OF ECONOMIC DEVELOPMENT

It is worthy of note that economic development is the ultimate objective of all developing countries. Developing countries should always strive to improve economic growth, reduce unemployment, and promote quality of life and sustainable development. All these objectives are equally important for development purposes and are examined below.

2.3.1 Improve the economic growth

It is the desire of every nation to achieve the targeted economic growth. The targeted economic growth in South Africa is set at 5% every year (Trading Economics, 2017). Economic growth is measured by the Gross National Product. It is defined as the total value of goods and services produced in a country (Mohr, 1997:460). The Gross National Product is regarded as one of the good measures of economic development (Todaro & Smith, 2009). In addition, Perkins, Radelet and Lindaurer (2006:39) state that economic growth is crucial but not enough for economic development. In other words, economic growth should ultimately result in economic development and the majority of the citizens should benefit from the increased growth rate. Thus, the majority should benefit from better education, health care, better life, life free of poverty and better income levels.

2.3.2 To reduce the level of unemployment

Another salient objective of economic development is to reduce the high rate of unemployment. In South Africa the unemployment rate is significantly greatly than normal and is recorded at 27.1 percent (Statistics South Africa, 2016). Unemployment has been high since 1994 and it is the major event with long-run effects (Powell, 1973:1). In the long-run it comes with unfavourable attachments such as reducing an individual's income, high stress levels, prostitution, high rates of crime and decreased standards of life. The aforementioned effects of unemployment do not favour individuals, the government and the country as they present negative effects in the long-run. On the other hand, every country should strive for economic development to combat unemployment. This calls for each and every local municipality to devise projects that will create employment and improve the standards of life.

2.3.3 Quality of life

Economic development entails a good life for everyone in the country/region. However, the World Bank (2000) unmasked a pivotal point that the majority of South Africans live under extreme poverty. Since then, poverty keeps on increasing and has compromised the quality of life (UNICEF, 2016). In addition, unemployment, inequality, corruption and illiteracy in South Africa have compromised the standards of living to an even greater extent. Seers (1969) suggests that all these socioeconomic problems should be addressed for better quality of life. Furthermore, environmental issues, the education system and health issues should be a priority for economic development (Stiglitz, 1998). Several researchers have reached a consensus that reduced poverty,

a smart environment, equality, social and economic freedom and better education standards lead to economic development (Seers, 1969; Sens, 1999; Stiglitz, 1998). After achieving all these objectives, the aim of LED is to ensure sustainable development.

2.3.4 Sustainable development

The International Union for the Conservation of Nature is the inventor of the concept of 'Sustainable Development' (International Union Conversation Nature, 1980). The concept can be traced back to the late 1980s to achieve goals such as zero poverty, zero hunger, quality education, decent work and economic growth, responsible consumption and production, clean water, reduced inequality and peace and justice (United Nations, 2016). Thereon, it became popular and currently there are many views on what it entails. Some view sustainable development as a preserver and function of ecological systems. On the other hand, some view sustainable development as the conservation and enhancement of the standards of life (Solow, 1999). Despite different views on what sustainable development entails, Bruntland (1987) sheds light on this concept by defining sustainable development in both the ecological and economic way. Sustainable development is a concept that caters for an individual's needs without compromising the upcoming generation. This definition is bulwarked by the definition of the United Nations (1987:43) which defines sustainable development as a concept that achieves economic freedom and simultaneously considers the future generation. Considering two schools of thought on sustainable development, researchers have identified three aspects of it, namely: economic, environmental and social issues (Dernback, 1998; Harrie et al., 2001; Holmberg, 1992; Reed, 1997; Stoddart, 2011). The above-mentioned researchers emphasised the key principle of sustainable development as being the integration of the environment, the economy and social issues.

Serageldin and Steer (1994) share the proposition that sustainable development is all about protecting and enhancing the available opportunities to people around the world for the accumulation of wealth. These noble authors further outlined three kinds of wealth as natural capital, human capital and produced capital. All these three are all important and lead to economic development when used efficiently and effectively. Stoddart (2011) and Dernback (1998) further view sustainable development as a natural resource that should be used efficiently and effectively to benefit the upcoming generation. Something sustainable pertains to long term goals, thus Emas (2015) alludes that sustainable development is a long term goal for environmental and economic stability. Since sustainable development is a long term concept, it is supported by some long term goals to be achieved by 2030. The United Nations (2015:16) has outlined some of these long term

goals as being to end poverty and hunger, provide better health, and ensure quality education, gender equality, affordable energy, infrastructure development, reduced inequality and creation of jobs. For the purpose of this study, sustainable development aims at reducing poverty, improving growth and creating jobs for all its citizens. This is successfully achieved through entrepreneurship and creating small and medium businesses. To sustain this objective, policies and strategies should be put in place. These strategies should aim at creating more jobs and promoting small businesses and this forms part of LED objectives.

2.4 DYNAMICS OF ECONOMIC DEVELOPMENT

The world is limited in terms of space and time, thus concepts and phenomena change over time. For instance, economic development is a concept that is related to people, their basic needs and the surrounding environment and people`s needs change with time and circumstances (Beer & Swanepoel, 2000; Rondinelli, 1983). Therefore, the needs of people should be reviewed over time to avoid some uncertainties and meeting unrealistic goals. To add to the above, Beer and Swanepoel (2000:63) state that economic development should not be narrowed to modernisation, industrialisation and women empowerment. These are not the only issues to be addressed as already noted the needs of people change with time. Issues should be reviewed over time since economic development is subjective in nature. Some local areas might need job creation while other areas might be only focusing on infrastructure development. It is important for the local government to identify the needs of the area and focus on the economic development of that area. For economic development to materialise, development economists should address the needs of people on a local level. Each and every local municipality has to identify the needs of its citizens and address them. The municipality should come up with projects that are aimed at improving its locals at a particular time and in particular situations. The following section will discuss the economic development theories.

2.5 ECONOMIC DEVELOPMENT THEORIES

Each and every region has unique problems that require unique solutions. These unique problems have led to formulations of many economic development theories such as location quotient, O-ring, big-push, growth poles, neoclassical, linear stage of growth, new growth theory and sectorial models of LED theories. For this study, the problems require economic development theories such as regional economic development traditional theories, absolute and comparative theory, classical economic development theories, the Keynesian and Kaldor`s theory, location theories and modern theories. These theories address economic growth, employment, poverty alleviation and the

sectorial growth. The subsequent section discusses in sequence these theories in relation to the study.

2.5.1 Regional economic development traditional theories

The regional economic traditional theories are divided into two categories, namely the neoclassical theory and the theory of export basis. These two categories have a direct link between LED and sectorial growth. For instance, the neoclassical theory puts emphasis on the availability of factors of production for sectorial growth (Kacar *et al.* 2016:235). This theory further propounds the argument that factors of production such as labour and capital should be in abundance and mobile for a region to grow. The theory affirms that all the economic systems should come to an equilibrium point if capital flows without restrictions (Blakely & Leigh, 2010:81). Accordingly, capital will migrate from high wage to low wage due to a high return of investment (Blakely & Leigh, 2010:81). In the event that this assumption is achieved, all local areas will reach a point of equilibrium. In this scenario an equilibrium is reached when all the salaries are the same in all the regions (Kacar *et al*. 2016:235). This will help all the regions to increase the productivity of each sector, at the same time creating employment, alleviating poverty and improving economic growth.

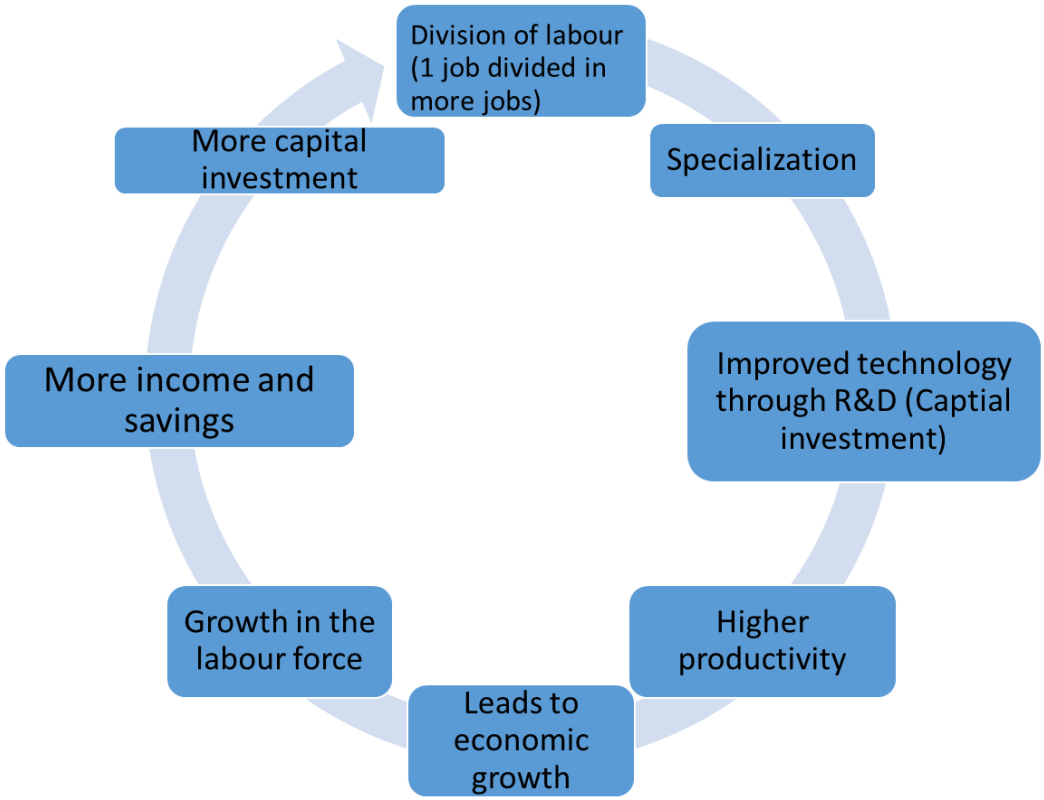
The export base theory separates the economic activities into two, namely the export and the non-export activities (Kacar *et al*. 2016:235). The theory puts more emphasis on activities that bring money into the region. Thus, the theory prescribes that regions should sell more goods and services to other regions. This is a strategy of promoting exports, economic growth and employment in a region. This is achieved through the export multiplier. The export multiplier is the increase in economic growth as a result of exportation of goods and services (Giordani, 2012). The multiplier will generate more income for households and improve the poverty alleviation, economic growth and employment in a region. In support, LeSage (1990) realised that there is a strong negative link between the export multiplier and poverty reduction. As the region exports more, poverty is reduced. The disadvantage of the export base theory is that everything depends on exports. A region cannot heavily rely on exports only; rather it also has to import other goods and services. The solution to the export base theory is the absolute advantage theory and comparative advantage theory introduced by Adam Smith and David Ricardo.

2.5.2 Absolute and comparative advantage theory

The absolute and comparative advantage theories are based on regional trade. The absolute advantage is a theory that was developed by Adam Smith in 1976. He proposes the argument that agriculture is the major contributor of wealth/sector in an economy and people should specialise in agriculture for economic development (Slowman, 1994). In other words, agriculture contributes to poverty alleviation, improved economic growth and employment in a region. Furthermore, the recent application of the absolute advantage is that a region should specialise in any sector in which it has an absolute advantage. On the same note, a region should import a good or service in which it has an absolute disadvantage. The major success of the theory lies in its willingness to use the division of labour principle, specialisation, savings and investment (Dang & Pheng 2015:1).

Figure 2.1 illustrates the stages of economic development according to traditional theories. The first step is the division of labour. One task has to be divided into different job units among workers and the workers have to specialise in a specific task until completion. Specialisation reduces costs through improved technology and improved technology is a result of research and development. This will bring higher productivity that will lead to improved economic growth. Improved economic growth will strengthen the labour growth that will lead to more savings and income. More savings and income will further create more capital and more jobs. The absolute theory backs LED. For a local economy to develop, residents or workers should specialise on the task they are given. This will reduce costs and simultaneously improve local economic growth. Economic growth leads to economic development.

Figure 2.1: Stages of economic development



Source: Smith (1976), own design

Adam Smith put more emphasis on division of labour or absolute advantage. Contrary to Adam Smith's work is the comparative advantage of David Ricardo. Slowman (1994:918) defined comparative advantage as a region having an advantage over another in production of a good if it can produce it using a lower opportunity cost. David Ricardo avers that there will be an economic activity in each and every region despite having a disadvantage in one or both of the goods (Yoon, 2000:40). Rather, a region should specialise in an activity with lower opportunity costs than its competitor. For better comprehension of this concept, let us assume two regions (Capricorn region and Gauteng region) and two goods (shoes and shirts). We further assume that Gauteng has an absolute advantage in both shoe and shirt production. In this instance, Smith contends that there is no need for trade because the Gauteng region is better than the Capricorn region in the production of both goods under survey. However, Ricardo prescribes a need for trade, thus the Capricorn region can also benefit from trade by specialising in a good that has a lower opportunity cost. At the end each, region should specialise in one product. The Ricardon theory is applicable in LED as local governments can produce goods and services they have lower opportunity cost. This will lead to more exports in a local municipality and improve the living standards of residents.

However, the comparative advantage theory is not exempt from criticism. Scholars assert that Ricardo only considered labour costs and inadvertently neglected other non-labour costs and transport costs in the production of goods and services (Chenery, 1961).

2.5.3 Classical theories of economic development

The works of classical economic development theories trended around the 1960s to the early 1990s. The classical theories of economic development focus more on stages of growth and the structural change model. The stages of growth theorists opine the notion that a local economy passes through stages of development (Jacobs, 1969; Thompson, 1968). These theorists prescribe five stages of development, namely: export specialisation, export complex, export maturation, regional metropolis and technical virtuosity (Thompson, 1968). These five stages point to production (exports). Every industry in a local economy has to export for growth. The first stage stipulates that a municipality has to export at least one product in which it has an absolute advantage (Thompson, 1968:15). The second stage is when a local firm broadens its production (Blair & Carrol, 2009:89). If the firm was producing 218 units of goods, it should increase its production to 450 units. The third stage is where there is an intense production of exports which will reach a stage where imports are replaced (Thompson, 1968:15). Therefore, a municipality should specialise with more exports to replace imports in a region. This will alleviate poverty, increase the number of jobs and improve economic growth.

The fourth stage is when the local firm becomes a source for many neighbouring regions and the last stage is when the equilibrium is achieved (Blair & Carrol, 2009:89). As a result of specialisation, a local municipality should be a source to other neighbouring municipalities. Overall, the theory promotes an increase in sectorial output in a certain municipality. Thus, a municipality should identify the good(s) they have an absolute advantage in and increase the sectorial output. At the end, the increase in sectorial output should benefit other neighbouring regions. However, Helsenrth (1993) criticises the stages of growth theory. The author argues that development is not influenced only by the four stages of growth but is also influenced by a lot of factors such as policies, government regulation and modern production methods. Thus, the structural change addresses the modern production sectors.

The structural change model shifts the focus from traditional sectors to modern sectors for better sectorial growth (Todaro & Smith, 2006:108). The theory affirms that factors of production in particular labour should be shifted from traditional sectors to modern sectors such as manufacturing and services sectors (Dang & Pheng, 2015). Lewis (1950) classified the traditional

sectors as zero marginal productivity implying that no/less output is produced in the traditional sector. The traditional sectors include the agriculture sector, the forestry sector, and quarrying sector (Todaro & Smith, 2006:108). On the other hand, modern sectors are characterised as high-productivity sectors that produce more sectorial output for employment. Therefore, labour should be transferred from a zero productivity sector to a high productivity sector to reduce poverty, increase economic growth and create employment. The success of this theory solely depends on the rate of industrial investment and the capital accumulation of the modern sector (Todaro & Smith, 2006:108). For the region to create jobs, reduce poverty and improve economic growth the modern sectors should invest and accumulate capital in the region.

2.5.4 The Keynesian and Kaldor`s economic development theory

The theory by Keynes is based on demand. The demand should impact economic growth and employment positively. The Keynes theory is solely based on consumption, savings and investment (Shapirov, 2015:764). The theory explains the dynamics of the market structure based on consumption, savings and investment. For instance, in times of unemployment and recession, Keynes recommends that income should be increased to increase consumption, investment and savings. Thus, the government should implement a fiscal policy that is relevant to the current market environment (United Nations, 2011). In the Keynes theory of thinking, investment is the main factor that influences growth. In support, Harrod-Domar supplemented the Keynes theory by emphasising that every local economy should save a certain amount in order to invest (Todaro & Smith, 2006:105). Therefore, investment is the driver of economic growth. The accumulation of capital goods can only come into fruition by savings. This means each municipality should encourage its residents to save a part of their income to translate these savings into investment. More investments leads to more jobs and more income circulation in a local economy. This theory has its limitations in the sense that it only depends on the accumulation of capital goods and rarely depends on technology (Shapirov 2015:764).

The Kaldors theory bridges the gap between the manufacturing sector and economic growth. It emphasises the relationship between manufacturing output and economic growth in a region (Kaldor, 1966). The relationship is explained by three laws; the first law suggests that the manufacturing sector is positively related to economic growth. This means that the manufacturing sector is the main driver of economic growth (Kaldor, 1957). The second law further states that an increase in the manufacturing output will lead to an increase in employment in the sector. Thus, the second law promotes employment and poverty reduction in a region. The third law has more

to do with other sectors that are not the manufacturing sector. It suggests that a constant increase in manufacturing output will improve other sectors through labour transfer that will solve the unemployment problems (Mamgain, 1999).

2.5.5 Location theories

Regional economists argue that there are three important factors that affect regional growth: location, location and location (Blakely, 1994; Capello, 2011; North, 1955). Location is the main factor that influences economic growth and employment. The study discusses the location theories based on Weber and Perroux. Weber (1909) argues that the location of an industry is one of the major decisions to be undertaken. Weber (1929) opines that the location of an industry should consider factors such as material cost, transportation cost and labour costs. When choosing a location for an industry, development economists should consider the proximity of the sources of raw materials, consumption and intermediate points. The industry should also consider the labour costs and the agglomeration factor. The agglomeration factor gives a sector an advantage of lower cost of production. These factors are normally enjoyed by industries located in urban areas.

The growth pole theory was developed by Francois Perroux around the 1950s. He emphasised that growth occurs at one place at a time (Perroux, 1955:279). He further outlined that growth will spread evenly with different channels. Perroux (1950:27) defined the growth pole as a centre in which all forces are derived and attracted. For instance, if development or growth occurs in Polokwane it will spread to surrounding places such as Seshego, Turfloop and Westernburg. This means that the growth in all these regions is not uniform. Most growth is experienced in the centre and other areas benefit from the focal point. Normally, growth is experienced in sectors such as automobile, electronics, steel and agriculture. An industry with high interaction is likely to experience more growth compared to small and less interacting industries (Monsted, 1974:106). The growth of other industries means improved economic growth, employment and reduction of poverty.

2.5.6 Theories of coordination

The theories of coordination are mainly divided into the big push theory and the O-ring theory of economic development. The founder of the big push theory is Rosentein-Rodan (1943). He recommends the Big Push theory for economic development purposes because it has been a problem for economic development to kick start due to poor coordination (Todaro & Smith, 2011:164). The Big Push theory exerts more weight on the coordination of economic activities in

cases of market failures such as public goods and externalities (Borooah, 2003:3). In essence, the big push theory describes how market failures affect development and how these market failures should be addressed (Todaro & Smith, 2011:165). Thus, Nurse (1953) and Rodan (1943) emphasised the role of the government in solving problems. To curb that, Rosentein-Rodan (1943) initiated large scale investment programmes for countries and regions. Thus, firms are encouraged to merge. The basic idea is to move the market from urban regions to small restricted markets in poor regions. This will provide new markets, especially in poor regions, and break the cycle of poverty (Peet & Hartweek, 2009:70). Merging would help policy makers to coordinate all the investment and this will improve a region or country (Easterly, 2005:29). Furthermore, government can make use of the Big Push theory when urbanisation is needed. This will improve the country's economic growth through industrialisation (Todaro & Smith, 2011:167). The Big Push theory is practical for LED as it encourages all local governments to coordinate all the economic activities in their local area. This calls for local governments to move some industries to where it is not congested to create employment in these areas. In the process the government is responsible for correcting all the market failures.

The works of the O-Ring theory is attributed to Kremer (1993). The theory subscribes to current production methods for sectorial growth. Division of labour, specialisation, economies of scale and complementarity are the catalyst to O-Ring theory (Kremer, 1993). This means that firms in both rural and urban areas employ people with the same skills but workers who are employed in a high-skill firms are paid more compared to those in low-skilled firms (Todaro & Smith, 2006:169). The theory indicates that workers earn different wages for the same job. The above explained model illustrates the existence of poverty traps between less developed countries and developed countries (Kremer, 1993). It is vital for local governments to understand these trends and try to improve or allow the movement of capital from regions of high concentration to regions of low concentration for economic development purposes. This calls for the LED projects to be performed using recent production methods and workers should specialise to reduce costs.

2.5.7 Modern theories

The development of modern theories are seen in the works of Porter, Romer and Krugman (Meyer, 2013). They put more emphasis on competitiveness of regions. The works of Porter (2007:1) emphasise that the ultimate goal of development policy is competiveness which should be shown by industries, people, capital and natural resources. All these should aim to improve the business environment. This can be done through good fiscal policies, tax policies, savings and investing

(Porter, 2007:1). Thus, a cluster should have good policies and a combination of good skills, knowledge of the business, knowledge of other institutions and rivals. In the event that there are firms with the same skills, clustering will be the best for growth. Porter (2007:2) emphasises the fact that clustering drives innovation and productivity. This will increase the regional competitiveness and regional competitiveness improves the local economy through job creation and improved economic growth.

The contribution of Paul Romer in development economics is based on the notion that poor countries are poor because they lack valuable resources and knowledge (Romer, 1993:1). Then he made a point that the way firms use and distribute knowledge is vital to regional development. Knowledge should be distributed in a way that develops a region. The flow of knowledge between firms is vital for growth. Romer (1993:546) mentions that economic development is the proper use of capital and labour in the region and how these two interact with the region. Thus looking at the resources and the capacity, regions are also developed through research and development. Thus, local municipalities should make use of resources efficiently and effectively in a region. The local government should invest in research for better results in developing their economies.

The modern theorist, Paul Krugman, poses a question, where does development take place? (Krugman, 1998:1). This question was motivated because of differences in countries such as location, growth, temperatures and continents. He observed huge disparities in inequalities within the less developed countries and overpopulation. From all these challenges identified, Krugman (1998) came up with the modern theory prescribing that all firms should conclude and specialise in all the economic activities as this leads to increased returns on investment. This means that all factors such as transportation, market size, and availability of resources should be linked with regions where there are high returns on investment. Krugman (1998) further mentions that industries should set the wages high to attract skilled labour for better returns on investment.

2.6 LOCAL ECONOMIC DEVELOPMENT

The LED is a European concept that can be traced back to the early 1960s (Clarke & Gaile, 1998; Swinburn, 2006). It was introduced to improve the standard of living of every member of the community. In Africa, the LED received attention around the 1990s due to the socioeconomic challenges it faced such as poverty, inequality and unemployment (Blakely & Leigh, 2010). Henceforth, LED became popular and many African governments including South Africa adopted it (Nel & Rogerson, 2005:1). In the year 1996 the South African government decided to officialise the LED phenomenon (HSRC, 2003). This is when the powers were given to local government to

manage its resources and reinforce the economic structure of local municipalities (Republic of South Africa, 1996). The mandate pushed by the Constitution gave each municipality a competitive advantage to create jobs and improve the living standards of their local economy.

Rowe (2009:3) states that LED is a multipart fusion of concepts and practices. Some perceive LED as a poverty alleviation strategy, others regard LED as infrastructure development and others as a job creation mechanism (Akah, 2008:4; Cazanelli, 2001:6; Rowe, 2009:3; World Bank, 2003:4; Zaaier & Sara, 1993:129). Akah (2008:4) describes LED as a practical concept that shapes the future generation and builds the local economies. On the other hand, Zaaier and Sara (1993:129) define LED as a process where the local government, community members and the private sector join hands in utilising resources with the aim of creating jobs and improving standards of living. From the above definitions, LED entails employment creation, improving economic growth, reducing poverty, coming up with new opportunities, improving infrastructure and enhancing income for the locals.

Despite different views on LED, there is a general consensus that it is a regional development strategy that seeks regional solutions. Thus, LED provides a region with social and economic benefits such as sustainable economic growth, job creation and poverty alleviation (Kotz, 2000:2; World Bank, 2003). In other words, LED curbs region problems and produces both social and economic benefits. All these can empower local societies and improve the use of resources. Noteworthy is that LED can be achieved when local governments, community members, the private sector and non-governmental organisations join hands. The local government, private sector and the non-governmental organisations provide resources to community members and manage those resources with the aim of creating jobs, reducing poverty and improving economic growth.

2.6.1 Scope of local economic development

Understanding a broader picture requires one to understand the narrow picture. The national level should be understood from a local level perspective. Poverty, unemployment and stagnant economic growth cannot be cured on a national level; rather a micro approach should be used. Thus, LED should be the catalyst to improved economic growth, economic development and employment. It is the process that involves the local government, private institutions, and communities joining hands in solving the local economic crises (Zaaijer & Sara, 1993:129). The scope of LED calls for decentralization of decision making and powers to effect an economic change in local municipalities (Nel & Rogerson, 2005:1). This means that a local municipality is

able to make its own decisions to combat unemployment, poverty and stagnant growth. The decision making includes managing natural resources and financial resources. Abrahams (2003) gives a scope for LED as:

LED= (natural resources, investment, government spending, export market, communication, industrial composition, entrepreneurship, transport, size and technology) 2.1

According to equation 2.1, LED entails natural resources, government spending, export markets, communication, industrial composition, entrepreneurship, transport, size and technology. LED is the management of all these resources in improving local employment, economic growth and poverty. Fosler (1991) emphasizes the idea that all these resources should be used efficiently and effectively to improve the quality of life.

2.6.1.1 Goals of local economic development

There are many goals of LED. These goals do vary from region to region because each region will seek to address its local needs. For this study, the LED sought to build quality jobs, achieve economic stability and build an economic and employment base. It is the desire of every municipality to provide jobs for its residents. It is the responsibility of every municipality to identify on-going projects that will create employment. These projects should employ the locals for the current generation and the upcoming generation. In addition, the local government should fund locals with business ideas to promote employment. Blakely (1994) suggests that the government should provide subsidies, loans and advice (Blakely, 1994). Secondly, LED aims at economic stability or poverty reduction. Thus, every household should have a source of income and it should meet basic goods and services. Furthermore, creating more jobs for locals and ensuring the economic stability of locals will lead to an improvement in the economic growth.

2.6.2 Dimensions of local economic development

There are four dimensions of LED namely: the territorial, government, integrated and sustainable dimension. This section will discuss these dimensions of LED.

2.6.2.1 The territorial dimension

The territorial dimension is based on the implementation of policies in a certain territory or area to improve the competitiveness. The LED territorial dimension targets the local sectorial problems for strategy development. The strategy development includes coming up with the vision, plan,

goals and projects (Meyer, 2016). For instance, the territorial dimension provides the economic needs such as technology, workshop education, transport and the improvement of firms for competitiveness of local sectors (Rodriques-Pose, 2002:9). Coming up with a good strategy development creates a good environment where LED policies can be implemented. A territorial dimension allows all stakeholders to partake in decision making and puts more weight on the efficiency of the policy (Brenner, 2003). Efficiency is a result of stakeholders' involvement and decision making at the territorial level that gives an industry a competitive advantage (Cheshire & Gordon, 1998). Lever and Turok (1999:791) support the view that an increase in competition improves the efficient use of resources. Thus, competitiveness leads to more production of goods and services in local municipalities. This will lead to improved growth and employment.

2.6.2.2 The Governance dimension

Government plays a vital role in the success of LED. In this dimension, the government provides the maximum support in solving socio-economic problems within local municipalities (Rodriques-Pose, 2002:8). The government intervenes in LED to combat corruption, poverty, illiteracy and unemployment (Zarend, 2013:1). The governance dimension is of the view that the implementation of LED strategies require good governance. Its success heavily relies on institutional systems and the available frameworks (Rodriques-Pose, 2002:8). Thus, the participation by stakeholders is vital in identifying opportunities and threats and the participation is done through voting and attending developmental meetings to promote accountability, participation and transparency (Klugman, 1994; Putnam, 1993). However, intervention of government may result in unfavourable results such as personal interests and corruption (Banfield, 1979:98). Rather, the LED process relies on cooperation of local government and local stakeholders in the formulation and implementation of policies. In addition, such cooperation will add value to the informal sector for the development process (Rodriques-Pose, 2002:9).

2.6.2.3 Integrated dimension

Generally, a top down approach is the most common approach in LED. Using this approach has a risk of ignoring special needs of local individuals (Oates, 1972). In the case of a top down approach, growth might not be experienced because of some personal interests and corruption. However, the integrated approach is the solution to a top down approach. The integrated approach prescribes the idea that the growth of one region should benefit other regions as it caters for economic preferences of the local residents (Paddison, 2002:12). For the integration dimension to occur there should be competitiveness, investment attraction and improvement in human capital

and infrastructure (Rodriques-Pose, 2002:9). All these four should be promoted and a balance should be struck to achieve an integrated dimension.

2.6.2.4 Sustainability dimension

For the past decades economic development and environmental protection were conflicting agendas. However, the introduction of sustainable development reconciled the two. This aims to join economic growth with the environment resources such as natural capital (Rodriques-Pose, 2002:9). As mentioned earlier, the sustainability dimension is about protecting and enhancing of the available opportunities to people around the world for the accumulation of wealth for a long time (Serageldin & Steer, 1994). Thus, the long term goals are to end poverty and hunger, provide better health, and ensure quality education, gender equality, affordable energy, infrastructure development, reduced inequality and the creation of jobs United Nations (2015:16).

2.6.3 Types of local economic development

There are generally two approaches to LED, namely the corporate centre approach and the alternative approach. The corporate centre approach is when the private sector influences decisions in the market (Bradley & Blakely, 2000 & Robinson, 1989:285). Noteworthy is that the private sector solely makes market decisions concerning industrial development. Thus, the private sector is responsible for creating a good market environment that promote economic development (Blakely, 1994:51). The government extends its confidence in the private sector that it will make rational decisions that foster economic growth. Its success lies on less/no government intervention. The corporate centre approach has been criticised because of less/no involvement of low-income earners and the ethnic group. In other words, this approach favours the elite as most of the resources are transferred from the public to the private sector. This is done to improve economic growth, promote key economic sectors, create jobs and improve the standard of living (Blakely, 1994:51; Robinson, 1989:285).

The alternative approach takes a different stand from the corporate centre approach. In the alternative approach, the public sector influences decisions of the private sector (Blakely, 1994:51). This means that all the decisions on any economic issue are in the hands of the public sector. Unlike the corporate centre approach, the alternative approach favours the low-income earners and ethnic minority (Robinson, 1989:285). Moreover, these groups are involved in the planning process for their economic development. Accordingly, all the public resources are utilised for economic development only. These resources should help those with low-income and ethnic

minority residences. In addition, the resources are directed to all sectors, local projects and employment in a local area.

2.6.4 Aspects of local economic development

There are four aspects of LED, namely: geographical location, provision of public goods and services, participation of local residents and a multidisciplinary approach (Tello, 2010). For the geographic location aspect, countries or regions are divided into three major classes: geographic, political and economic. These three classes exist in regions, provinces, districts, departments and municipalities (Organisation for Economic Co-operation and Development, 2002). Within these spheres, economic development should be the ultimate goal. To achieve economic development, policy makers should identify special characteristics of a territory and study the functioning of markets. In addition, policy makers should also identify the nature of unemployment in a region such as the global-economy setup in which the local economy exists (Greffe, 2004). The second aspect is the provision of public goods and services at a local level. It is worth mentioning that government is the sole provider of public goods and services (Mohr, 2004:384). These goods and services include street lights, basic research, education, roads and health facilities (Slowman, 1994:417). The government should distribute these goods and services efficiently and equally to benefit all the local residents of that particular municipality (Tiebout, 1956).

The third aspect is the participation of local residents. The local residents participate in the political, economic and social spheres. The residents participate by demanding goods and services from the government such as health, education and street lights. Secondly, local residents participate through agents in improving the supply of public goods and services (Organisation for Economic Co-operation and Development, 2007). That is to say, the locals' participation improves the performance of an economy. The last aspect is the multidisciplinary approach of LED. The LED is a multidisciplinary approach that encompasses geographical location, the psychological and the public-finance approach (Organisation for Economic Co-operation and Development, 2007). The geographical location calls for regional economics that deal with the nature of urban and rural economics while the psychological approach provides social answers in understanding the LED. The public finance analyses how best public goods can be financed. In short, all the approaches should be integrated to achieve better results.

2.6.5 Approaches to LED: traditional and market-led approaches

There are two main approaches of urban and rural LED: market-led and pro-poor (Human Sciences Research Council, 2003:11). The market-led approach is mainly practiced in developed urban areas while the pro-poor approach is practiced in developing rural areas. The market-led is a macroeconomic concept that extends more emphasis to macroeconomic variables (Scott & Pawson, 1999). It is centered on the investment, economic growth and entrepreneurship in a local municipality (Abrahams, 2000). In other words, it aims to improve the competitiveness, and promote the infrastructure development and entrepreneurship skills of a region. The theorists of the market-led approach echo the view that economic development can be achieved by meeting the mentioned objectives. However, the South African government realized that the market-led approach is not a people centered approach and introduced a bottom-up/pro-poor approach or traditional approach to thwart the market-led approach.

The pro-poor/bottom-up approach is a people centered approach. It allows local residents to undertake decisions that will improve their standards of living (Abrahams, 2000). In other words, local residents participate in planning, decision making and implementation of all the plans in a local municipality. The South African government strongly endorses the pro-poor approach because a majority of the citizens are poor (World Bank, 2016). The approach addresses the needs of the community while the market-led approach does not fully address unemployment and the poverty of a local area (Bond, 2001). The profits made from investments in the market-led approach do not cater for the poor which raises the need for community based projects that address unemployment and poverty. Despite the differences between these two approaches in nature, they share the same principles which all boil down to job creation, poverty alleviation and economic sustainability (Scott & Pawson, 1999).

2.7 THEORIES OF LOCAL ECONOMIC DEVELOPMENT

The theories on LED are mainly divided into the neo-liberal and market-led approach. This section discuss these two theories in sequence.

2.7.1 Neo-liberal approach

The neo-liberal approach is traced back to the year 1999 and lays emphasis on economic development (Colclough & Manor, 1991:51). The neo-liberals are of the view that governments are the barriers to development. They further postulate that government restricts industries, organizations and individuals who drive economic development (Thompson, 2016). For instance,

the government can restrict development through the regulations and high taxes it charges. Rather, the neo-liberals insist that developing countries dispense with all the barriers to free markets (Thompson, 2016). Therefore, Colclough and Manor (1991:51) advocate zero government intervention in the economy. The neo-liberals accept that a laissez-faire approach is ideal for the economy. They argue that individuals, firms and organizations should be allowed to work freely and generate wealth for their local municipalities.

Furthermore, the theorists assert that an equilibrium can be reached without government intervention. Economic growth, employment and poverty reduction can be achieved without any interference from the government (World Bank, 2000). In other words, the neo-liberal approach aims at developing a local economy by moving from a public sector to a private sector. Thus, private investors are the driving force of the economy. They are responsible for employment creation and poverty reduction. However, this reduces government spending that will lead to a decrease in social services such as education, health and social grants (International Monetary Fund, 2000). This will lead to unfavorable structural adjustments that lead to inequality. The best catch-phrase to describe such economic inequality is that of the rich becoming richer while the poor become poorer.

2.7.2 Market friendly approach

In the same manner as the neo-liberal approach, the market friendly approach dates back to 1991 and it is the neoclassical counter revolution (Sekhampu, 2013). The market friendly approach was initiated at the World Bank meeting of 1991 (Singh, 1994). As mentioned earlier, the approach was to counter the neo-liberal thinking. The neo-liberals do not extend any confidence in government intervention while the market friendly proponents counter this by investing little confidence in the government. The market friendly approach advocates for minimum government intervention at a developing stage and no intervention after the developing stage (Bustelo, 1998:1).

It should be noted that the government intervention in this approach is limited only to the smooth functioning of the market. Accordingly, the government should intervene to achieve macro stability, encourage infrastructure improvement, protect the poor and invest in skills (World Bank, 1997). The government should examine its accuracy whether all the organizations are in line with the abovementioned objectives. Therefore, the government should set less strict rules to create a suitable and favourable environment for development (Shams, 2014). Another objective of the market friendly approach is to rectify the market failures such as public goods, externalities, education and health facilities (Organisation for Economic Co-operation and Development,

2011:2). The theorists believe there are a lot of imperfections in the market that need to be rectified. The World Bank (1990:145) provides a solution to market imperfections of investing in health care and infrastructure, closing the inequality gap and improving the overall economic performance.

2.8 LOCAL ECONOMIC DEVELOPMENT DEBATES IN SOUTH AFRICA

It is important to note that LED has received much attention since its introduction with debates on what it is, thus, the question that begs an answer is: Is LED a pro-poor strategy or a pro-growth strategy? LED experts subscribe to the supposition that LED should be a pro-poor approach while others perceive LED as pro-growth approach (Bond, 2003; Pieterse, 1998; World Bank, 2001). The pro-poor theorists accept with confidence that an individual's basic needs and wants should be met while the pro-growth approach is investment inclined. The question is which branch of LED should the government pursue? Traditionally, local governments were not part of economic players and their powers were limited. Nevertheless, in the late 1990s a change gave the local government powers to influence their economies through job creation and poverty alleviation using the pro-poor approach (Pieterse, 1998). However, local governments have migrated their focus from a pro-poor approach to a pro-growth approach. The main focus was to improve economic growth, investment, partnerships, SMMEs and training of locals (World Bank, 2001). The approach created many problems because the majority of the people are of the view that the approach is more inclined to Western countries (Simon, 2003). The approach was more concerned with the competitiveness of a firm rather than the welfare of locals. This created debates and the South African government decided to counter such by drafting a document that was people centred.

In the course of time, the Department of the Provincial and Local Government produced a LED manual that incorporated different approaches (DPLG, 2000). This was drafted in order to avoid bias between the pro-growth and the pro-poor approach. Thereafter, local economic development actors were composed of public, private sector, community members and non-profit organisations (RSA, 1998). The local government was to work with the local community in addressing socio-economic issues that integrate both developmental issues and non-developmental issues (Abrahams, 2003). Thus, the national government has supported the LED by introducing six LED strategies: community economic development, human capital development, development and maintenance of infrastructure, plugging the leaks in the local economy, linkages between profitable growth and retention and expansion of existing business (DPLG, 2000). A success of

these strategies relies on the support of both approaches: the pro-poor approach and the traditional approach. All the stakeholders have to devote equal effort to achieve sustainable development.

2.9 SECTORIAL EMPLOYMENT AND LOCAL ECONOMIC DEVELOPMENT

It is alarming but not surprising that the unemployment rate in South Africa is significantly high. Both the private sector and government have failed to provide jobs for its citizens. Instead, the key economic sectors have shed a lot of jobs for the past decade. Therefore, this section explores the economic growth and employment trends of South Africa, the structure of the economic sectors in South Africa and the approaches to sectorial employment.

2.9.1 Economic growth and employment in South Africa

It has been two decades since South Africa first enjoyed the fruits of economic democracy. It has moved from a centralised economic system to a decentralised one. Despite this development, South Africa has faced both internal and external economic pressures. Some of the pressures include but are not limited to: drought, political instability, lacklustre economic growth and other fundamental imbalances (Industrial Development Corporation, 2016). These internal and external pressures have contributed to stagnant economic growth, unemployment and poverty in South Africa (Industrial Development Corporation, 2016).

Before and just after South Africa's independence, the primary sector was the main driver of economic growth (StatsSA, 2014). Mining and agriculture were dominant sectors, contributing to economic growth and employment. These two sectors gave South Africa an absolute and comparative advantage compared to other African countries. Around the late 1990s, there was a shift from the primary sector to the tertiary sector. The International Monetary Fund (2015) outlined the tertiary sectors that were dominant in the late 1990s as business and finance, the trade and the government sectors. The business and finance sector contributed about 20 percent whereas the trade sector and government sector contributed 15 and 17 percent respectively (International Monetary Fund, 2015). Currently, South Africa has also taken another shift and has grounded its focus on a knowledge based economy. This includes the financial service sector, e-commerce and technological services (Industrial Development Corporation, 2016).

On the other hand, the sectorial growth was not favourable for the primary, secondary and tertiary sectors. The agricultural sector decreased significantly showing a negative outlook and drought was the major contributor to this decline (Industrial Policy Action Plan, 2016). The mining,

manufacturing and electricity sector also had a negative decline in the sectorial output while trade, transport, community and construction declined but remained positive (StatsSA, 2016). Nonetheless, the finance and the government sector contributed positively to economic growth (StatsSA, 2016). This was accompanied by a rise in the unemployment rate from 24.5 percent in 2015 to 27.1 percent in 2017 (StatsSA, 2017). The institution further reports that more than 355 000 jobs were lost in the year 2016 and the manufacturing sector only lost 100 000 jobs (Industrial Development Corporation, 2016:3). All these uncertainties were attributed to many factors such as drought, strict labour laws, recession, and political instability (Industrial Development Corporation, 2016:1).

2.9.2 Economic sectors in South Africa

The South African economic sector is composed of three main sectors, namely primary, secondary and tertiary sectors. Vagdevi and Kiranbabu (2015:1) define the primary sector as all activities that deal with direct extraction of all raw materials. This includes the mining, forestry and fishing sectors. The secondary sector is a sector that translates inputs into outputs such as manufacturing, construction and textiles, while the tertiary sector is a sector that provides services such as health, banking, education and retail (Bastos & Perobelli, 2010:1; Gayathri, 2016:1). The section below discusses the primary sector in detail.

The agricultural sector is composed of growing vegetables, natural resources, fisheries, livestock and animal husbandry (Agricultural Sector Development Strategies, 2010:1). This includes any activity of growing crops, animal husbandry, timber production and animal product harvesting. The mining sector is the mining of solid, liquid and gas minerals (StatsSA, 2012:56). For instance, solid minerals include coal and ores while liquids and gas minerals are petroleum and natural gas respectively. Contrary to the two above is the manufacturing sector which is comprised of chemical and physical transformation of inputs or substances into final outputs (Sector Industry Classification, 2012:64). This production makes use of mills, driven machines and handling equipment.

The electricity sector is made up of all the activities that provide all the electric power, natural gas, water, steam, network and pipes (StatsSA, 2012). The construction sector consists of general construction, civil engineering and specialised construction (Sector Industry Classification, 2012:148). The construction sector further encompasses additions, new work and modifications done on a permanent or temporary structure. Nonetheless, the wholesale and retail sector comprises of the sale of any goods and services. This sector is the final step in the delivery of

goods (Sector Industry Classification, 2012:148). It is responsible for distributing the final goods called merchandise or stock. Conversely, the transportation and storage sector is the provision of freight or passenger transport by air, rail, road and water (Sector Industry Classification, 2012:172). This also includes other activities like parking and terminal facilities, cargo and storage, renting of transport, postal and courier activities. By contrast, the communication and information sector consists of production and delivery of data through transmission. This can be done through publishing activities such as books, pamphlets, radio, TV broadcast, telecommunications and other information services (Sector Industry Classification, 2012:193). In consideration of the foregoing, the finance sector is an insurance, reinsurance, financial service and other supporting financial services sector. In addition, holding of assets, trusts and funds form part of the financial sector (Sector Industry Classification, 2012:183). Be that as it may, the estate sector deals with agents, brokers, lessors in buying and selling of estate.

2.9.3 Formal and informal sectors

In South Africa there are two employment sectors: the formal and informal sector. Within these sectors, there are three schools of thought. The first school of thought subscribes to the idea that the informal sector is the sole sector responsible for sustenance (Baragya, 2010). The second school of thought presents a different view where all the sectors are equally important and there is a dependent relationship between these two sectors (Baragya, 2010:8; International Labour Organisation, 1991). The third school of thought opines strongly the integration of the informal sectors with other sectors of the economy for economic development (International Labour Organisation, 1991). The relationship between all these sectors is linked to production, consumption and technology. The next section examines the informal sector in detail.

The origin of the informal sector can be traced back to the early 1970s (Daniel, 2004:500). The concept has raised debates on what it is (Castells & Porter, 1989; ILO, 1991; Losby *et al*. 2002). Some subscribe to the traditional informal sector while others to the modern informal sector (Baragya, 2010; Ranis & Steward, 1999). The traditional informal sector deals with the consumer goods that cater for those with low income. A consumer good is any good that gives a consumer satisfaction (Slowman, 1994). The second type of informal sector is the modern informal sector. The modern informal sector is the production of capital and consumer goods to cater for the middle class (Baragya, 2010:8). Furthermore, firms and workers in the informal sectors are not legally registered. A majority of the firms operate illegal and do not pay tax to the government (Gindling,

1991). Workers join the informal sector out of desperation and involve themselves in activities such as street vending (Daniel, 2004:503).

Nevertheless, the concept of formal employment relies on the employment of waged labour where there are certain rules and regulations (Daniel, 2004:502). These rules are set by the government by which institutions should abide. The rules include the working conditions, minimum wages, number of hours, the qualifications and taxes (Daniel, 2004:502). Formal employment is mainly common in developed countries and major cities in developing countries. Hence, the workers in a formal sector are well paid compared to the informal sector (Lewis, 1954).

2.9.4 Activities of the informal sector and formal sector

One of the key features or activities of the informal sector is street vending (Cross & Balkin, 2002). Street vendors sell anything which is sellable for survival or sustenance. This activity is common in less developed countries such as Zimbabwe, Malawi, Zambia and South Africa. For instance, there are many street vendors in Johannesburg, Pretoria, Bloemfontein, Polokwane and Durban selling second hand clothes, perfumes, snacks, crafts, furniture and offering all kinds of repairs. Another activity of the informal sector is the home based activity where workers work on a part time basis (World Bank, 2001). This group incorporates telecommunication services that provide software and websites on a part time basis. Most of the telecommunication service providers operate without certificates of registration. In addition, the plumbers, engineers and manufacturing sector are part of the informal sector especially as some do not register and insure their workers (Daniel, 2004:503; Ghersi, 1997).

2.9.5 Approaches to sectorial employment

There are four basic approaches to the informal sector, namely the dualistic, legalist, structuralistic and continuum approaches (Human Science Research Council, 2008). This section thus explores the approaches to sectorial employment.

2.9.5.1 Dualistic approach

The dualistic approach subscribes to the notion that the informal sector is the substitute of formal employment (Kay, 2011:5). The informal approach becomes the substitute of the formal sector because of less strict rules and requirements required by the sector. The informal sector requires less capital, use of old production methods and workers are paid less (Kay, 2011:5). Due to these reasons, there is a flow of labour from the formal sector to the informal sector. Despite the flow of

labour to the informal sector, it is highly unfortunate that it makes a small contribution to economic growth and development compared to the formal sector (Kingdom & Knight, 2007). In addition, Devey *et al.* (2005:5) opine that the informal sector is linked with underdevelopment. The dualistic approach contends that underdevelopment will disappear provided the sector has achieved a higher capita income (Chen, 2004). In other words, underdevelopment will disappear with the existence of a capitalist system and anything informal is perceived as poverty. However, there is no evidence that all the informal activities will disappear; rather the informal sector activities will reduce and can account for less than 15 percent (Pratap & Quintin, 2006).

2.9.5.2 Structural approach

The structural approach assumes the informal sector as a diverse sector that is made up of more than two subsectors (Portes & Schauffler, 1993).The structural approach views the informal sector as a continuation process that will work closely with the formal sector (Kay, 2011:6); for example, a relationship between customer-supplier and employer-employee. It can be an entrepreneur and a small firm involved in a business working together to avoid strict government laws and regulation. This will give consumers better prices while small firms get cheap labour (Kay, 2011:6). The structural view allows the informal sector to provide goods and services to the whole economy. This approach is best in poverty reduction and improving economic growth. In order to achieve the two, proper policies should be analysed and implemented.

2.9.5.3 Legalistic approach

The legalist approach views the existence of the informal sector as a way to avoid business rules and regulations such as company tax and barriers to entry (Chen, 2004). In support, Soto (1992) avers that the informal sector is formed in response to many rules set by the government. These activities are common in Latin American countries such as Brazil where the taxes are very high and there are a lot of business regulations (Chen, 2004). In addition, barriers to entry such as high capital outlay, economies of scale and patent rights lead many businesses to resort to the informal sector (Soto, 1992). All these barriers to entry are proliferated by an increase in bureaucracy and lack of property rights (Chen, 2005:8). Chen (2004:9) defines too much bureaucracy as an institution complying with a lot of laws and regulations. Due to many rules and regulations a strong relationship between the formal and informal sector is created to do without certain rules and regulations. For instance, formal businesses give work to the informal sector to avoid certain regulations in the formal sector.

2.9.5.4 Alternative approach

The alternative approach is an economic development theory that deals with the informal sector employment (Kay, 2011). The alternative theory can also be called the neo-liberal approach. The alternative approach is more applicable to less developed countries (Chaudhuri & Mukhopadhyay, 2009). Kay (2011) states that the informal sector is the best sector for entrepreneurs. The alternative theory is a response to the dualistic theory that gave no room for capital accumulation and job creation (Porters & Scauffler, 1993). The theory advances the argument that the informal sector trains employees on how to do the job and later they employ others as business owners. In other words, the alternative approach promotes job creation through entrepreneurship. This requires small firms to acquire small capital to start their own businesses and get exposure (Kay, 2011:2). Maloney (1998) further puts forward the water tight argument that the informal sector has the ability to raise capital and improve the economic growth of any economy.

2.10 REVIEW OF EMPIRICAL STUDIES ON LED AND SECTORIAL EMPLOYMENT

The research on the analysis of key economic sectors promoting LED cannot be separated from and is therefore intertwined with the previous literature. The literature linking economic sectors and LED is very limited. Researchers have dealt much with the contribution of LED to poverty, employment and the community. This section discusses studies done on developed and developing countries with the main focus on South African municipalities.

2.10.1 Some empirical studies on America, Europe and Asia

This section reviews some empirical studies on LED in America, Europe and Asia. A study done in Europe by Pedrana (2013) used the Pike, Pose and Tomaney development model to find the impact of tourism on LED in 2012. The study concluded that tourism is one of the most important sectors in Europe. Tourism has managed to emphatically impact the economic development of local governments in the majority parts of Europe. In addition, tourism was found to be the most contributing sector in job creation, infrastructure development and source of income in Europe. In Latin America, Valdes and Foster (2005) investigated the impact of agriculture on poverty. The study used a survey to investigate how agriculture contributes to poor rural households. The results have shown a significant improvement as poor households have managed to procure food and security. However, Valdes and Foster (2005) observed that the agriculture sector alone is not sufficient for economic development; other sectors should play a vital part in economic

development too. Furthermore, Haines & Margo (2006) examined the impact of the transport sector on the living standards of people in the United States. The study used the Von Theunen model and found out that the transport sector has increased the probability of employment in the service sector.

A research institution, Notre Europe (2011), conducted a survey in Ireland on how LED affects the employment in the region. The institution developed a model that incorporates employment, small business, infrastructure development and education in an attempt to investigate the impact of LED on employment. The results of the model showed that small businesses were established and the majority of people from Ireland were employed in the business sector. In addition, infrastructure development has also employed some local residents. Miejerink and Roza (2007) carried out a survey in East and South Asia on the impact of agriculture on LED. The survey distinctly depicted that agriculture provided food, jobs, income, savings and income to the community members. The study also highlighted that agriculture contributed to poverty reduction, social sustainability and food security. A study done by the International Labour Organisation (2015) in Bangladesh analysed the sectors and subsectors that promote LED. The study used a desktop analysis, interviews and review of other existing literature to analyse the sectors that promote LED. The results showed that trade, agriculture, tourism and forestry and fisheries promoted LED.

The empirical studies done in America, Asia and Europe have shown that tourism and agriculture are some of the contributing sectors to employment and poverty reduction. However, another study has highlighted that not only agriculture and tourism are the most important sectors in these continents, but other sectors such as manufacturing, mining, service sector, construction, government should also contribute to better standards of living. All the studies mentioned on Asia, Europe and America, however, lack an econometric analysis such as time series and panel data. The next section will discuss the empirical studies on LED in South Africa.

2.10.2 Empirical studies on LED in South Africa

The empirical studies on LED in South Africa are divided into national and provincial spheres and the local sphere. This section is a discourse on the national, provincial and local empirical studies in South Africa.

2.10.2.1 Empirical studies on LED in national and provincial spheres

Since the introduction of LED, South Africa has been involved in the initiative in an attempt to improve economic growth, unemployment and poverty. There are several studies on LED in relation to economic growth, unemployment and poverty (Brand, 1969; Nel and Binns, 2003; Stiftung, 1999; Triegaardt, 2014; Oosthuizen, 1998; Van Rooyen, 1997; Van Zyl *et al*., 1988; Zalk, 2014). Nel and Binns (2003) investigated why LED should be initiated in South Africa. The study used a questionnaire survey to identify the important factors/reasons why LED should be initiated. About 51 percent of respondents argued that unemployment is significantly high; thus, LED should be introduced. Others were of the view that LED should be introduced to stimulate local economies. Nel and Binns (2003) further investigated LED strategies. Among other strategies are: industrial recruitment, tourism promotion, incentive provision, infrastructure provision, local procument, privatisation, small business support, poverty alleviation, job creation and agriculture support. Of these strategies, about 72 percent of respondents identified job creation and tourism as pivotal, while 71 percent put poverty alleviation and infrastructure provision as priorities. In achieving these strategies, several researchers have examined the relationship between LED and the employment of local residents of South Africa (Brand, 1969; Nel and Binns, 2003; Stiftung, 1999; Triegaardt, 2014; Oosthuizen, 1998; Van Rooyen, 1997; Van Zyl *et al*., 1988; Zalk, 2014).

Research on the agriculture sector and LED is limited. The most popular literature is traced back to 1969, 1988 and 1997 (Brand, 1969; Oosthuizen, 1998; Van Rooyen, 1997; Van Zyl *et al*., 1988). Most of these studies used the Johnson and Mellor framework to investigate the interactions of the agricultural sector and the whole economy (Brand, 1969; Van Rooyen, 1997 & Van Zyl *et al.* 1988). Brand (1969) found a decrease in demand for capital in the sector. The results further revealed a decline of white employment in the agricultural sector while black employment increased significantly. Following this, Van Zyl *et al.* (1988) investigated the impact of the agricultural sector on other sectors. The results have shown agriculture as the sole provider of food and the major employer. In 1997, Van Rooyen (1997) investigated the role of agriculture on the economic development of South Africa and found that the agriculture sector has significantly contributed to economic development through income, employment, food security and transfer of resources. Conversely, Oosthuizen (1998) used a different method, a modernised method to investigate the impact of the agricultural sector on the pro-poor. He found out that agriculture reduces food prices in rural areas.

Another study done on LED used qualitative methods to investigate the most contributing sector in South Africa (Triegaardt, 2014). The results revealed tourism as the most important sector contributing to economic growth and employment. In support, Stiftung (1999) conducted the same study and alludes that tourism is a vehicle to development in South Africa. The results of Triegaardt (2014) and Stiftung (1999) are in contrast with Zalk (2014). Zalk (2014) examined three major sectors and their contribution to economic growth and economic development using the Kaldorian hypothesis. The results have revealed and placed the manufacturing sector as a vehicle to economic growth and development.

Rogerson (1996:103) studied the relationship between the private sector and LED in South Africa using a qualitative approach. The study considered three private companies: Anglo-American, Eskom and Sasol. The results have shown a positive link between the private sector and LED. Anglo-America created employment in the service sector and manufacturing sector. On the other hand, Eskom and Sasol promoted the small and medium business sector in disadvantaged townships and the majority of people became employed in these sectors.

On the other hand, LED was also undertaken at a provincial level by institutional and academic researchers (Department of Social Welfare, 2003; Development Policy Research Unit, 2006; Human Science Research Council, 2003; Wyngaard, 2006). Research done by Department of Social Welfare (2003) examined the key economic sectors influencing employment in the Free State province. The study has shown that agricultural and SMMEs are the most employing economic sectors in the Free State. In the Western Cape Province, Wyngaard (2006) identified the agricultural sector as the major employer. The agricultural sector only employs about 14 percent of the total employed. The results further indicate that the manufacturing and construction sector improved in employment from 1995-2002. A survey by the Development Policy Research Unit (2006) has examined the relationship between SMMEs and job creation. The results have shown that jobs were created in all sectors especially in the mining, construction, community, retail and manufacturing sectors. On the other hand, the Department of Economic Development and Environment Affairs (2015) devised projects in manufacturing, agriculture and tourism from 2002-2006. About 30 projects were created in manufacturing, 40 projects in the agricultural sector and 32 projects were created in the tourism sector. Out of all these projects about 165 jobs were created. However, there were setbacks identified in the implementation of local economic development such as lack of funds and lack of coordination, resources and skills.

2.10.2.2 Empirical studies on local municipalities in South Africa

There have been a number of studies that attempted to examine LED and economic growth, poverty and job creation in South African local municipalities (Bond, 2002; Nel & McQuaid, 2002; Rogerson & Stoddart, 2008; Sol Plaatje Local Municipal, 2008; World Bank, 2005). Nel & McQuaid (2002) investigated the impact of LED on the Stutternheim local community. They came up with a Stutternheim Development Fund that seeks to improve the standards of living through loans and small business support. The results of the fund can be summed up by improved social capital, service delivery, infrastructure services and a few jobs created.

A LED study investigated the opportunities available to increase the economic base of Mogalakwena Municipality in 2006 (Mogalakwena Local Municipality, 2006). Researchers used a Local Economic Potential Analysis report and found government services and the transport sector as major employers. In terms of economic growth, the government sector, trade sector, mining sector and finance sector were the major sectors (Mogalakwena Local Municipality, 2006). Another study in Molemole Local Municipality on LED identified the agricultural sector and wholesale and retail sector as the major employers while finance, banking and retail services were the major drivers of economic growth (Molemole Local Municipality, 2011). On the other hand, various stakeholders in public, private and non-profit organisations investigated the key economic sector in Stellenbosch Municipality in 2006. The study aimed at improving these key economic activities. All these stakeholders improved the services, tourism, agriculture, manufacturing and construction sectors (Stellenbosch Municipality, 2008)

A study by Sol Plaatje Local Municipal (2008) used a survey to identify the key economic sectors contributing to LED. The study identified four major economic sectors, namely agriculture, manufacturing, tourism and SMMEs. It was found that the agricultural sector created 20 jobs through the LED projects while manufacturing created 82 permanent jobs in Sol Plaatje Local Municipal. In addition, tourism created about 510 jobs while SMMEs accounted for about 100 jobs. A similar study was done in Mbombela Municipality in 2015 using a qualitative method. The Mbombela Local Economic Development Strategy (2015) reports that construction, tourism, trade, manufacturing and agriculture sectors have created jobs and laid an economic base for the municipality.

Musakwa (2009) in his research investigated the impact of LED on the Clarens and Smithfield community using a questionnaire. The results have shown tourism as a major contributor to economic growth and job creation. In addition, the business sector, SMMEs and agriculture also

contributed to job creation. A study done in Cape Town on LED has shown that Groblershorp is dominated by livestock and wine production (Parker, 2004). These two subsectors are the major sources of food production. The study has shown that in the year 2004 these two subsectors have created more than 130 jobs. Stoddart (2008) examined the impact of tourism in Magaliesig using the qualitative method and tourism was found to be the major sector influencing employment.

2.11 SUMMARY

It is worth noting that LED is a multifaceted discipline that entails a range of activities that stimulate local economies. It involves many disciplines such as developmental studies, development economics, politics, geography and urban studies. There is no discipline that can claim to address all socio-economic issues of LED. Due to its multifaceted nature, researchers lack consensus on what it entails. Some researchers perceive local economic development (LED) as a poverty alleviation strategy and others regard LED as a strategy for creating jobs. All in all, local economic development entails employment creation, coming up with new opportunities, improving infrastructure and warranting economic stability. It is a catalyst to sustainable development. Local economic development cannot be separated from development economics

Furthermore, it is paramount for one to note that development economics involves the economic transition and the transformation of developing countries to developed countries. To achieve economic development one has to eliminate poverty, inequality and unemployment. At the same time, increased productivity, structural transformation and foreign trade should be promoted. In support of this are the developmental theories: traditional, classical, theories of coordination, modern theories and some tools for development. Traditional theories perceive economic development as the specialisation in products in which a country has an absolute and comparative advantage. The neoclassical economic theory fits well in a competitive environment as it generates wealth in a local area while location theories put focus on the location of a firm. To achieve economic development, sectors should provide jobs and income to local residents.

The formal and informal sectors are responsible for providing jobs, however, the unemployment rate is significantly high. Both the private sector and government have failed to provide jobs for its citizens. Moreover, these sectors have shed jobs. The South African economic sector is composed of three main sectors: primary, secondary and tertiary sector. Before and just after South Africa's independence, the primary sector was the main driver of economic growth; mining and agriculture were dominant sectors, contributing to economic growth and employment. Around the late 1990s, there was a shift from the primary sector to the tertiary sector. Currently, South Africa

has also taken another shift and has extended more focus on a knowledge based economy. These include the financial service sector, e-commerce and technological services.

The literature linking economic sectors and LED is very limited. Researchers have dealt much with the contribution of LED to poverty, employment and the community. Several researchers have examined the relationship between LED and employment of local residents of South Africa. These researchers have found different results. The overall results have shown that manufacturing, mining, tourism, government services, electricity, financial services and wholesale are the major employers in South Africa. The next chapter discusses the LED policies and case studies in developing South Africa.

CHAPTER 3
LOCAL ECONOMIC DEVELOPMENT POLICIES AND CASE STUDIES IN DEVELOPING SOUTH AFRICA

3.1 INTRODUCTION

In the pre-apartheid era, local government was involuntarily implementing plans and policies from provincial and national government (Rogerson, 2002). All decisions and economic activities pertaining to local government were undertaken by provincial and national government. However, the introduction of a new government after independence in 1994 paved the way for local government, thus the introduction of LED (Republic of South Africa, 1998). The local government became a separate and autonomous sphere of government to manage its resources, policies and make decisions regarding the needs of its community. Local governments adopted LED as a total tool for economic development of their economies (Meyer, 2014:1). This author emphasised that LED is perceived as a phenomenon that gives jobs to communities, reduces poverty and improves the standards of living in a community. Hence, this chapter addresses the role of the South African government in LED policies, challenges and case studies.

3.2 THE ROLE OF THE SOUTH AFRICAN GOVERNMENT IN LOCAL ECONOMIC DEVELOPMENT

Worthy of note is that the South African governmental system is based on three spheres of government: national, provincial and local government (National Treasury, 2011:27). The spheres are co-dependent, distinct and interrelated (Republic of South Africa, 1996). Their relationship is solely based on its powers and functions (National Treasury, 2011:27). The next section discusses the role of the three government spheres in local economic development.

3.2.1 The role of national government in local economic development

Since time immemorial, the national government has been regarded as the golden thread and foundation of every economy. In South Africa, the national government is notable for its reputation of being the highest authority among all government spheres (RSA, 1996). It is responsible for job creation and ensuring sustainable development (SA LED, 2016). To successfully bring this task into fruition, it comes up with rules and regulations by which all three spheres should abide (Department of Provincial and Local Government, 2016:38). Thus, the provincial and local government operates within the national regulation. In addition, it is salient to note that the national

government delegates the authority to provincial and local government to identify disadvantaged individuals in communities that need development (South African Local Government Association, 2005). Following this, the national government will provide policies and strategies on how to help disadvantaged community members (South African Local Government Association, 2005). The organisation further explains that the national government provides the LED with the research on people's needs and how to meet them. Thus, it is quite laudable that the national government through LED provides financial assistance to other spheres in the implementation of local economic development (South Africa Local Government Association, 2005).

3.2.2 The role of provincial government in local economic development

It is important to note that the provincial government sphere has an important role to play in LED. It acts as a coordinator of LED (South African Local Government Association, 2005). This sphere coordinates all the activities done under local municipalities. The provincial government facilitates and makes sure that all the activities are in line with the LED objectives. The SALED (2016) states that provincial government distributes all the necessary resources to local governments for human and capital development. Thus, the provincial government ensures that the distribution of these resources and facilitation of all LED programmes are in sync with the policies and procedures of the local government. All these build the capacity and proficiency of the municipalities.

There are nine provincial governments in South Africa: Free State, Gauteng, Mpumalanga, Limpopo, North West, Eastern Cape, Western Cape, Kwazulu Natal and Northern Cape (StatsSA, 2016). Within these provinces there are local governments and municipalities (Edoun & Jahed, 2009). Thus, the provincial government provides services to its provinces such as hospitals, roads and investments. All the services provided by the provincial government are inclined to: job creation and poverty alleviation, local economic strategic development, promotion of local ownership and community involvement as well as the proper use of resources (South African Local Government Association, 2005). As mentioned earlier, job creation and poverty alleviation are the main pillars of local economic development.

3.2.3 The role of local government in local economic development

The local government was given powers to play a significant role in the economic development of the country (Bobat *et al.* 2000). These powers were a culmination of a change in government from the apartheid system to the party of the people (Republic of South Africa, 1998). This was evident when the national government coordinated the structure of local municipalities of which were to

implement an Integrated Development Plan (Harrison, 2001). Nel & Binns (2002) emphasise that local government takes the leading role in regional development. Thus, it is important and necessary that the local government works with the citizens and other interested stakeholders to improve a local area.

The principal role played by central government is now transferred to local government (Vanvuren, 2003:10). According to the local government Act of 1998, the local government objectives are to: create a democratic environment for decision making and participation, promote accountability and good governance and the alleviation of poverty (Susan & Pieterse, 2002). Accordingly, each municipality should create jobs for its locals, provide goods and services and develop its local economies. This is in accordance with the Republic of South Africa Constitution and the White Paper on Local Government to address unemployment and alleviate poverty (Republic of South Africa, 1998). The Department of Provincial and Local Government (2003:2) prescribes that the municipality should be the coordinator, stimulator and the developer of local economic development.

The LED is part of the Department of Provincial and Local Government. This Department assists in devising policies, reviewing such policies and strategies on LED, managing and supporting economic development as well as facilitating, coordinating and monitoring programmes (Department of Provincial and Local Government, 2003: 2). All these can be successfully attained by utilising the resources efficiently and effectively to achieve local economic growth, job creation and elimination poverty. The resource allocation and creation of jobs will be done in all 278 municipalities in South Africa. These municipalities are divided into metropolitan, districts and local municipalities (Nel, 2005:3). For example, eight metros are Buffalo City, Cape Town, East Rand, Durban, Johannesburg, Bloemfontein, Port Elizabeth and Pretoria. Those that are not metropolitan are district and local municipalities. Their descriptions are based on policies and the review of policies, the monitoring of municipality performance, budget development, communication and decision making (Republic of South Africa, 2015).

3.3 POLICY ANALYSIS ON A NATIONAL LEVEL

The socioeconomic problems faced in South Africa have led to formulations of many national policies. Some of the policies used in South Africa include the New Growth Plan, Industrial Policy Action, the Reconstruction and Development Programme, and the National Development Plan. All these national policies were devised as a result of inequality, unemployment, stagnant economic growth and poverty. Of the most importance is the National Development Plan. It links

with the current study as it addresses employment, economic growth and poverty alleviation by 2030. The subsequent section discusses the National Development Plan.

3.3.1 The national development plan

It is of greatest importance for one to note that the National Development Plan is one of the socioeconomic policy pillars in South Africa. The National Development Plan is a strategy that addresses socio-economic issues (Zarend, 2013:1). The author further emphasised that the National Development Plan also incorporates the New Growth Path, Industrial Policy Action (IPAP) and the Department of Trade and Industry. The whole idea was the birth child of the national government and the African National Congress party in 2012/2013 (Zarend, 2013:1). The national government unmasked that South Africa had high levels of corruption, low quality education, poor infrastructure, underutilisation of resources, poor public health, and poor public service, all of which resulted in a divided South Africa (National Development Plan, 2011:5). In addressing all these socioeconomic problems, the government brought forth a long term plan that should be achieved by 2030. In pursuit of these challenges, the National Development Plan centred its objectives on attaining a decent life through employment, a clean environment, quality education, quality health care, safe and reliable transport, better nitrification and social protection (State of the Nation Address, 2013:1; Zarend, 2013:1). The government is determined that this can be achieved through improved economic growth, employment, elimination of poverty, building capabilities, good leadership and collaborating with the society.

It is an unfortunate and disappointing fact that South Africa remains one of the countries faced with a high unemployment rate and a huge inequality gap (Trade Economics, 2017; StatsSA, 2016). To address these two epidemics the government shares the perspective that the National Development Commission should work with the macroeconomic policy of the New Growth Path. To remedy the issue of unemployment the government has to address economic growth, hence the National Development Commission (2011:30) prescribes that South Africa`s economic growth should grow at 5.4 percent every year for more jobs to be created. A growth of 5.4 percent will create more than 11 million jobs in South Africa (National Development Commission, 2011). The National Development Plan shares the sentiment that 11 million jobs will ensure full employment and better standards of living for all South Africans. Thus, the National Development Plan aims at reducing the unemployment rate to 6 percent by 2030 (National Development Commission, 2011:30).

Economic analysts subscribe to the idea that a reduced unemployment rate requires good fiscal and monetary policies (European Central Bank, 2005). The policies should not only be made; rather, they should also be implemented, controlled and monitored. Other analysts hold a dissenting view, stating that the majority of South Africans should attain a high educational level for employment and growth to occur (Aceleana, 2012; Chen, 2007). A high level of education should give the majority of citizens the necessary skills that enhance human capital and promote exports (Republic of South Africa, 1996). The government wants to improve skills in agriculture, mining, manufacturing, finance and the construction sector whilst concurrently promoting commercial transport, the telecommunication business and servicing municipal activities (National Development Commission, 2011). In addition, it is averred that the government further wants to improve skills in the aforementioned sectors through the promotion of education and health.

3.4 DEVELOPMENT OF LOCAL ECONOMIC DEVELOPMENT IN SOUTH AFRICA

Notable is that the apartheid government policies were more centred on centralising all important economic activities. Decentralisation was only noticeable in urban industries favouring one racial group over the others (Hunter, 1994). The existence of decentralisation was aimed at excluding blacks from employment in critical areas (Gunter, 2006:18). To endorse this, the national government devised a regional policy, the National Physical Development Plan that allowed blacks to work at growth points only (Gunter, 2006:9-19). Later on, the National Physical Plan attracted a profusion of criticism during the Good Hope Conference due to its irrationality and gave birth to a new regional policy called the National Region Development Plan. The New Regional Development Plan was put in place to eliminate all the market imperfections that would ensure export growth for South Africa (Gunter, 2006:20). The theorists contend that economic development is achieved through producing more goods and services in South Africa. Rogerson (1998) further explains that this policy was not sustainable as it incurred more costs while bringing less results.

The above mentioned economic development policies were common before 1994. These policies did not give local government much power to make decisions in their zones (Gunter, 2006:20). However, after 1994, the African National Congress (ANC) developed an initiative that involved all racial groups called LED. This took the form of a catalyst for economic development (Bloch, 2000; Rogerson, 1997). Bloch and Rogerson further explain that LED was introduced to curb

socioeconomic challenges such as poverty, inequality and corruption. These challenges are assumed to be better solved in a local set up than in a centralised system. Thus the introduction of a new strategy called the 'Developmental Local Government (Rogerson, 2003). This strategy gave local government the power and capability to improve their local economies.

As a result of the conception of the Local Economic Strategy, South Africa has benefited from the Growth, Employment and Redistribution Strategy (GEAR). The strategy placed responsibility on local government to facilitate the development of South Africa (Gunter, 2006:21). The same author states that provincial and local government were the main pioneers of LED. Furthermore, the Department of Trade and Industry (2011) extended the invite to the local municipalities. The concept kept on growing and the actors from the community, non-profit organisations, private businesses and government joined the initiative and formed four institutions: formal government initiatives, community based initiatives, companies and the top-down approach (Nel, 2000; Rogerson, 2003). Government initiatives are thus initiatives that boost local investment. It places the responsibility and burden on manufacturing, tourism and other economic activities to boost investments. The government initiatives are more common in metropolitan municipalities such as Pretoria, Bloemfontein, Durban and Johannesburg (Rogerson, 2003). He further explained that community based initiatives are dominant in small towns. It includes stakeholders such as non-governmental organisations, private businesses, churches and community members. Rogerson (2003) stipulates that community based initiatives have not received much attention from the government and private individuals. On the other hand, the company initiative put more weight on investment programmes to improve regions while the top-down approach is when decisions are from the community to local and national government (Department of Provincial and Local Government, 2000:18).

3.5 POLICY CONTEXT OF SOUTH AFRICA LOCAL ECONOMIC DEVELOPMENT

Worth mentioning is that the ANC (1994) introduced the Reconstruction and Development Programme with reference to local economic development. In 1995, economic development was promoted through the Development Facilitation Act of 1995 that gave municipalities a mandate of development through the Land Urban Development Strategy of 1995. Thereafter, the ruling party decided to constitutionalize the role of local government on economic development (Republic of South Africa, 1996). More emphasis was on local government prioritizing the needs of the community while achieving economic development. In addition, the local government was to

provide goods and services, safe and healthy environments, encourage community participation and democratic and accountable government for local communities (Republic of South Africa, 1996). This means that a municipality can effectively and efficiently manage its resources through budgeting, planning and participation.

In 1997, the Rural Development Framework gave the local authority the mandate to negotiate on how best LED can be improved. The Green Paper on Local Government of 1997 gave local governments the mandate to promote economic growth whilst simultaneously solving the inequality and poverty problems. Equality, economic growth and poverty reduction are part of local economic development objectives and yet were promoted by the Rural Development Framework and the Green Paper. In 1998 the RSA (1998) released a supporting document titled the Local Government White Paper stating that local governments should work hand in glove with the community and other organizations in improving the quality of lives. Local governments are to take a leading role in all these developmental activities. In support of the Constitution, Mufamadi (2001:3) emphasized that LED should target the poor, create new economic opportunities and improve existing infrastructure. The Municipal Act of 1998 gives the LED a mandate to three levels of government as metropolitan, municipal and district municipalities (RSA, 1998). The Act stipulates that municipalities are the catalysts of economic development as they mainly focus on the poor. It has been noted that the poor are those that live below the poverty line (Sekhampu, 2013). In 2000, a new policy was drafted focusing on the poor. This policy targets community members with low income. In 2005, the local government came up with a policy framework that strategizes to promote SMMEs, community economic development, industrial recruitment, business expansion, investment, export promotion and business development (Musakwa, 2009:99). Overall, Vanvuren (2003:14) has described local government as the hands and feet of economic development in South Africa. Thus, this depicts the importance of local government as the catalyst of development.

3.6 THE SOUTH AFRICAN EXPERIENCES OF LOCAL ECONOMIC DEVELOPMENT

In South Africa, there are four major options of LED: local government, community led, corporate and top-down local economic development (Nel & Binn, 2003). These four options are further grouped into two initiatives, namely market-led and pro-poor (Rogerson, 2000). The former promotes local economic development through investment in urban areas whilst the pro-poor target the poor to improve their lives. Rogerson (2000) opines that LED in South Africa is inclined

to urban areas. Thus, all economic activities are in cities rather than rural areas. In support, Nel (2001) outlines that the market-led approach is pursued in metro municipalities to relieve poverty and create employment. By way of illustration, Durban and Cape Town developed strategies that aim at achieving competition locally and globally. Furthermore, LED activities were also undertaken in mining provinces such as Free State, North West and Kwazulu-Natal. The activities were also undertaken in fishing villages such as Stilbaai and Lamberts Bay and tourism, small business support and urban farming in Welkom and Klerksdorp. Overall studies about LED have shown that the majority of municipalities are involved in LED programmes. The majority of the municipalities engage in LED to reduce unemployment, business closure and stimulate local economies (Nel, 2003).

3.7 CHALLENGES FACED IN IMPLEMENTING LOCAL ECONOMIC DEVELOPMENT IN SOUTH AFRICA

The introduction of LED has inevitably presented its own challenges. The South Africa Local Government Association (2010:12) stipulates that there was a lack of understanding on what LED entails. Government and other stakeholders were bewildered about what LED entailed and could not understand LED objectives and strategies. Furthermore, a majority of stakeholders could not interpret policies. They were only of the view that LED is a multifaceted phenomenon that addresses socioeconomic problems but neither knew what to prioritise nor what not to. In addition, stakeholders could not understand their roles on LED (South Africa Local Government Association, 2010:12).

The failure of LED back then was linked with the lack of resources and capacity. It is regrettably reported that there are small municipalities that cannot afford to attract better and capable skills (South Africa Local Government Association, 2010). Funds were highly limited which in turn had the repercussion that small municipalities could neither hire the right people for the job nor engage in economic activities. In support, Nel and Binn (2003) emphasised that the lack of funds has led to the failure of LED. This was mainly attributed to the lack of support from the national government (South Africa Local Government Association, 2010:12). The national government did not provide local municipalities with the sufficient skills and training hence projects failed because the LED phenomenon was still new.

South Africa Local Government Association (2010:12) identified the challenge of an increase in urban-rural division. The economic structure of South Africa is that of a few rich people who own resources. Few rich people reside in big metro towns and this gives these metros a greater

advantage compared to smaller towns. Moreover, larger cities are more advanced in that there is proper planning and better coordination. South Africa Local Government Association (2010:12) further explains that bigger metros always have funds to support the LED initiatives. Conversely, small towns and rural areas are disadvantaged because there is no proper planning, coordination and lack of funds to push the LED initiative.

3.8 CASE STUDIES IN SOUTH AFRICA

Local economic development cannot do without case studies. South Africa's experience of LED is evident in all nine provinces. This section discusses the case studies in all the provinces. The study further analyses other case studies in Europe.

3.8.1 Limpopo case studies

There are a number case studies that have been conducted in the Limpopo Province that sought to improve the living standards of locals. For example, the Limpopo local government has partnered with the European Union in improving the economic growth of the province. These stakeholders have invested a funding of 34 million euros to facilitate a number of projects in rural areas. The objectives of the project were to promote community development, strengthen SMMEs, create the LED environment and strengthen LED capacity (Pafferson, 2008). In achieving this, three funds were established: the Local Government Support Fund (LGSF), the Marginalised Community Fund (MCF) and the Local Competitive Fund (LCF). The Local Government Support Fund gave the support to local government in improving local businesses and strengthening the LED capacity, while the Marginalised Community Fund gave support to small initiatives in rural areas. The Local Competitiveness Fund was more concerned with the competitiveness of SMMEs (Pafferson, 2008). The project made a commendable impact on a few local residents in Limpopo Province. A few jobs were created, income was generated and business skills were acquired. Pafferson (2008) further reports that there was a significant improvement in the standard of living of local residents.

3.8.2 Gauteng case studies

The city of Johannesburg is the economic harbour of sub-Saharan Africa. A majority of Africans migrate to Johannesburg in search of a better living. Therefore, the municipality has targeted Johannesburg as a pro-growth area because it has poorly responded to poverty and unemployment (Nel, 2005). To curb these socioeconomic problems, local government devised the Johannesburg CBD regeneration project. The project focused on how to improve the local economy and infrastructure. This was to be achieved by constructing a railway station in the city of

Johannesburg. In pursuit thereof, the government invested about 1.7 billion rand to fund the project. Some of the projects funded include: the Cradle of Humankind World Heritage Site, Constitution Hill, Newtown, Dinokeng, Gauteng Automotive Cluster Innovation Hub, Gautrain, airports and Wadesville Industrial Corridor to mention but a few. The case study has shown positive results: a reduction of social crimes and an increase in employment in the province (Nel, 2005).

Employment and poverty were not the only main aims of LED in Johannesburg. Instead, the city also aimed at improving economic growth, investment and marketing strategies (Akah, 2008). To achieve this, local government focused more on building the transport and logistics depot and supporting small agricultural businesses (Nel *et al.* 2006:55). The government tackled this responsibility by funding and marketing such projects. The projects covered most parts of Johannesburg municipalities and the project was supported by all three spheres of government, the private sector and the tertiary training institution. The fashion project has increased the employment and promoted SMMEs. Initiatives such as the Johannesburg fashion district have created employment through micro manufacturers in the clothing industry (Nel, 2005).

3.8.3 Cape provinces case studies

Among the projects in the Cape provinces, one of the notable ones is the Thina Sinako project in the Eastern Cape. The project was introduced in 2005 and it was carried through for five years by the European Union, Office of the Premier, Treasury, Economic Development, Environment Affairs and Local Government (Pafferson, 2008). The Thina Sinako project was to address poverty and unemployment. In addressing this, three funds were made available, namely the Local Government Support Fund, the Local Competitive Fund and the Finance Innovative Fund. The Local Government Support Fund was provided to create a healthy environment and improve economic systems while the Local Competitive Fund assisted local businesses to capitalise on opportunities and promote a market led LED. The Finance Innovative Fund supported the SMMEs whilst concurrently targeting financial service providers to provide more funds (Pafferson, 2008). The Thina Sinako project made a significant impact as more income was generated by Eastern Cape residents for sustenance. In addition, jobs were created from this project.

The Hertzog community is dominated by extreme poverty and a high unemployment rate (Akah, 2008:30). In an attempt to solve social and economic challenges, the community came up with the Hertzog Agriculture Cooperative Initiative (HACOP). The initiative objectives were to encourage everyone to engage in agricultural activities, generate income for the community, and educate the

community about self-reliance (Nel, 1998:220). The initiative had twenty-three members who acquired a loan from Agribank (Akah, 2008:30). The commitment of the members has led to the success of this initiative as many agricultural products were harvested. Consequently, the products were sold in the surrounding markets and it gave the scheme bigger profit margins. The scheme managed to repay the loan and members managed to get extra income. The initiative has to a great extent improved employment in the community. In addition, eighty three percent have income from these projects. The scheme has also led to better infrastructure (Nel, 1998:227-228).

3.8.4 Case studies in Mpumalanga and KwaZulu-Natal

Notable is that the Department of Trade and Industry in Mpumalanga started a spatial development initiative to promote investment (Gunter, 2005; Rogerson, 2002). The government realised that the province is underperforming and not achieving what it is supposed to achieve. This led the government to invest in infrastructure (Rogerson, 2002). The infrastructure development was financed by different stakeholders solely to improve the Mpumalanga-Maputo corridor (Gunter, 2005:45). The project also covered the N3 road and upgraded the railway in Maputo. The results have shown a significant improvement in infrastructure development and job creation (Rogerson, 2002). Overall, the Spatial Development Initiative was perceived as a top-down approach that is worthy of praise.

Of importance is that the Gijima programme was a six year project that was developed by the KwaZulu-Natal Province. The provincial government was supported by Economic Development and other stakeholders as the provincial department was spearheading the project. The project was aimed at improving the local economic growth. The project was funded by three institutions: Business Enabling Fund, Local Competitive Fund and the Networking and Co-operation Fund. All these institutions invested about 37 million. The Business Enabling Fund was designed to help projects in developing economies. The Local Competitive Fund promoted projects that would promote investment while the Networking and Co-operation Fund was mainly responsible for marketing.

3.8.5 European case studies

The case study on New York was based in the New York canal corridor. Schafft *et al.* (2007) aver that the initiative improve people's lives and expands the economic base for world trade. The majority of individuals in New York were unemployed due to the shutdown of industries. In addressing the unemployment, the US local government decided to initiate the Canal Corridor

Initiative. About 120 million U.S dollars were invested for this initiative to improve tourism which is the engine of growth in New York. The project also aimed at poverty reduction and economic development (Schafft *et al*. 2007). The Canal Corridor Initiative was a successful infrastructure programme as boat stations, power stations and sewer lines were built. The success of the project brought income to the local residents for sustenance. The local economy benefited from the improved tourism sector and SMMEs as they are the pillars of growth and employment (Schafft, 2007).

Another case study done outside Africa that is worth noting is the Favelo Bairro project. Residents of Rio de Janeiro are victims of poverty and unequal distribution of income. They live in inappropriate housing, have poor quality infrastructure, poor health, and suffer from the ills of violence and unemployment (Gilbert, 1995). The Favelo Bairro project was initiated to address all these problems but the main focus was on poverty alleviation and investment (Musakwa, 2009:89). The local government was working with the Inter-American Development Bank (IDB). Inter-American Development Bank (1998) stipulates that the project was aimed at addressing land legalization, social services, regulatory changes, infrastructure development and poverty reduction. The stakeholders implemented the project by developing and thereby devising a master plan, discussing the proposals, coming up with investing projects and getting them approved by relevant offices, and employing local residents (Inter-American Development Bank, 1998). Thus, the Inter-American Development Bank community members and private business joined hands in improving the local area.

3.9 CHAPTER SUMMARY

As noted above, in the apartheid era, local government was involuntarily implementing plans and policies from provincial and national government. All decisions and economic activities pertaining to local government were undertaken by provincial and national government. However, the introduction of a new government after independence in 1994 paved the way for local government, thus the introduction of LED (RSA, 1998). Local government became a separate and distinct sphere to manage its resources and policies and make decisions regarding the needs of its community. However, this did not eliminate the existence and role of national and provincial government in LED. Local government still operates under the national government framework. Thus, the national government is responsible for job creation and sustainable development as the highest authority. On the other hand, the provincial government has a vital role to play in LED. It acts as a coordinator of local economic development. The provincial sphere coordinates all the

activities done under local municipalities. The provincial government facilitates and makes sure that all the activities are compatible with LED. All the three spheres are pushing the LED mandate through the National Development Plan.

Hence, the National Development Plan is a strategy that addresses socioeconomic issues such as corruption, low quality education, poor infrastructure, and underutilisation of resources, poor public health, poor public service and a divided South Africa. In addressing all these socioeconomic problems, the government came up with a long term plan that should be achieved by 2030. In pursuit of these challenges, the National Development Plan centred its objectives on a decent life through employment, a clean environment, quality education, quality health care, safe and reliable transport, better nitrification and social protection. The government contends that this can be achieved through improved economic growth, building capabilities, good leadership and collaborating with the society. Thus a growth of 5.4 percent will create more than 11 million jobs in South Africa.

Furthermore, the South African government has developed policies to bulwark the LED initiative, for example, the Reconstruction and Development Program, the Rural Development Framework, the Green Paper on Local Government of 1997 and the Republic of South Africa Constitution. All these policies emphasise that the local government is the hands and feet of economic development. Thus, the local government is the catalyst of development. In pursuit of LED, five interventions were used: financial support, land and building development, information and marketing assistance, new planning and organization structures and training and employment. In addition, LED came up with programmes such as encouraging local businesses, supporting new entrepreneurs, improving the local investment climate, the provision of inward investment and the provision of hard and soft infrastructure.

The South African experience on LED has been evident in mainly market-led and pro-poor dimensions. The former promotes local economic development through investment in urban areas whilst the pro-poor targets the poor to improve their lives. There is an observation that many LED activities are more inclined to cities than rural areas. This is evident from the case studies done on LED in all the provinces in South Africa, for example, the Thina Sinako project that addressed poverty and unemployment, the Hertzog Agriculture Cooperative Initiative (HACOP) and the Gijima project. All these case studies done in South Africa were aimed at improving the living standards of the poor through poverty reduction and employment. The projects were a success to a certain extent as some jobs were created. On the other hand, the introduction of LED has not

been exempt from its own challenges. Some of the challenges include: lack of support and funds, and lack of understanding on what LED entails. Furthermore, government and other stakeholders could not understand the LED objectives and strategies. The next chapter discusses the methodologoy used in the study and profile of the study area.

CHAPTER 4
RESEARCH METHODOLOGY AND PROFILE

4.1 INTRODUCTION

For the past years, numerous studies have examined the relationship between local economic development (LED) and economic sectors. Chapter two indicated some of the studies such as Musakwa (2009), Pedrana (2013) and Wyngaard (2006). Although, more studies were done on LED, few have focused on the impact of key economic sectors on LED using an econometric panel quantitative approach. Thus, the literature review in chapters two and three indicated a lack of econometric panel quantitative studies in South Africa on key economic sectors promoting LED. To this end, this chapter provides a description of the quantitative methods used to research LED. Therefore, the purpose of this chapter is to conduct a panel econometric analysis on key economic sectors that promote LED. The purpose of this analysis is to analyse the key sectors that promote economic growth, employment and alleviate poverty. The chapter begins with the discussion of research design and methodology used in this study. The study outlines and discusses the panel data and panel Autoregressive Distributed lag model analysis. Furthermore, the chapter discusses the socio-economic factors for Capricorn District Municipality such as population, tress index and the unemployment in the study region.

4.2 RESEARCH DESIGN AND METHODOLOGY

The research design and method helps the researcher to meet the objectives of the study outlined in chapter one. The researcher avers that research design is one of the most important aspects of research and as such must be clearly outlined for better results (Leedy, 1997:195). On the other hand, Cant *et al.* (2003:65) assert that the research methodology outlines techniques of dealing with a problem statement and a mechanism of obtaining results and conclusions. Therefore, this section outlines the research design, sample selection and period, the nature of data, model specification, and description of variables, data analysis, model estimation and the socio-economic factors of the study region.

4.2.1 Research design

The research design is the overall plan that outlines how, when and where data should be collected and analysed in answering the research questions (Vosloo, 2014:299). In other words, a research design includes the population target, sample size, type of data, method and the analysis to be used.

A good outline of all these should provide the researcher with good and credible results (MacMillan & Schumacher, 2001:166). The nature of data, methods and analysis take two forms: qualitative and quantitative analysis (Johnson & Christensen, 2008:34). Qualitative research involves the understanding and interpretations of social issues using images, observations and films while quantitative research is the process of collecting data that can be quantified to test a cause or relationship between variables (Burns & Grove 1993:777; Creswell, 2003:153; Litchman, 2006:7; Merriam, 2009:13, Seeberg, 2012). Furthermore, quantitative analysis involves the use of mathematical, statistical and economic models to test, measure and analyse variables (Nicholls, 2011:3). In light of the above, the study employs a quantitative research design in analysing the key sectors that promote LED. The researcher chose the quantitative research design because it supports the nature of the data of the current study. In addition, a quantitative approach accommodates a large sample size and enables reliable statistical conclusions (Lancaster, 2016). Thus, the subsequent sub-section discusses the nature of data, the econometric model and the panel estimation methods.

4.2.2 Study period and sample selection

This section discusses the study period and sample selection that is the area of research. The study period was from 1996 to 2015. This gave the researcher a sample period of nineteen years. The researcher chose 1996 because the LED in South Africa became more popular in that particular year. In addition, the LED data consistency results from the popularity it gained after South Africa`s independence were also an advantage. Although there are five district municipalities in Limpopo Province, the Capricorn District Municipality was the focus area of the study. Appendix L shows the map of the Capricorn District. The appendix L shows that Capricorn District Municipality is composed of four municipalities, namely the Lepelle-Nkumpi Local Municipality, Molemole Municipality, Blouberg and Polokwane Local Municipality (Capricorn District Municipality, 2010). All these municipalities cover a distance of about 21 705 km (Capricorn District Municipality, 2016). This distance includes the layover between Gauteng Province and North of Limpopo and access to most of the Southern Africa countries such as Zambia, Mozambique, Zimbabwe and Malawi via the N1. At the heart of the Capricorn District Municipality is Polokwane, which is also the capital city of the province. The Capricorn District is surrounded by other towns such as Alldays, Dendron, Zebediela and Morebeng, and key sectors in these towns are the community services sector, finance and business sector, trade sector, manufacturing sector, construction sector and agriculture sector (Capricorn District Municipality, 2016).

Noteworthy is that the Capricorn District is the focus area of this study because the district is dominated by a rural area that experiences absolute poverty, unemployment and stagnant growth (Capricorn District Municipality, 2016). The unemployment in the region was recorded at 37 percent in 2016, while the majority of the people live in extreme poverty (Capricorn District Municipality, 2016). Furthermore, the economic growth in the region has been stagnant over the past decades (Global Insight, 2016). The aforementioned problems have attracted prominent researchers into research on LED (Hungwe, 2012; Kganakga, 2015; Machaka, 2012; Mukonza, 2014). There is no study that has been conducted in the area on the key sectors contributing to LED using a quantitative panel approach. Therefore, the researcher avers that the productivity of key economic sectors could play a vital role in the Capricorn District Municipality in improving absolute poverty, unemployment and stagnant growth (Stiftung, 1999; Triegaardt, 2014; Zalk, 2014).

4.2.3 Nature of data

The study used annual secondary data to analyse the key sectors promoting LED. It is important to note that LED is difficult (complex) to measure. The studies that measured LED measured it by using the number projects at a local municipality, jobs created in a region and income earned by households (Nel, 2003; Musakwa, 2009; Rogerson, 2009). LED is thus complex to measure in that it is difficult to quantify the success of a project in a local area. In addition, it is also complex to measure the income earned during a project in that one cannot ascertain whether such income has improved the standard of living or not. Moreover, a project may employ people until its completion only, meaning that after the completion of such a project the people who were once employed because of this project become jobless, hence, making the measurement of LED complex. In response to such complexity, the researcher regards the definition of LED as a more comprehensive measurement of LED than the aforementioned measures. Thus, by definition, LED is an approach that stimulates economic growth, creates employment and alleviates poverty in a local area (Meyer, 2013). Therefore, the researcher firmly maintains the use of the LED definition in measuring LED, namely economic growth, employment and poverty alleviation.

Economic growth, employment and poverty were used by several prominent researchers to measure LED (Musakwa, 2009; Stiftung, 1999; Triegaardt, 2014; Van Rooyen, 1997). Despite the researchers employing the aforementioned LED measures, no study has combined all the three measures to develop a local economic development index. Therefore, the study developed a local economic development index. The index comprised of economic growth, employment and poverty

alleviation. After compilation of the index, the researcher estimates the productivity of key economic sectors and the local economic development index. The key sectors include the manufacturing sector, mining sector, agricultural sector, trade sector, community service sector, construction sector, tourism sector, utility and electricity sector and the finance sector. These key sectors were also implemented by numerous researchers such as Miejerink & Roza (2007), Rogerson (1996) and Wyngaard (2006). Furthermore, the study estimates the individual components of local economic development separately: economic growth, employment and poverty alleviation. This is to check how the key sectors are contributing to economic growth, employment and poverty alleviation. Therefore, four models are estimated namely the local economic development, economic growth, employment and poverty alleviation.

As stated above, the study employed the annual secondary data of four local municipalities, namely Blouberg Municipality, Lepelle-Nkumpi Municipality, Polokwane Municipality and Molemole Municipality. The data for this study was a balanced panel data set that contained a combination of time-series and cross-sectional observations. Thus, panel data observations included two dimensions: the first being the cross-sectional dimension and the second being the time-series dimension (Hauser, 2016:5; Hsiao, 2007:1). The data was comprised of four cross-sectional dimensions, that is four local municipalities and twenty time-series dimensions. This adds up to eighty observations. The panel data analysis was deemed fit for the study due to data availability, as well as due to the fact that it allowed for better capacity in modelling complicated human behaviour. It also provideed a more precise conclusion of parameters (Heckman *et al*., 1998; Hsiao *et al*., 2006). The next section discusses the method used in the study.

4.2.4 Model specification

To analyze the impact of the roductivity of key sectors on LED, this study adopted a panel quantitative approach. The researcher estimated the local economic development index (LEDI) and productivity of key economic sectors. The local economic development index (LEDI) is a dependent variable while the productivity of key economic sectors are independent variables. The local economic development index (LEDI) constitutes economic growth, employment and poverty alleviation as one variable and it is in line with the LED definition that pertains to economic growth, creation of employment and poverty alleviation (Meyer 2016; Nel, 2000). This index was estimated as it is in line with the main objective, empirical objectives and the contribution of the study. Thus, the study adopted a Pooled Mean Group and equation 4.1 shows the local economic development model (LEDI).

Model 1: lnLEDI= f(lncomus, lntrade, lnmanufac, lnconstr, lnagric, lnfinance, lnmining, lntourism, lnelectr) 4.1

Where lnLEDI represents log of local economic development index, lncomus is log of productivity in the community service in municipality, lntrade is log productivity in trade in municipality, lnmanufac is log of productivity in manufacturing in municipality, lnconstr is log of productivity in construction in municipality, lnagric is log of productivity in agriculture in municipality, lnfinance is log of productivity in finance in municipality, lnelectricity is log of productivity in electricity in municipality, lntourism is log of productivity tourism in municipality, lnmining is log of productivity mining in municipality. The variables in this study are put in logarithm form. The logging of variables is a vital process as it eliminates misspecification and hetereskedacity problems as a majority of these variables contain strong trends (Mongale, 2012:28). Furthermore, it allowed the researcher to analyse using percentages.

It is also important to note that equation 4.1 estimates the local economic development index that is made up of economic growth, employment and poverty alleviation. The results show how the productivity of key sectors influence economic growth, employment and poverty alleviation combined (LEDI). However, the study further estimates how these key sectors influence each component of the local economic development index. Thus, the study investigates the impact of the productivity of key sectors on economic growth, employment and poverty alleviation as represented by models 4.2, 4.3 and 4.4 respectively. This is in line with the empirical objective number two that pertains to economic growth and productivity of key sectors: employment and productivity of key sectors and poverty alleviation and productivity of key sectors. Hence, there is a need to check how the productivity of key economic sectors contribute to economic growth, employment and poverty alleviation. Equation 4.2, 4.3 and 4.4 shows the economic growth model, employment model and poverty alleviation:

Model 2: Growth model (lngrowth) = f (lncomus, lntrade, lnmanufac, lnconstr, lntrans, lnfinance, lnmining, lntourism)..... 4.2

Model 3: Employment model (lnemploy) = f (lncomus, lntrade, lnmanufac, lnconstr, lnagric, lnfinance, lnmining, lntourism)..... 4.3

Model 4: Poverty alleviation model (lnnon-poor) = f (lntrade, lnmanufac, lnconstr, lnfinance, lnmining, lntourism)..... 4.4

Where lngrowth represents log of economic growth, lnemploy is log of employment in municipality, lnnpoor is log of non-poor in municipality, lncomus is log of productivity in community service in municipality, lntrade is log of productivity in trade in municipality, lnmanufac is log of productivity in manufacturing in municipality, lnconstr is log of productivity in construction in municipality, lnfinance is log of productivity in finance in municipality, lntourism is log of productivity in tourism in municipality, lnmining is log of productivity in mining in municipality, lnagric is log of productivity in agriculture in municipality and lntrans is log of productivity in transport in municipality. The variables in this study are put in logarithm form. The logging of variables is a vital process as it eliminates misspecification and hetereskedacity problems as a majority of these variables contain strong trends (Mongale, 2012:28). Furthermore, it allows the researcher to analyse using percentages.

4.3 DESCRIPTION OF VARIABLES

This section defines each variable and explains how it is measured. The section also outlines other researchers who have used such variables. This section is divided into two, firstly description and measurement of dependent variables and, secondly, description and measurement of independent variables.

4.3.1 Description and measurement of dependent variables

There are four dependent variables in this study, namely the local economic development index (LEDI), Gross Domestic Product per capita (economic growth), employment (employ) and poverty alleviation (non-poor). This section discusses these dependent variables in detail.

4.3.1.1 Local economic development index

The Local Economic Development Index is a measure of development in a certain area or region looking at socio-economic issues such as poverty, trade, income and unemployment (Meyer *et al.*, 2016:2). To this effect, the researcher developed a Local Economic Development Index (LEDI) to measure the economic development of Capricorn District Municipality. The LEDI is composed of three sets of variables, namely economic growth, employment and poverty. These three variables were chosen because they define the LED. Local economic development is a concept that is aimed at improving local economic growth, employment and alleviating poverty (Akah, 2008; Kotz,

2000:2; World Bank, 2003). The first component of LEDI is economic growth, which is defined as the flow of goods and services in the economy measured as per capita (Boulhol, 2008). Economic growth is measured by Gross Domestic Product per capita. The second component is employment defined as the total number of people in a region who are working in both the formal and informal sector (Belle & Bullock, 2011). The last component is poverty alleviation which is defined as the number of individuals in a region living above the poverty line or non-poor people (World Bank, 2015:2). The non-poor people are those who can afford basic goods and services in a municipality such as food, shelter and transport. The computation of LED is shown below in equation 4.5

$$\sum_{it=1}^{3} X_{it} = 1 \quad \text{.....} 4.5$$

Where X_{it} = Local Economic Development Measure, $_{it}$ i at time.

The equation 4.5 shows how the LEDI is constructed. It shows that three variables are considered, namely economic growth, employment and poverty. These variables make one variable that is the LED Index (LEDI). The choice of the variables that measured LEDI are in line with the LED definition which pertains to improved economic growth, poverty alleviation and job creation (Rodríguez-Pose; Seduma, 2011; Tijmstra, 2005). The construction of LEDI provides an insight into the understanding of local economic development (Rives & Heaney, 1995). The literature on construction of local economic development measures include Notre (2011), Rives and Heaney (1995) and Victor (2010). These studies compiled a local economic index using variables such as income, employment, GDP, small business, infrastructure development, education and population. Costanza *et al.* (2009) support the idea that new measure that are composed of two or more variables are better measures of development and should be used to measure development of a certain area. Thus, the study adopts the literature review by formulating a LEDI composed of economic growth, employment and poverty. Equation 4.6 shows the components that were used to make up the LEDI measure.

$$\text{LEDIit} = \text{f}\ (X_{1it} + X_{2it} + X_{3it}) \quad \text{.....} 4.6$$

Where LEDI $_{it}$ is the LED Index, X_{1it} is the economic growth (growth), X_{2it} is the employment (employ) and X_{3it} is poverty alleviation (non-poor). Equation 4.7 further shows the weights of the LEDI

$$\text{LEDIit} = \text{f}(X_{1it} * 0.4 + X_{2it} * 0.3 + X_{3it} * 0.3) \quad \text{.....} 4.7$$

Excel was used to construct the LEDI and it is conjectured that economic growth, employment and non-poverty rate are components of a single model that is LEDI. The researcher attached weights to each component of the LEDI. Economic growth measured by Gross Domestic Product per capita weighs 0.4 while employment and poverty weighs 0.3 and 0.3 respectively. There are other studies that used the same methods in coming up with a single model from many variables using Excel (Berenson *et al.,* 2012: Garcia & Ramon, 2013: United Nations, 2016). Therefore, the study adopted the literature review by formulating the LEDI using Excel. Economic growth measured by GDP per capita has taken a bigger share compared to other components because GDP per capita is a better measure of development compared to other variables (Bergh, 2014; Ivković, 2016: United Nations, 2016). Economic growth is the first step to economic development. Furthermore, the economics theory prescribes that economic growth eventually leads to employment and reduction of poverty (Islam, 2004; Krongkaew, 2016; Dursun, 2016). In other words, a region with better economic growth will create jobs and eventually alleviate poverty. Hence, economic growth has taken a bigger share. This is in line with other studies (Haunshek, 2013; Ramirez, 1997).

The researcher expected either a negative or positive relationship between LEDI and key economic sectors. As the key sectors improve, the LEDI was expected to improve as well. The studies that have established positive and negative relationships between local economic development and key economic sectors include Rives and Heaney (1995) & Musakwa (2009).

4.3.1.2 Employment

Based on the empirical analysis, employment is the number of people in a region that work in both the formal and informal sector (Belle & Bullock, 2011; Content & Frankman, 2016; Sari et al., (2008). A majority of the studies in development economics used employment as a measure of development in a region (Content & Frankman, 2016 & Rives and Heaney, 1995). Others used migration less growth per capital expenditure as a proxy of employment (Lee & Li, 2010). However, this study used the number of individuals employed in both the formal and informal sectors within these four municipalities expressed in logarithm (lnemploy). This is supported by a studies done by Belle & Bullock (2011), Content & Frankman (2016), Rives and Heaney (1995) and Sari *et al.* (2008) who have used this proxy. The study expected a positive or a negative relationship between employment and key economic sectors. The studies that have established positive and negative relationships between employment and key economic sectors include Afeikhena *et al.* (2016) & Nagel (2015).

4.3.1.3 Gross domestic product per capita

In this study, the logarithm of Gross Domestic Product per capita was used to measure economic growth (lngrowth). This is the final goods and services produced within a specific region measured at the market price (thousands of rands) taking into account the population of the region (Callen, 2008). A number of studies have used Gross Domestic Product per capita as a proxy of economic growth in developing economics (Boulhol, 2008; Easterlin, 2013 & James *et al*., 2015). Other studies have found a positive relationship between economic growth and key sectors while other studies found a negative relationship (Hussin & Yik, 2012; Odetola & Etumnu, 2013). Based on the literature, the researcher expected a positive or negative relationship between economic growth and key economic sectors.

4.3.1.4 Poverty alleviation

Based on the literature review on key economic sectors in developing economics, poverty is measured using the number of people below and above the poverty line (Cervantes-Godoy & Dewbre, 2010; Deininger & Squire, 1996; Lundberge & Squire, 1998). The below line includes all the people that live below $1.25 per day while above the line are individuals who live above the $1.25 per day (World Bank, 2016). These researchers measured poverty using the headcount that is the number of people who are poor per person in a region. Based on the literature review, this study used poverty alleviation to measure non-poor people who live above $1.25 per day according to World Insight (2015). Thus, the study used the logarithm of non-poor to measure the number of people who are above the poverty line in each municipality (lnnonpoor). The more people above the poverty line means more poverty alleviation in a region. The researcher expected either a negative or positive relationship between poverty and key economic sectors. Such a relationship was established by several researchers (Bond, 2002; Nel & McQuaid, 2002; Rogerson & Stoddart, 2008).

4.3.2 Description and measurement of independent variables

Independent variables in this study are the productivity of all key economic sectors in the Capricorn District Municipality. These include community service, trade, tourism, construction, agriculture, finance, manufacturing, transport and mining. All these key economic sectors were selected based on the literature review in the Capricorn District Municipality. The Capricorn District Municipality (2016) mentions the key economic sectors as the community service sector, trade, tourism, transport, electricity, construction, agriculture, finance and mining. The study

expressed all these key sectors in thousands of rands of value added converted into logarithms to make the analysis easier.

4.3.2.1 Community and social service sector

The community and social service sector in this study is measured by the productivity of general activities in health, education, government, defence activities, social work, culture, hairdressing, recreational activities, sports, trade unions, funeral and related activities and sewage and refuse disposal (Stastistics South Africa, 2015). The literature review motivated the measurement of the community and social service sector using the gross value added measurement (StatsSA, 2015; World Insights, 2015). The gross value added measurement is the production instrument that measures the contribution of a sector or region to an economy (Weiland & Kavonius, 2016:9). Thus, the study adopted the literature review and measured the community and social service sector using the gross value added (lncomus). The community and social service sector accounts for 30.9 percent in the district (Capricorn District Municipality, 2016). The community and social service sector is expressed in monetary terms that is thousands of rands. The study further transformed the thousands of rands into logarithms for easier analysis. The community and service sector is expressed in logarithms and is expected to contribute positively or negatively to economic growth, employment, poverty and development (Nel & McQuaid, 2002; Stoddart 2008).

4.3.2.2 Trade sector

The productivity of the trade sector in this study is measured in thousands of rands of gross value added of imports and exports of the Capricorn District Municipality. Based on the empirical analysis, the trade sector is measured by gross value added of imports and exports in a region (OECD, 2010; Stehre, 2010; World Insights, 2015). Organisation for Economic Co-operation and Development (2010) emphasised that gross value added is a meaningful measure of trade as it reflects issues such as labour, non-financial assets, capital and natural resources used in the production process. Thus, this study used the gross value added of all the trade sector activities to measure the trade sector (lntrade). In the Capricorn District the trade sector accounts for 14 percent (Capricorn District Municipality, 2016). The trade sector is expressed in monetary value (thousands of rands). To make the analysis easier the study converted the thousands of rands into logarithms. The study expected a positive or a negative relationship between trade sector and economic growth, poverty, employment and development. Such a relationship was also established by Organisation for Economic Co-operation and Development (2010) & Stehre (2010).

4.3.2.3 Tourism sector

Based on the literature review, the tourism sector was measured using the productivity of the tourism sector (Bezic & Radic, 2017; Frechtling, 2013; Vieira & Santos, 2017; World Tourism Organisation, 2013). This study adopted the approach in the literature review and measured the tourism sector according to the revenue earned in thousands of rands of gross value added of all tourism activities. Frechtling (2013) defined the gross value added of the tourism sector as the total outcome in the tourism sector including the output produced by non-residents. This measure accounts for everything that is related to tourism. The tourism sector is expressed in monetary value that is thousands of rands. The thousands of rands are converted to logarithms to make the analysis easier. The study expected a positive or a negative relationship between the tourism sector, economic growth, poverty, employment and development (Bezic & Radic, 2017; Frechtling, 2013; Vieira & Santos, 2017).

4.3.2.4 Construction sector

The literature review on the construction sector and development economics measured the construction sector using the gross value added of all the construction activities (Bringezu & Bleischwitz, 2009; Hoffman, 2004; Voet *et al.*, 2005). This study adopted the literature review by measuring the construction sector in thousands of rands of productivity of all construction activities. These included the demolition of equipment, civil engineering and building installations (Stats South Africa, 2016). The gross value added is the production instrument that measures the contribution of a sector or region to an economy (Weiland & Kavonius, 2016:9). The construction sector contributes about 3.3 percent to the Capricorn District Municipality (2016). This is expressed in thousands of rands and converted to logarithms for easier analysis purposes. The sector is expected to contribute positively or negatively to economic growth, employment, poverty and development. Such a relationship was established by several researchers (Bringezu & Bleischwitz, 2009; Hoffman, 2004; Voet *et al*., 2005).

4.3.2.5 Agriculture sector

The literature review measured the agricultural sector by share of expenditure government budget on agriculture, share of government expenditure on Gross Domestic Product and the agriculture gross value added (Ceylan & Ozkan, 2013 & Elias, 1981). The current study used the productivity of agriculture as a proxy of the agriculture sector. This measure is consistent with the Elias (1981), Statistics South Africa (2015), and World Insights (2015). The activities measured include crop

production, mixed farming, cattle ranging, commercial hunting, forestry, fishing, sheep farming and other farming activities expressed in thousands of rands (Stats SA, 2015). These activities amount to 3.1 percent and they are expressed in thousands of rands. The thousands of rands are further changed to logarithms to make the analysis easier. The study expected a positive or a negative relationship between the agriculture sector, economic growth, poverty, employment and development. Brand (1969), Oosthuizen (1998) Van Rooyen (1997 & Van Zyl *et al*., (1988) found both a negative and positive relationship among key economic sectors and local economic development.

4.3.2.6 Finance and business sector

There is relatively scarce literature on the finance and business sector in development economics. The available literature shows that the finance and business sector is measured by all gross value added of investment, insurance, banking, computers, legal, bookkeeping, architecture, auditing, engineering, research and development and other business activities that are not mentioned (Stock Exchange, 2012). The study adopted the literature and measured the finance and business sector using the productivity of finance and business using thousands of rands (lnfinance). In the Capricorn District Municipality, the finance and business sector contributes about 27 percent. The finance and business sector is expressed in thousands of rands and expressed in logarithms. The study expected a positive or a negative relationship between the agriculture sector, economic growth, poverty, employment and development. This is in line with other studies (Nel and Binns, 2003; Stock Exchange, 2012).

4.3.2.7 Mining sector

Based on the literature review, the mining sector is measured using the gross value added of the mining sector (Koitsiwe & Adachi, 2015; Sheehan, 2007; Statistics South Africa, 2015). This study adopted the approach used in the literature review and measured the mining sector using the productivity expressed in thousands of rands of gross value added of the mining sector (lnmining). This includes all unrefined minerals such as precious metals, minerals, energy minerals, non-ferrous metals and ferrous minerals, and industrial minerals are included in the mining sector (Chamber of Mines, 2016). The mining sector in the region is measured in thousands of rands and further converted into logarithms. This measure is consistent with Statistics South Africa (2015) and Mkhize (2016). The study expected a positive or a negative relationship between the mining sector, economic growth, poverty, employment and development which is in line with other studies such as Koitsiwe & Adachi (2015), Mogalakwena Local Municipality (2006) & Rogerson (1996).

4.3.2.8 Manufacturing sector

The literature on the manufacturing sector and development economics reveals that the manufacturing sector is measured by the gross value added of all manufacturing activities (Friedman, 2006; Sheehan and Sun, 2007; Statistics South Africa, 2015). This study adopted the literature review and measured manufacturing using the productivity of all manufacturing activities (lnmanufac). Several studies have used the manufacturing output as a proxy for the manufacturing sector such as Alberta (2013), Dasgupta & Singh (2005) and Libanio (2015). The gross value added of the manufacturing sector includes all retailers in food, chemicals, household appliances, metals, wood, electrical and pulp products (Keith, 1976). All these manufacturing activities are measured in thousands of rands and converted to logarithms for easier analysis. The manufacturing sector contributes about 4.3 percent in the Capricorn District Municipality (2016). Based on the literature, the study expected a positive or a negative relationship between manufacturing sector, economic growth, poverty, employment and development (Friedman, 2006; Sheehan and Sun, 2007; Statistics South Africa, 2015).

4.3.2.9 Electricity and utility sector

The literature on the electricity and utility sector and development economics reveals that the electricity and utility sector is measured by the gross value added of all utility activities (Global Insight, 2016; Statistics South Africa, 2015). This study adopted the literature review and measured the electricity and utility sector using the productivity of all electricity and utility sector activities (lnelectr). Several studies have used the electricity and utility sector productivity as a proxy for the electricity and utility sector such as Mogale Local Municipality (2006) and Statistics South Africa (2016). The activities that encompasses the sector are water purification, gas production, supply of water and the distribution of electricity (Mogale Local Municipality, 2006). All these electricity and utility activities are measured in thousands of rands and converted to logarithms for easier analysis. The manufacturing sector contributes about 2.9 percent in the Capricorn District Municipality (2016). Based on the literature, the study expected a positive or a negative relationship between the manufacturing sector, economic growth, poverty, employment and development (Mogale Local Municipality, 2006; Statistics South Africa, 2015).

4.3.2.10 Transport sector

Based on the literature review, the transport sector was measured using the gross value added of the transport sector (Berg, 2017; Fujiwara & Zhang, 2013; Statistics South Africa, 2015). This

study adopted the approach used in the literature review and measured the transport sector using the productivity expressed in thousands of rands of gross value added of the transport sector (lntrans). This includes activities such as telecommunications, land, railway, air transport and courier activities (Mogale Local Municipality, 2006). The transport sector is measured in thousands of rands and further converted into logarithms. The study expected a positive or a negative relationship between the transport sector, economic growth, poverty, employment and development which is in line with other studies such as Berg (2017), Fujiwara & Zhang (2013) and Statistics South Africa (2015).

Table 4.1: Summary of the dependent and independent variables

VARIABLES	ABBREVIATION	DESCRIPTION
DEPENDENT		
Local economic development Index	lnledi	Number of people employed in the Capricorn District Municipality plus number of people living above $1.25 per day plus Gross Domestic Product per capita. All these are expressed in logarithms.
Economic growth	lngrowth	Gross Domestic Product per capita expressed in millions of rands and converted into logarithms.
Employment	lnemploy	Total number of people employed in the Capricorn District Municipality expressed as a percentage
Poverty alleviation	lnnpoor	Total number of people who are non-poor in the Capricorn District Municipality. This number is expressed in percentage.
INDEPENDENT VARIABLES		
Community and social service sector	lncomus	Gross value added of community and social service sector expressed in thousands of rands and then converted into logarithms

Trade sector	lntrade	Gross value added of trade sector expressed in thousands of rands and then converted into logarithms
Agriculture sector	lnagric	Gross value added of agriculture sector expressed in thousands of rands and then converted into logarithms
Tourism sector	lntourism	Gross value added of tourism expressed in in thousands of rands and then converted into logarithms
Construction sector	lnconstr	Gross value added of construction sector expressed in thousands of rands and then converted into logarithms
Finance and business sector	lnfinance	Gross value added of finance and business sector expressed in in thousands of rands and then converted into logarithms
Mining sector	lnmining	Gross value added of mining sector expressed in thousands of rands and then converted into logarithms
Manufacturing sector	lnmanufac	Gross value added of manufacturing sector expressed in thousands of rands and then converted into logarithms
Electricity and utility sector	lnelectr	Gross value added of electricity and utility sector expressed in thousands of rands then converted into logarithms
Transport sector	lntrans	Gross value added of transport sector expressed in thousands of rands then converted into logarithms

Source: Own Compilation

4.4 DATA ANALYIS

The data analysis section is divided into two: statistical tests and the panel unit root tests. The next section discusses the statistical tests and analysis.

4.4.1 Statistical tests

There were statistical tests to be performed before running the panel ARDL model. The tests are conducted to check the trend of variables, the linear relationship between dependent and independent variables, check if all the variables share the same number of observations and to assess the chance of facing the multicollinearity problems (Kowalski & Napiórkowski, 2014). Tests that test the aforementioned issues include the trend tests, descriptive statistics, correlation and the panel unit root tests. Thus, the study first gave the trend analysis results on both the dependent and independent variables. The trend analysis is important as it shows the behaviour of a variable in all the areas under study. It gives the researcher possible reasons why the variable behaved in a certain manner and provides an overview of how a certain variable behaves in relation to every other variable (Mokotsanyane, 2016:80).

Furthermore, the study provided the results of descriptive statistics. Mongale (2012) describes the descriptive statistics as a summary of both dependent and independent variables expressed in a quantitative state. In other words, descriptive statistics makes one understand the characteristics of the variables or data used in the study. Thus, the study analysed the mean, median, maximum and minimum of both dependent and independent variables. Mean is defined as the total number of all the data divided by the observations (Pindyck & Rubinfeld, 1998). On the other hand, standard deviation is the measure of the inconsistency and consistency of the population (Seltman, 2015:37). Therefore, the study analysed the measure of inconsistency and consistency of the population under study that is the Capricorn District Municipality.

Correlation analysis is a numeric method that checks the degree of interaction between two or more variables (Freeman & Young, 2009:31). The association between variables can be either positive or negative. A positive and closer to 1 signifies a strong relationship between variables while a negative coefficient closer to 1 signifies a strong negative linear relationship (Brooks, 2014:151). In the event that that the variable is zero, it means there is no relation between variables (Freeman & Young, 2009:31). On the other hand, if the correlation coefficient is between 0.9 and 1 the variables relationship will be very strong. All these statistical tests were done using Eviews 9.5 software. The last statistical test is the panel unit root test. This test is used to determine the best estimation to use.

4.4.2 Panel unit root test

The panel unit root test has become popular and powerful since its introduction though they originate from time series (Hlouskova & Wagner, 2005; Levin *et al.,* 2002). The difference between panel data and time-series is that panel unit root tests consider both the time-series and the cross-sectional dimension whereas time series consider only the time-series dimension (Nell & Zimmermann, 2011:1). To test for panel unit root test, the literature suggested the tests of Levin, Lin and Chu (2002), Breitung (2000), Perasan and Shin (2003), Maddala & Wu (1999) and Hadri (2000). These tests are divided into first and second generation tests. The first generation tests are further divided into homogeneous and heterogeneous tests. Breitung (2002), Hadri (2000) & Levin, Lin & Chu (2002) form part of the homogeneous unit root tests while Maddala and Wu (1999), Choi (2001) & IPS (2003) are part of the heterogeneous unit root tests. These tests attempt to answer questions such as: What is the null and alternative hypothesis? What is heterogeneous and homogeneous? How do you treat small sample properties? The next section will discuss the specific panel unit root tests used in this study.

4.4.2.1 Levin-Lu-Chu unit root test (LLC)

The LLC is the first generation unit root test introduced by Levin, Lin & Chu (2002). The unit root test makes an assumption that all cross-sections are independent (Nosier, 2012:213). Levin *et al.*, (2002) further assume a common unit root across countries and relies on t test statistics that have a limiting normal distribution. In support, Nell and Zimmermann (2011:1) mention that the unit root test contains a limited power at the same time that it allows the lag parameter to vary through individuals (Nell & Zimmermann, 2011:1). Levin *et al*. (2002) recommend a unit root test that has an alternative hypothesis that has the coefficients that are negative and the same. Thus, the null hypothesis is that there is a unit root while an alternative hypothesis assumes no unit root (Nell & Zimmermann, 2011:1). If the hypothesis tested on the existence of unit root is accepted, this means that the time series is non-stationary. On the other hand, if the hypothesis testing the existence of a panel unit root is rejected, then the time series is stationary. Equation 4.8 illustrates the Levin, Lin and Chu unit root test:

$$DY_{it} = \alpha Y_{it-1} + \sum_{j=1}^{p1} \beta_{ij} DY_{it-j} + \varepsilon_{it} \quad \text{.....} 4.8$$

Where DY_{it} stands for difference term, Y_{it} is panel data, p_1 is the number of lag order for the difference term and ε_{it} = the error term

H_O: a series contains unit root test ($\boldsymbol{\alpha = 0}$)

H_1: a series does not contain unit root test ($\boldsymbol{\alpha \neq 0}$

The disadvantage of this test is that its null hypothesis is very restrictive on cross section and it depends on the assumption of cross-sectional independence (Nell & Zimmermann, 2011:1).

4.4.2.2 Im, Pesaran and Shin unit root test (IPS)

The IPS is a first generation test that was extended from the LLC unit root test. Nosier (2012:213) mentions that the IPS gives room for heterogeneous coefficients. In other words, the IPS allows coefficients to vary. This will allow the power of the test to change in the event of a unit root. In the existence of heterogeneous coefficients, ADF t stats should be used (IPS, 2003). Furthermore, the IPS allows the serial correlation residuals and heterogeneous dynamics across groups (Tan, 2007:11). This method uses regression that is lagged to deal with the autocorrelation (Nosier, 2012:213). The IPS sets its null hypothesis at unit root and alternative hypothesis as panel does no unit root test. If the hypothesis tested on the existence of unit root is accepted, this means that the time series is non-stationary. On the other hand, if the hypothesis tests the existence of panel unit root is rejected, then the time series is stationary. Equation 4.9 illustrates the IPS equation:

$$DY_{it} = \alpha Y_{it} - 1 + \sum_{j=1}^{p1} \beta_{ij} DY_{it-j} + \varepsilon_{it} \quad \text{.....4.9}$$

Where DY_{it} stands for difference term, Y_{it} is panel data, p_1 is the number of lag order for the difference term and ε_{it} = the error term

H_O: a series contains a unit root test ($\boldsymbol{\alpha = 0}$)

H_1: a series does not contain a unit root test ($\boldsymbol{\alpha \neq 0}$

4.4.2.3 Fisher and PP test

These unit root tests allows for heterogeneity in the coefficients (Choi, 2001; Maddala &Wu, 1999). The Fisher and PP test has a stronger power and is less restrictive compared to other panel unit root methods (Nosier, 2012:212). The Fisher ADF panel unit root test relies on regression that is lagged on difference to correct autocorrelation (Nosier, 2012:212). On the other hand, the Fisher PP panel unit root test uses the Kernel Weighting models when estimating for long-run variances (Nosier, 2012:212). The Fisher ADF and PP tests have set a null hypothesis assuming a unit root on panel data and no unit root as an alternative hypothesis. If the hypothesis tested on the existence

of unit root is accepted, this means that the time series is non-stationary. On the other hand, if the hypothesis tests the existence of panel unit root is rejected, then the time series is stationary. Thus, equation 4.10 shows the Fisher ADF and PP unit root test:

$$-2\sum_{i=1}^{n} log\,(\pi) \leftrightarrow X_{2N}^{2} \quad \text{.....4.10}$$

Where π is the p-values, N is the cross-sections, log is the logarithm.

H_O: a series contains unit root test ($\boldsymbol{\alpha = 0}$)

H_1: a series do not contain unit root test ($\boldsymbol{\alpha \neq 0}$

4.4.2.4 Hadri unit root test

The Hadri panel unit root test assumes the existence of a common unit root on all cross-sections (Hadri, 2000). The Hadri is different from all other methods because all individual variances and correlations are catered for. The Hadri method set a null hypothesis at no unit root while an alternative hypothesis has a unit root test (Nosier, 2012:213). If the hypothesis tested on the existence of unit root is accepted, this means that the time series is non-stationary. On the other hand, if the hypothesis that tests the existence of panel unit root is rejected, then the time series is stationary. Equation 4.11 illustrates the Hadri panel unit root test model:

$$Y_{it} = \delta_i + \eta_i t + \varepsilon_{it} \quad \text{.....4.11}$$

Where Y_{it} is panel data, δ_i is constant term, $\eta_i t$ is the coefficient of trend and ε_{it} is the error term.

H_O: a series does not contain a unit root test ($\boldsymbol{\alpha = 0}$)

H_1: a series contains a unit root test ($\boldsymbol{\alpha \neq 0}$

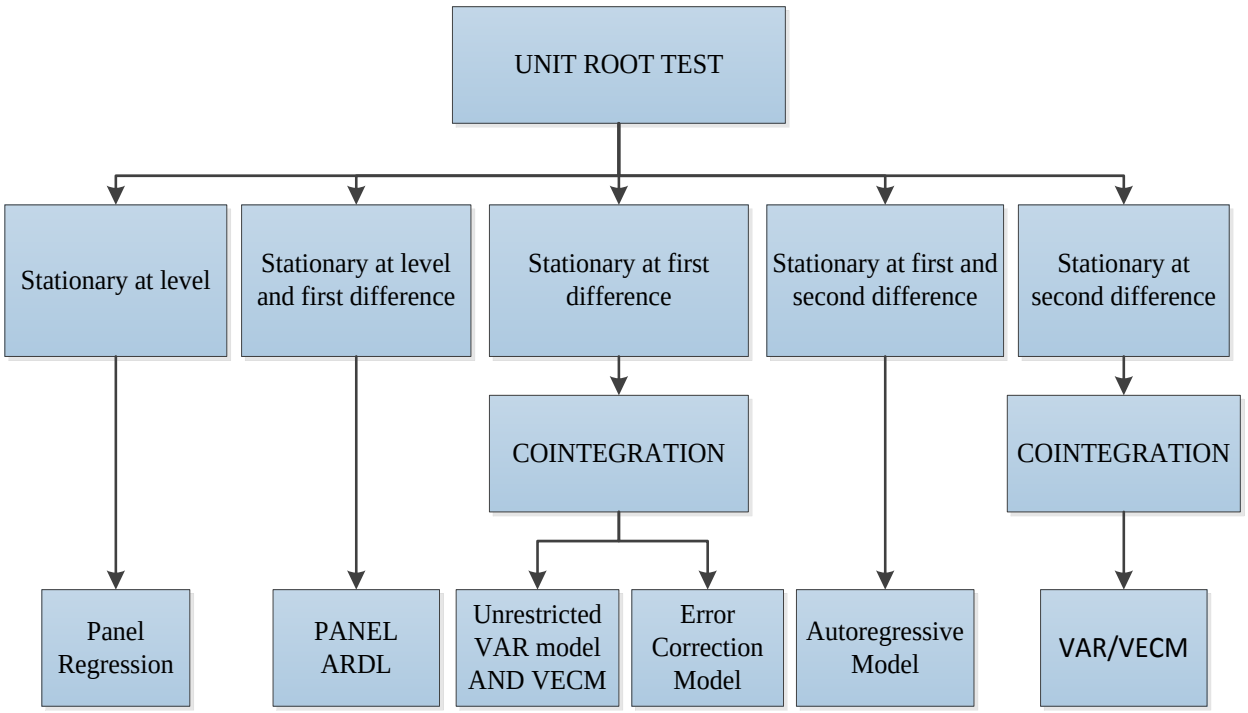
The Hadri panel unit root advantage is that it decides or confirms the results of other panel unit root tests. In addition, it solves the problem of heterogeneous and serial correlation (Hadri & Larson, 2000).

4.5 MODEL ESTIMATION

As mentioned earlier the panel unit root test clearly outlines the estimation method used by the study. The figure 4.1 below outlines the method used in this study based on the panel unit root tests. Nosier (2012:212) points out that if the variables are integrated and of the same order, a

researcher can test for Kao, and the Johansen Fisher cointegration test and use the unrestricted VAR model and error correction model. In the event that variables are integrated of different orders, then one can test for a new cointegration test that is the panel ARDL. The rule of thumb is that if the variables are stationary, a researcher may run a panel simple regression (Attiaoui *et al.*, 2017; Dogan *et al.*, 2014). In the event that variables are integrated and of a different order, then a panel ARDL model is appropriate (Dube & Zhou, 2015; Mokatsanyane, 2016; Nosier, 2012).

Figure 4.1: Estimation method



Source: Own compilation

4.5.1 Panel ARDL

To analyse key economic sectors contributing to LED, the study employed the panel ARDL or the panel pooled mean group (PMG). The panel ARDL is a panel estimation method that was introduced by Pesaran *et al.* (1999). They set the conditions that should be met before running a panel ARDL model. Firstly, the variables under investigation should be integrated at order zero and order one (Perasan & Shu, 1998:371). Secondly, the data should be normally distributed and variables should not be integrated at level two. Lastly, the variables should be free from heteroscedasticity and autocorrelation (Perasan & Shu, 1998:371).

The panel ARDL was employed in this study because it accommodates the nature of the researcher's variables which is a combination of variables integrated at order zero and one. The

panel ARDL also allows the researcher to analyse both short-run (ECM) and long-run relationship (Im *et al.*, 1997; Nosier, 2012:212). This process involves two stages: first stage is to check the presence of a short run relationship and, secondly, if the relationship exists then the long-run coefficients can be estimated (Bildirici, 2014). In analysing these two stages the econometric theory prescribes that the researcher should analyse the coefficient, sign off the coefficient and probability values and error correction term (ECT) the speed of adjustment (Samargandi *et al.*, 2013). If the sign of the coefficient is negative, it means the existence of a negative relationship between variables. Conversely, if the sign of the coefficient is positive, then a positive relationship is established. In the short run, the econometric theory subscribes that the coefficient of error correction term should be significant and at the same time negative and less than 2 (Samargandi *et al.*, 2013). The error term or speed of adjustment shows the percentage of equilibrium that will be attained in the upcoming year.

There are several researchers who employed the panel ARDL to determine the long run relationship between variables (Asghar *et al.*, 2015; Attiaoui *et al.*, 2017; Casola & Sichlimiris, 2015; Dogan *et al.*, 2014: Dube & Zhou, 2015; Mokatsanyane, 2016; Nadeem, 2015). These researchers chose the panel ARDL due to the advantages it offers. The first advantage is that panel ARDL allows variables that are integrated at different levels and produces good results while other methods such as the unrestricted VAR model allows only variables that are stationary at the same level (Mokotsanyane, 2016; Nosier, 2012). Furthermore, the panel ARDL acts as a cointegration test as it allows the model to estimate both short run and long run relationships and allows the number of lags for validity of data in the process of estimating the model (Dube & Zhou, 2013:204). Haug (2008) and Samargandi *et al.* (2013) mention that the panel ARDL eliminates the risk of using non-stationary data, gives consistency coefficient results and is appropriate for both small and large samples.

Despite the advantages the panel ARDL gives, it has its own disadvantages. One of the disadvantages is that panel ARDL is selective as it does not consider variables that are stationary at first and second difference (Nosier, 2012:212). Furthermore, Muchapondwa and Pamhidzai (2011) outline that the panel ARDL ignores the probability of cointegration. From the discussion, the Panel ARDL models advantages outweigh its disadvantages and this motivates the use of the panel ARDL model. Therefore, the researcher ran four models, namely the economic growth model, employment, poverty and the development model. The model estimations are shown below:

$$\Delta lnLEDI_{i,t} = \emptyset_i\left(lnLEDI_{i-t} - \beta_i X_{i,t-j}\right) + \sum_{j=1}^{p-1} \gamma\ {}_j^i\Delta\ (lnLEDI_{i,t-j} + \sum_{j=0}^{q-1} \delta\ \Delta(X_i)_{t-j} + \mu_i + \varepsilon_{it} \quad \text{4.12}$$

$$\Delta lngrowth_{i,t} = \emptyset_i\left(lngrowth_{i-t} - \beta_i X_{i,t-j}\right) + \sum_{j=1}^{p-1} \gamma\ {}_j^i\Delta\ (lngrowth_{i,t-j} + \sum_{j=0}^{q-1} \delta\ \Delta(X_i)_{t-j} + \mu_i + \varepsilon_{it} \quad \text{4.13}$$

$$\Delta lnemploy_{i,t} = \emptyset_i\left(lnemploy_{i-t} - \beta_i X_{i,t-j}\right) + \sum_{j=1}^{p-1} \gamma\ {}_j^i\Delta\ (lnemploy_{i,t-j} + \sum_{j=0}^{q-1} \delta\ \Delta(X_i)_{t-j} + \mu_i + \varepsilon_{it} \quad \text{4.14}$$

$$\Delta lnnpoor_{i,t} = \emptyset_i\left(lnnpoor_{i-t} - \beta_i X_{i,t-j}\right) + \sum_{j=1}^{p-1} \gamma\ {}_j^i\Delta\ (lnnpoor_{i,t-j} + \sum_{j=0}^{q-1} \delta\ \Delta(X_i)_{t-j} + \mu_i + \varepsilon_{it} \quad \text{4.15}$$

Where lngrowth, lnemploy, lnnonpoor and lnLEDI are used as the Local Economic Development proxies, X = all the key economic sectors in the Capricorn District Municipality while δ and γ stands for short-run coefficients of dependent and independent variables respectively. The subscripts i and t stands for cross-section and time respectively, β stands for long-run coefficients while u stands for fixed effect and e is the error term.

4.5.2 Lag length

The choosing of lag length in the panel ARDL should not be underestimated. It is vital to choose a lag length when running the models to avoid serial correlation and spurious results on the panel parameters (Mokatsanyane, 2016). The smaller the lag length used the more precise the error correction parameters (Pesaran *et al.,* 2001). On the other hand, the larger the lag length chosen the lower the problem serial correlation (Pesaran *et al.,* 2001). In this light, the researcher compared the lag length using the (AIC) Akaike Information Criterion, SIC and HQIC using the statistical software EViews 9.5. The best lag length across these information criteria was selected.

4.5.3 Residual diagnostic tests

The residual tests are done to confirm if the study did not come up with spurious results. The study used the cross dependency test to check the residual diagnostics of the models. The literature review prescribe tests such as the Breusch-Pagan Chi-square, Pearson LM normal and the Pearson

CD (Ertur & Musolesi, 2017; Xu *et al*., 2016). The cross-sectional dependence sets its null hypothesis on cross-section dependency while the alternative hypothesis is on no cross-section dependency. When the probabilities exceed 5 percent, we reject the null hypothesis and accept the alterative hypothesis (Pesaran, 2004). In other words, when the values are less than 5 percent, then we accept the null hypothesis.

4.6 CAPRICORN SOCIO-ECONOMIC ANALYSIS

The socio-economic analysis helps in planning and formulation of economic policies to improve economic growth, reduce unemployment, poverty and inequality (Sekhampu, 2015: 117). Thus, this section discusses the socio-economic analysis for the area under study for planning and formulation of economic policies.

4.6.1 Population and population growth

Population is the total number of all the entities and subjects that make the researchers study. The population of this study are four local municipalities in the Capricorn District Municipality. The study analyses both the population and population growth of all municipalities from 1996 to 2015.

Table 4.2: Population and population growth

Municipality	1996	2006	Annual Pop-growth	2006	2015	Annual Pop-growth	Average annual Pop-growth (1996-2015)
Blouberg Local Municipality	178 773	180 539	**0.10%**	180 539	175 085	**-0.30 %**	**-0.11%**
Molemole Local Municipality	133 807	127 613	**-0.46%**	127 613	126 370	**-0.08 %**	**-0.29%**
Polokwane Local Municipality	564 111	682 732	**2.1%**	682 732	786 457	**1.52%**	**2.07%**

Municipality	1996	2006	Annual Pop-growth	2006	2015	Annual Pop-growth	Average annual Pop-growth (1996-2015)
Lepelle-Nkumpi Local Municipality	249 184	221 787	**-1.1%**	221 787	235 491	**0.62%**	**-0.29%**
Capricon District Municipality	1 125 875	1 212 671	**0.77%**	1 212 671	1 323 403	**0.91%**	**0.92%**

Source: Author's compilation

Between 1996 and 2015 the Capricorn District Municipality population and population growth has been fluctuating. The overall population growth has grown from 0.77 percent to 0.91 percent. This gives a population growth rate of 0.92 percent from 1996 to 2015. Despite the overall increase in population growth of Capricorn District Municipality, individual municipalities such as Blouberg (-0.11), Molemole (-0.29) and Lepelle-Nkumpi (-0.22) experienced a decline in the population growth. The Molemole Local Municipality is the least in terms of population growth. Conversely, Polokwane Municipality is growing in terms of population. A majority are moving from rural areas such as Molemole, Lepelle-Nkumpi and Blouberg municipalities to Polokwane Municipality. These results are in line with the Integrated Development Plan (2016:43). It is expected that the population of Molemole, Blouberg and Lepelle-Nkumpi will keep on declining as people move to Polokwane Municipality as it is the centre of Capricorn District.

4.6.2 Population density

The population density is the measurement of entities using an area (Shabani, Akbari & Esfani, 2011:1). The study measured the population density of all the four municipalities. The higher the density, the more economic opportunities a region has (Meyer, 2012:193). Table 4.3 below shows the population density of Capricorn District Municipalities.

Table 4.3: Population density

MUNICIPALITY	AREA (km^2)	1996	2006	2015
Blouberg Local Municipality	9,540	18,74	18,92	18,35
Molemole Local Municipality	3,628	111,62	35,18	34,84
Polokwane Local Municipality	5,054	36,89	135,09	155,62
Lepelle-Nkumpi Local Municipality	3,484	71,52	63,65	67,59
Capricorn District Municipality	21.705	59.69	63.21	69.1

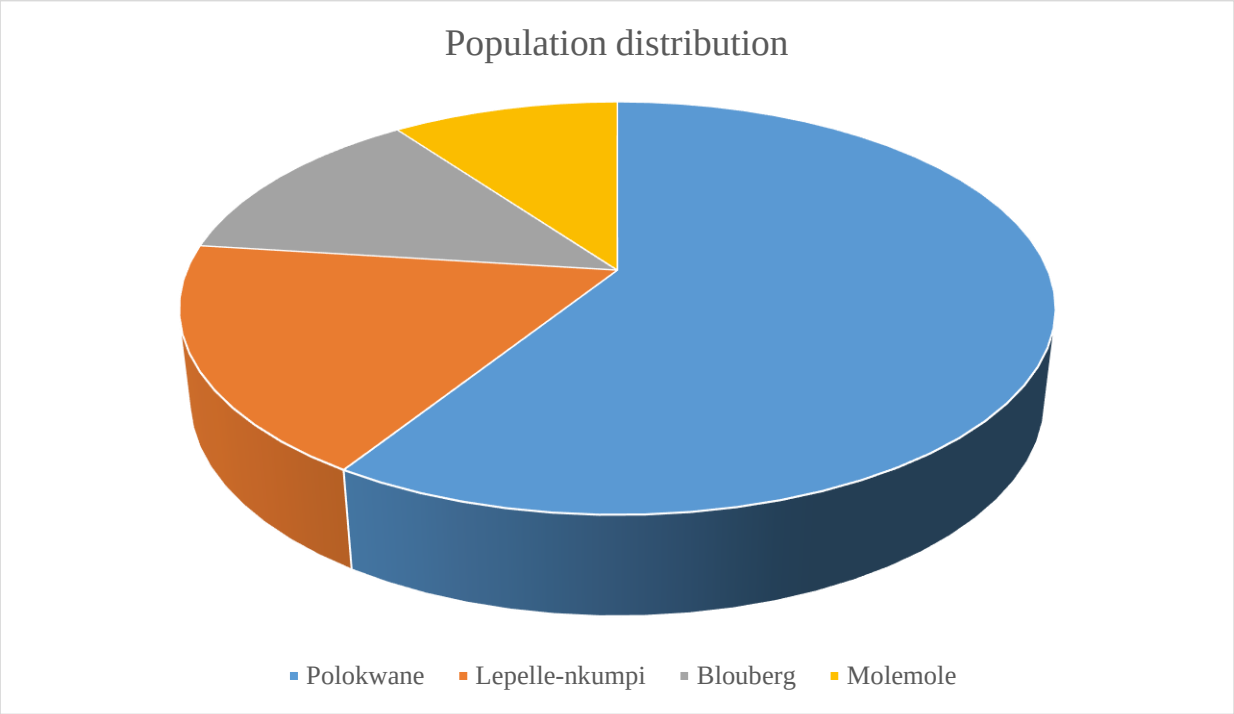
Source: Own compilation

The population density in Blouberg, Molemole and Lepelle-Nkumpi has been fluctuating since 1996 to 2015. In Blouberg the population density has declined from 18.74 to 18.35 while Molemole shows a sharp decline from 111.62 to 34.84. Thus, a low population density in these municipalities limits the population in terms of economic opportunities. On the other hand, a significant positive population density was witnessed in Polokwane Municipality from 36.89 to 155.62. This gives Polokwane a better opportunity to improve its economic opportunities though it is likely to face more socio-economic problems such as prostitution and crime. A study by the Capricorn District Municipality (2016) shows more similar results of population densities: Blouberg (18), Molemole (32), Polokwane (167) and Lepelle-Nkumpi (67).

4.6.3 Population distribution by local municipality

The population distribution is the spread of individuals within the area of the study (Linard, 2012). The study shows the distribution of the Capricorn District Municipality according to local municipalities. Figure 4.2 shows the composition of the Capricorn District Municipality. The total population for the Capricorn District Municipality is 1 323 403 with a total area of 21 705km2 (Capricorn District Municipality, 2016). The district is composed of four local municipalities namely Blouberg, Molemole, Polokwane and Lepelle-Nkumpi. The pie chart shows that more than half of Capricorn District Municipality population lives in the Polokwane Municipality. Others live in Lepelle-Nkumpi, Blouberg and Molemole with a population of 18%, 13% and 10% respectively. These results are in line with the study done by the Capricorn District Municipality (2016).

Figure 4.2: Population Distribution by Local Municipality



Source: Own compilation

4.6.4 Level of urbanisation in Capricorn

Urbanisation is an increase in the number of people moving to towns and a decrease in the number of people in rural areas in search of greener pastures (McGranaham & Satterthwaite, 2014:4). The study analyses the urbanisation of the four municipalities from 1996 to 2015. The table 4.4 below shows the trend for urbanisation

Table 4.4: Urbanisation in Capricorn District Municipality

MUNICIPALITY	1996	2006	2015
Blouberg Local Municipality	0,5%	8,3%	12,2%
Molemole Local Municipality	4,2%	7,5%	11,5%
Polokwane Local Municipality	23,1%	26,8%	32,0%
Lepelle-Nkumpi Local Municipality	15,2%	11,7%	12,4%
Capricorn District Municipality	10.8%	13.6%	17%

Source: Author's compilation from Global Insight

Table 4.4 shows the level of urbanisation in the Capricorn District Municipalities. The overall urbanisation in the Capricorn District Municipality has increased significantly since 1996 to 2015 from 10.8 percent to 17 percent. These results were also evident in the district according to the study done by the Capricorn District Municipality (Capricorn District Municipality, 2016). Urbanisation in Blouberg has increased from 0.5 percent to 12.2 percent, Molemole from 4.2 percent to 7.5 percent and Polokwane from 23.1 percent to 32 percent. This implies that people within these municipalities move from rural areas going to urban areas in search of sustenance. On the other hand, urbanisation in the Lepelle-Nkumpi Municipality has been fluctuating since 1996 to 2015. From 2006 to 2015, urbanisation increased from 11.7 percent to 12.4 percent. Urbanisation is expected to increase as more people will be moving from rural areas to urban areas.

4.6.5 Unemployment in Capricorn district municipality

Unemployment is a concept that results when the quantity supplied outweighs the quantity of labour demanded (Mohr & Fourie, 2004:344). In addition, the ILO (1998) outlines conditions that classify an individual as unemployed. An unemployed person is one without work, currently available for work and seeking for work (Byrne & Stroble, 2001:5). This section discusses the unemployment in the Capricorn region. Table 4.5 shows the unemployment in the Capricorn region.

Table 4.5: Unemployment in the Capricorn District Municipality

MUNICIPALITY	1996	2006	2015
Blouberg Local Municipality	5 805 (37.5%)	8 129 (35.9%)	5 877 (22%)
Molemole Local Municipality	5 060 (24.6%)	7 907 (28.6%)	6 115 (20%)
Polokwane Local Municipality	25 546 (23.6%)	52 991 (26.2%)	41 432 (15%)
Lepelle-Nkumpi Local Municipality	12 115 (35%)	16 468 (38.9%)	12 461 (23%)
Capricorn District Municipality	48 526 (27.2%)	85 495 (29%)	65 885 (17%)

Source: Own compilation

Table 4.5 shows the number of people and the percentage of the unemployed in the Capricorn District Municipality. In the year 1996 the highest unemployment rate was seen in the Blouberg Local Municipality (37.5%) while Polokwane Local Municipality had few individuals who were unemployed. In 2006 and 2015, Lepelle-Nkumpi was the local municipality with the highest unemployment rate (38.9%) and Polokwane still had the lowest unemployment rate. The unemployment rate was high between 1996 and 2006 for all the local municipalities. Conversely, from 2006 to 2015 a decline in unemployment in all the local municipalities was seen. These results are in line with the Capricorn District Municipality (2016); they found that unemployment in the district is increasing.

4.6.6 Tress index

Tress Index is a measure of diversification and economic activity in a region (Meyer, 2013). An index that is zero indicates a totally diversified economy while at the same time an index that moves to 100 indicates vulnerability to economic shocks (Development Bank of Southern Africa, 2001:37). Table 4.6 below shows a Tress Index for Capricorn District Municipalities.

Table 4.6: Tress index in Capricorn District Municipality

MUNICIPALITY	1996	2006	2015
Blouberg Local Municipality	57,60	57,76	51,25
Molemole Local Municipality	50,88	51,94	52,34
Polokwane Local Municipality	56,21	57,38	56,95
Lepelle-Nkumpi Local Municipality	57,38	58,95	57,47
Capricorn District Municipality	55.52	56.51	54.50

Source: Own compilation

Table 4.6 shows a Tress index of the Capricorn District Municipality. The Lepelle-Nkumpi Local Municipality is the most diversified municipality, followed by Blouberg, Polokwane and Molemole municipalities. Thus, these municipalities rely on many sectors for economic growth and employment. Overall, the Capricorn District Municipality shows an average tress index of 55.51. This means the Capricorn District Municipality has been diversified from 1996 to 2015. Thus, the district does not rely on one or a few sectors but relies on mining, finance, trade, tourism

and agriculture. Of note is that a more detailed analysis of the key economic sectors in the Capricorn District Municipality is discussed in chapter five.

4.7 SUMMARY

Chapter 4 presented the research methodology used in the study. The study used the literature review and empirical literature to achieve the study objectives. The literature review lacks the panel quantitative studies on LED and this chapter bridged the research gap by employing a panel Autoregressive Lag model. The study analyses the key economic sectors that promotes LED. The target population was the Capricorn District Municipality. The researcher used all the key sectors in the Capricorn District Municipality to check if they added value on economic growth, employment and poverty alleviation. To achieve this, statistical tests were done, namely the trend analysis, the descriptive statistics, the correlation analysis and the panel unit root test. Thereafter, the researcher employed the short-run and long-run analysis to check the relationship between key economic sectors and LED.

The study used economic growth, employment, poverty and the local economic development measures as proxies of LED. These proxies were used as dependent variables. Conversely, the mining sector, manufacturing sector, agriculture sector, trade sector, tourism sector, community service sector, construction sector, and the electricity and utility sector were used as independent variables. All these data variables were provided by the World Insight Data from 1996 to 2015. The study used EViews 9.5 to perform all the statistical tests and estimate the equation. Following the statistical tests, Chapter 5 presents the results and discussions.

CHAPTER 5
EMPIRICAL RESULTS AND DISCUSSION

5.1 INTRODUCTION

The main objectives of LED are to create jobs, improve economic growth and alleviate poverty. Similarly, the Capricorn District Municipality also aims at creating jobs, improving economic growth and alleviating poverty (Machaka, 2012). The literature review and empirical literature in chapters two and three have highlighted different ways or methodologies that are used to meet the aforementioned objectives. Some of the methods include the number of projects undertaken in a region, the number of jobs created, the resources and the capacity of a region (Nel, 2003; Rogerson, 2009; Musakwa, 2009). However, the literature review shows the scarcity of panel ARDL analysis on LED at regional level (Musakwa, 2009; Triegaardt, 2014; Stiftung, 1999; Van Rooyen, 1997). This study presents the panel ARDL results on key economic sectors promoting economic growth, employment, poverty reduction and development. The study first discusses the graphical analysis, descriptive statistics and the correlation of the variables used in the study. The chapter further presents the results of the panel unit root test, analysis of the long-run equation, the error correction model and the results of the residual tests of economic growth, poverty, employment and local economic development measures. The next section discusses the graphical analysis used in the study.

5.2 GRAPHICAL ANALYSIS OF VARIABLES IN THE STUDY

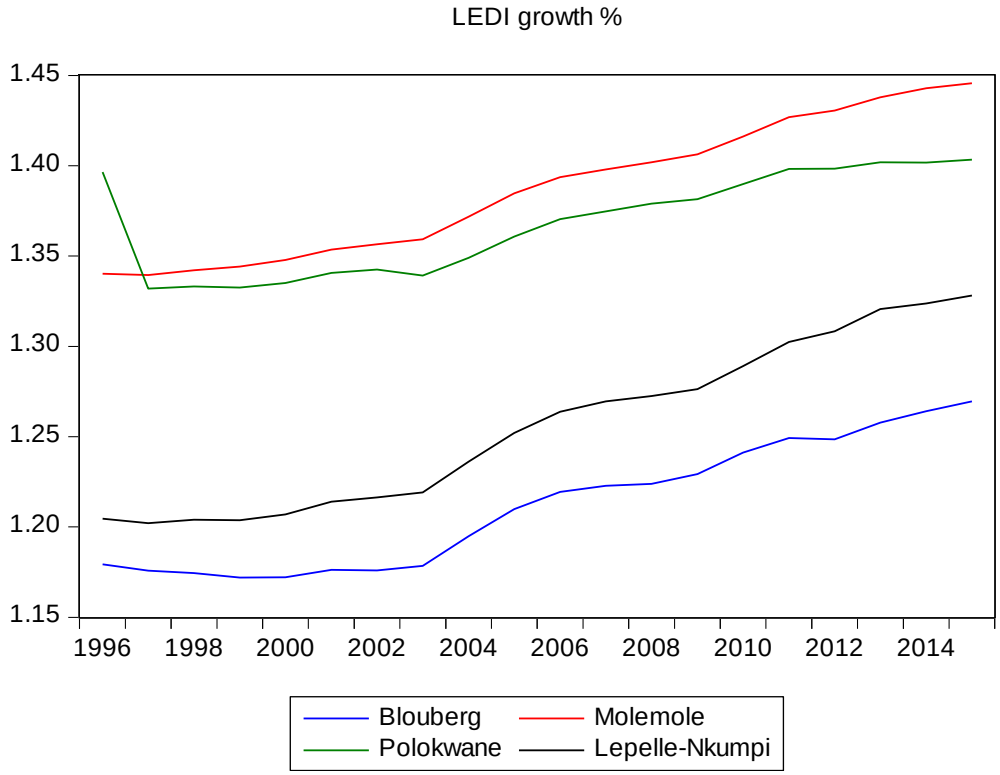
The graphical analysis is important as it gives an indication of how variables are related. This section discusses both the dependent and independent variables to check if any pattern exists between these variables.

5.2.1 Local economic development index (LEDI) trend in Capricorn district

Figure 5.1 shows the trend of the Local Economic Development Index in the Capricorn District Municipality. The measure is made up of economic growth, employment and poverty alleviation (non-poor). Figure 5.1 shows that local development was very low in Blouberg and Lepelle-Nkumpi. This has been attributed to low productivity in the electricity, community service and finance sectors. From 1997 to 2003 the local development was stable for Polokwane and Molemole. This was caused by a decrease in poverty in all the municipalities. The trend for local

economic development kept on increasing in all the four municipalities. These findings are in line with the Capricorn Municipality (2016).

Figure 5.1: Local Economic Development Index trend in Capricorn District Municipality

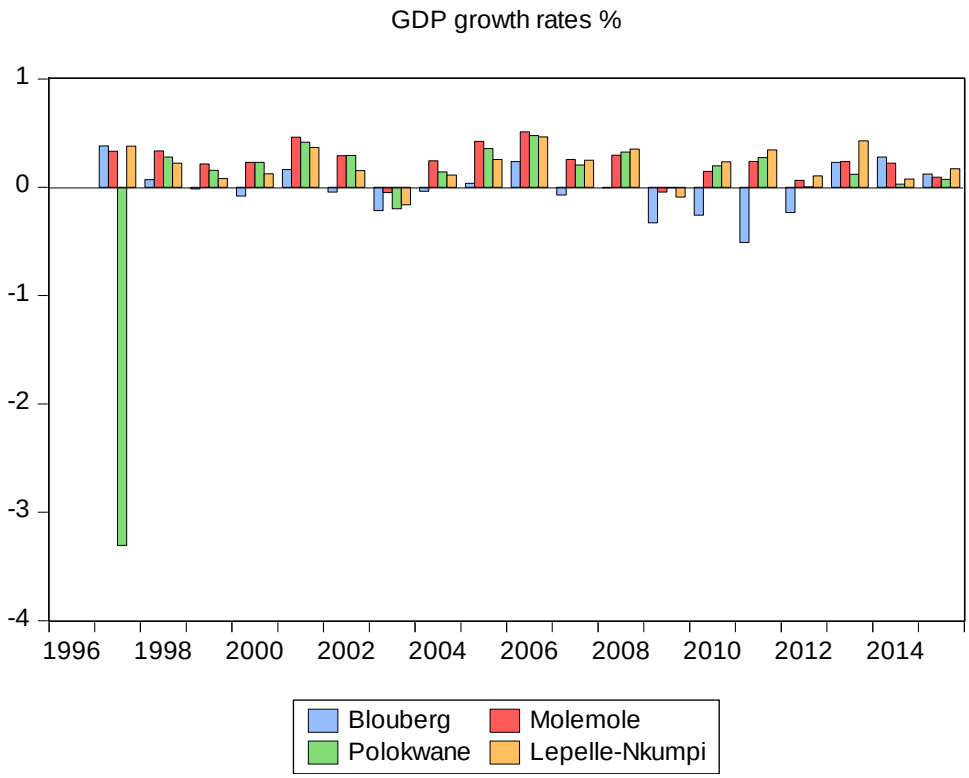


Source: Own compilation

5.2.2 Trend in economic growth (GDP per capita) in Capricorn district municipality

The GDP per capita trend shows a lower economic growth rate in the Capricorn District municipalities. The average economic growth in the district is 0.5 percent. However, individual municipalities such as Polokwane, Blouberg and Lepelle-Nkumpi show a negative economic growth in the years 1997, 2000-2002 and 2009-2012. The negative growth rates were caused by the lower productivity of other sectors, drought, recession and decline in investment. Thereafter, all the municipalities experienced a positive economic growth rate due to other sectors that improved drastically such as construction and trade. These trends are similar to South Africa`s economic growth rates (Statistics South Africa, 2016). The South African economic growth is recorded at 0.7 percent (Statistics South Africa, 2017). The decline in economic growth was caused by drought, loss of jobs and lower productivity of other sectors.

Figure 5.2: Gross Domestic Product Growth rates in Capricorn District Municipality

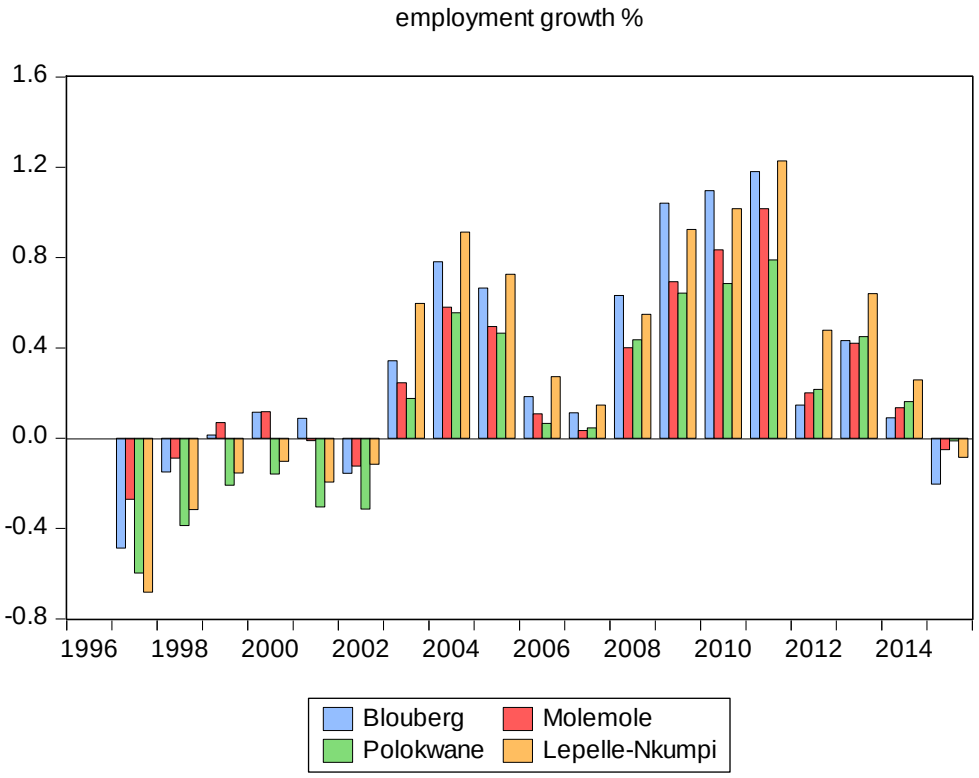


Source: Own compilation

5.2.3 Trend in employment in Capricorn district municipality

The trend in employment shows a negative growth from 1996 to 2002 for the majority of the municipalities. Thereafter, employment growth improved for all the local municipalities. Thus, good policies were put in place to promote job creation. Between 2006 and 2009 the employment growth declined for all the municipalities and it averaged at 0.2 percent. The decline was caused by a decrease in employment in the mining, trade and community service sector. Thereafter, the employment growth improved drastically, thus all the municipalities maintained jobs and created opportunities for its residents. The increase was attributed to an increase in the agricultural sector, finance sector and the construction sector. The findings of the study are similar to the findings of the Western Cape Province. It recorded an employment growth rate of 1.2 percent in all sectors which is significantly low (Municipal Economic Review and Outlook, 2016). This has been attributed to the drought and job losses in key economic sectors.

Figure 5.3: Employment growth rate trend in Capricorn District Municipality



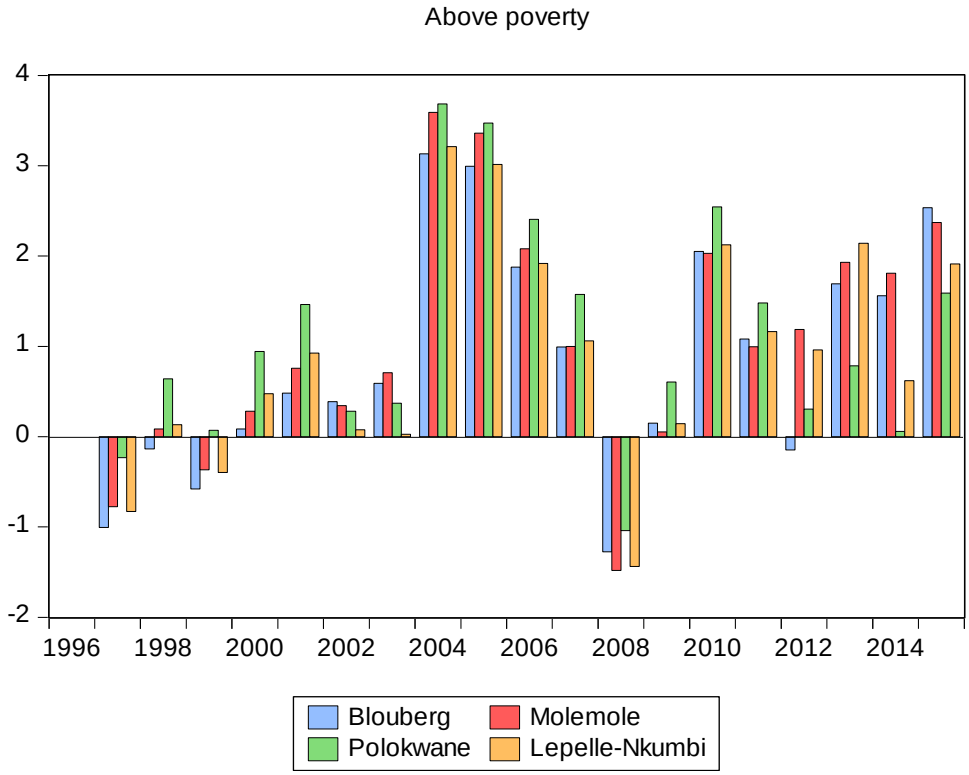
Source: Own compilation

5.2.4 Trend in poverty alleviation (non-poor) in Capricorn district municipality

Poverty is common in South Africa specifically in the Capricorn District Municipality. Figure 5.4 shows the percentage of people above the poverty line (non-poor) in the Capricorn District Municipality. Between 1996 and 1999 there were very few people living above the poverty line in all the municipalities. This also implies that the majority of people in the district are living under poverty. From 2000 to 2007 the trend began to change as more people lived above the poverty line. This can be attributed to the introduction of LED in the region as more local governments started implementing the LED concept. In 2008 all the numbers dropped to negative for all the municipalities. This might have been caused by the financial crisis and economic shocks in the district. Thereafter, the number of people above the poverty line started increasing. These findings are similar to the findings by the Capricorn District Municipality (2016). Similar findings were found by Statistics South Africa (2016). They propound that Kwazulu-Natal experienced high levels of poverty, thus few people are living above the poverty line. On the other hand, Gauteng

and Western Cape are the highest provinces in terms of people living above the poverty line (Statistics South Africa, 2016).

Figure 5.4: Poverty alleviation growth rate trend in Capricorn municipalities



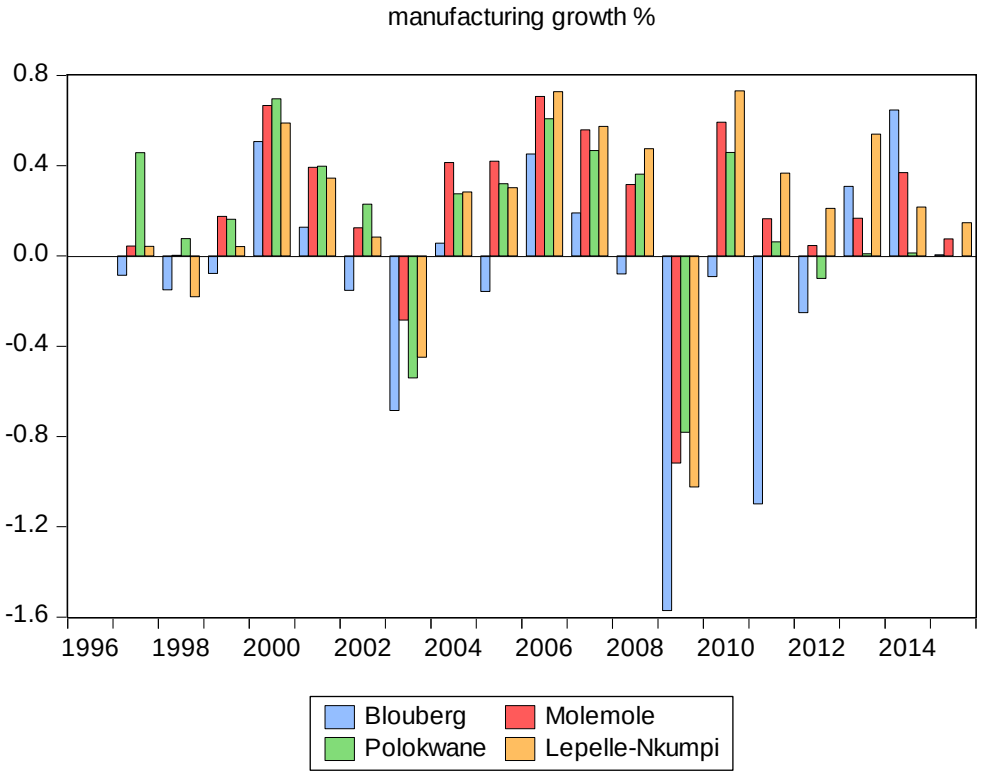
Source: Own compilation

5.2.5 Trend in productivity of manufacturing sector in Capricorn district municipality

The graph shows the manufacturing sector trend of the Capricorn District Municipality. The manufacturing sector of Polokwane Local Municipality recorded the highest output growth compared to other municipalities from 1996 to 2002. During the period 2002-2003 and 2008, the manufacturing sector growth was negative for all the municipalities. This was contributed to by the slowdown of the economy, drought and external shocks. From 2009, Polokwane and Lepelle-Nkumpi never experienced a negative manufacturing growth due to an increase in output in subsectors such as chemical, wood and paper production while Molemole and Blouberg experienced negative output growth in 2010 and 2012. This was attributed to an increase in the cost of production and low output of other sectors such as the agriculture and mining sector (Industrial Development Corporation, 2016). The manufacturing growth trends are similar to the

Boland District Municipality (Boland District Municipality, 2016). This implies that both municipalities were affected by drought, shortage of electricity and the slowdown of the economy.

Figure 5.5: Manufacturing productivity growth trend in Capricorn District Municipality

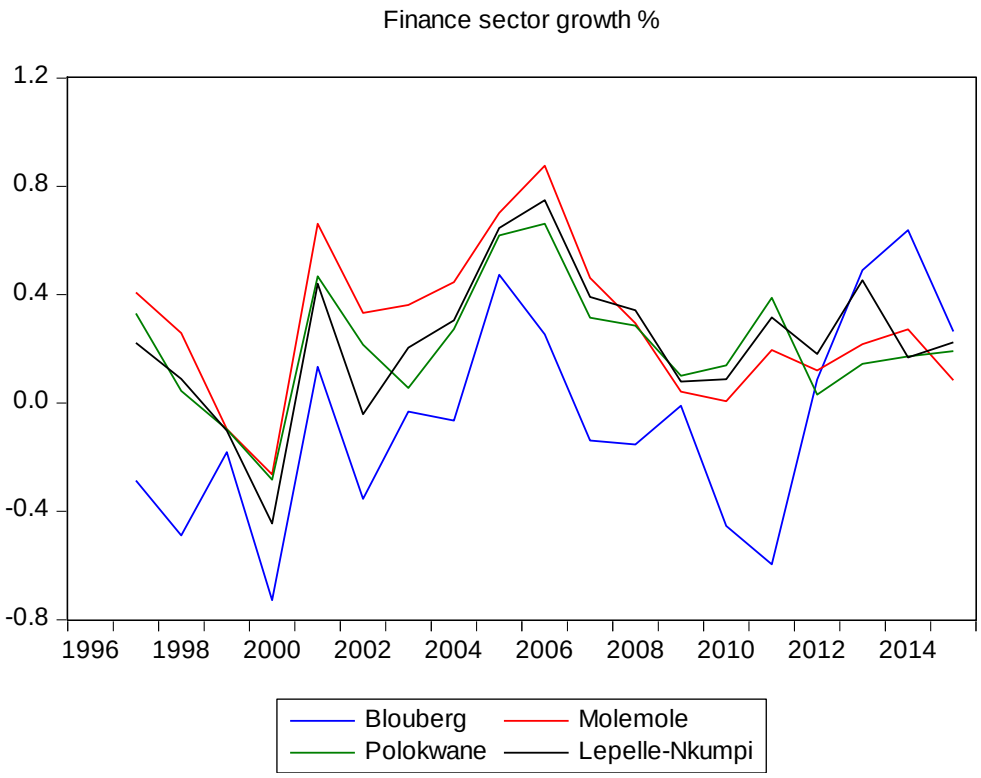


Source: Own compilation

5.2.6 Trend in productivity of finance sector in Capricorn district

Figure 5.6 shows the finance sector growth trends for the Capricorn District Municipality. The finance growth sector has been fluctuating in all the four municipalities. Figure 5.6 shows the decline in the financial output for all the four municipalities between the periods of 1996 and 1999. Thereafter, a sharp decline in finance sector growth was experienced in 2000 in all municipalities due to a fall in assets value and an increase in interest rates that caused the investment, aggregate demand and level of output to decline. From 2001 to 2002 the finance sector growth increased to an average of 0.7 percent. Between 2007 and 2011 the finance sector trend dropped in all municipalities due to the financial crises and a fall in the assets value. The productivity of the finance and business sector is similar to the Khayelitsha Municipality (Quantec Research, 2016). The finance and business sectors in both districts were affected by the drought, the slowdown of the economy, fall in assets value and an increase in interest rates that caused investment, aggregate demand and level of output to decline.

Figure 5.6: Productivity of finance sector growth trend in Capricorn District Municipality

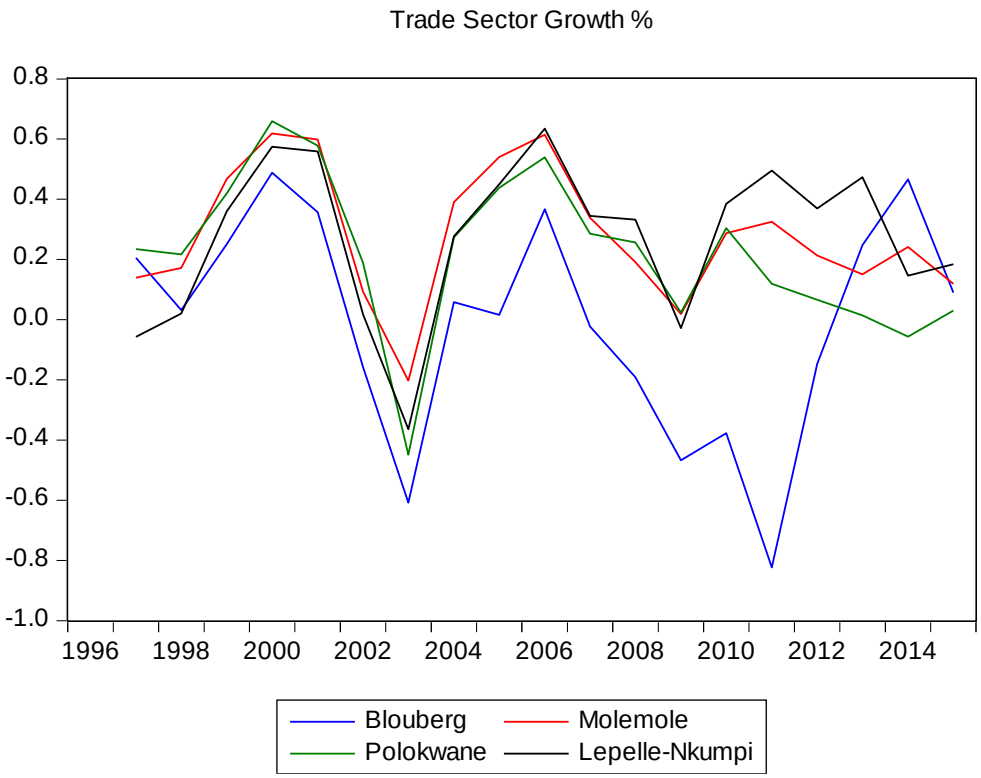


Source: Own compilation

5.2.7 Trend in productivity of trade sector in Capricorn district

The Capricorn District trade sector growth rates have been fluctuating over the time period of the study. Figure 5.7 shows a sharp decline between 1999 and 2000 in the trade growth rate for all municipalities. The output was compromised due to drought, decline in the productivity of the manufacturing sector and the exports of manufacturing products. The trend improved between 2003 and 2005 as the trade sector improved its production. The Capricorn District Municipality managed to maintain the stability in the trade sector except for Blouberg Municipality that registered a -0.8 percent growth rate in the year 2011. A similar conclusion was found in the Southern Local Municipality (Quantec Research, 2016). The trade sector in the municipality was fluctuating over time and this was caused by the decline in the manufacturing productivity and drought.

Figure 5.7: Trade Sector productivity growth rate trend in Capricorn District

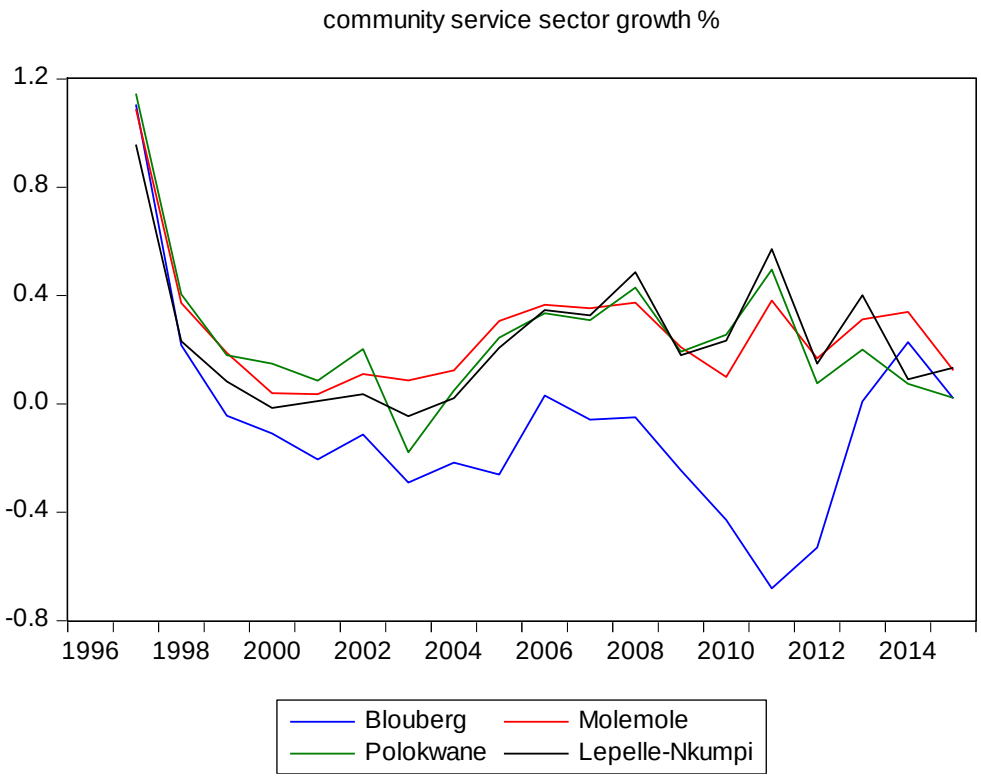


Source: Own compilation

5.2.8 Productivity of community service sector trend in Capricorn municipality

The trend for community service sector has been stable for Molemole, Polokwane and Lepelle-Nkumpi while declining for Blouberg Municipality. The trade growth rate for the three municipalities averaged at 0.6 percent between 1996 and 2015. The trend is in line with the survey done by the Capricorn District Municipality (2016). The municipality found out that the community sector is the main sector in the district. Conversely, Blouberg experienced a negative growth in the sector from 1998 to 2013. This has been attributed to economic shocks such as a decrease in the productivity in the sector and lack of creativity in the community service sector. However, the Blouberg community service improved from 2014 to 2015. A similar trend was found in Sekhukhune District Municipality (Sekhukhune District Municipality, 2016). All the districts rely on the community and service sector for economic growth, employment and poverty alleviation. Although the sector is the pillar for local economic development, it is affected by lack of creativity in the sub-sectors.

Figure 5.8: Productivity of community service sector growth trends in Capricorn

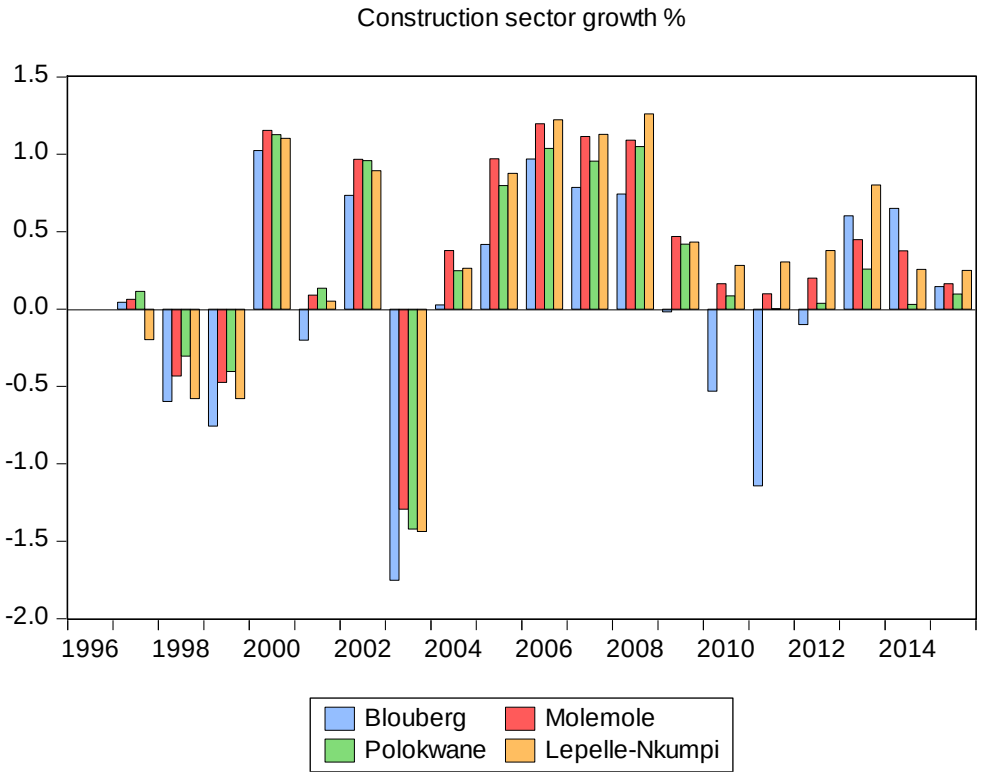


Source: Own compilation

5.2.9 Productivity of construction sector in Capricorn district

Figure 5.9 shows the growth rate in the construction sector. The results show the 1996 growth rate for Blouberg, Molemole and Polokwane municipalities as 0.1 percent, 0.2 percent and 0.3 percent respectively. From 1998 to 2000 all the municipalities experienced negative growth averaging at -0.5 percent. The negative decline might have been caused by the shortage of skills in the industry. All the municipalities' trade growth rate increased to about 1% in 2001 and decreased significantly in the year 2003. The increase was attributed to new skills acquired in the sector while the decrease was caused by the economic shocks in the Capricorn District Municipality. From 2004 to 2008 the construction sector has been stable with an average growth of 1percent. Thereafter, the Blouberg experienced a negative growth rate in the sector from 2009-2012. This has been attributed to recession and other economic shocks. Another municipality that experienced a similar trend is the Table Bay Local Municipality (Provincial Treasury, 2016). Its productivity trend improved up to a certain stage and eventually declined due to economic shocks in the local municipality.

Figure 5.9: Construction sector productivity in Capricorn District Municipality

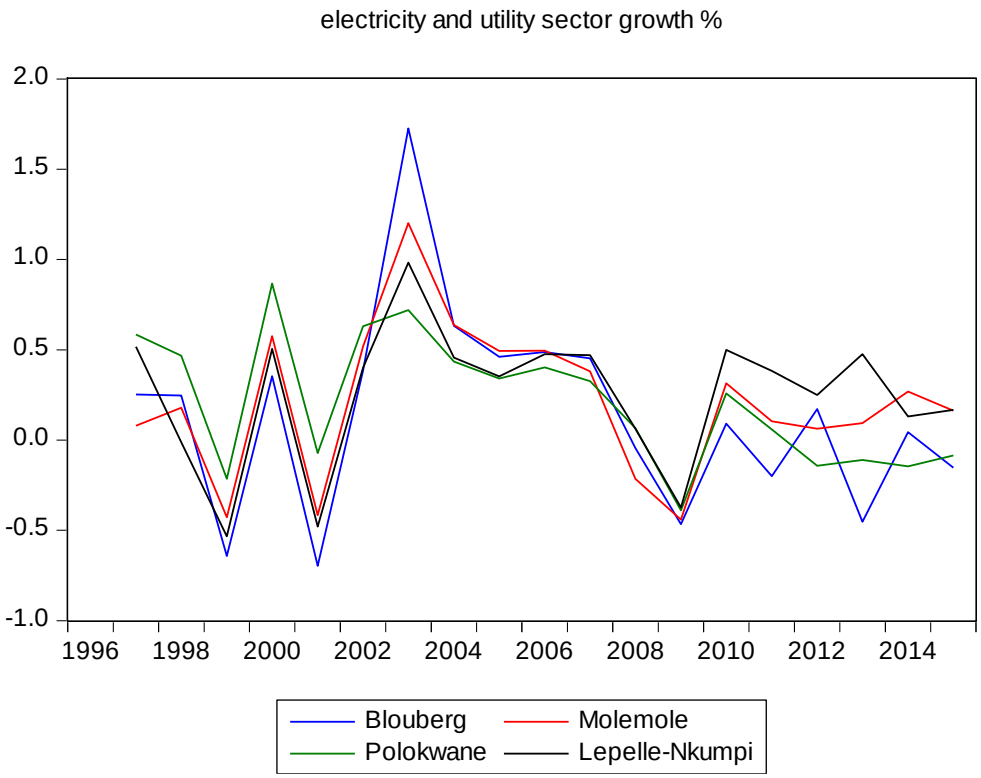


Source: Own compilation

5.2.10 Trends in electricity and utility sector

The electricity sector has not been stable across all the municipalities. A significant decline was seen in all the municipalities in the period 1999, 2000 and 2009 while in 2003 all the municipalities increased in output growth, recording an average of about 1.3 percent. The decline in the electricity sector was caused by loss of jobs in the sector, economic shocks and less productivity in the sector. Blouberg experienced a further decline in 2003 and later on had similar trends with other municipalities. Heidelberg Local Municipality shows a similar trend (Provincial Treasury, 2016). The productivity of Heidelberg has been fluctuating since 1996 to 2015. Some of the causes include less productivity by sub-sectors.

Figure 5.10: Productivity of electricity and utility sector in Capricorn Municipality

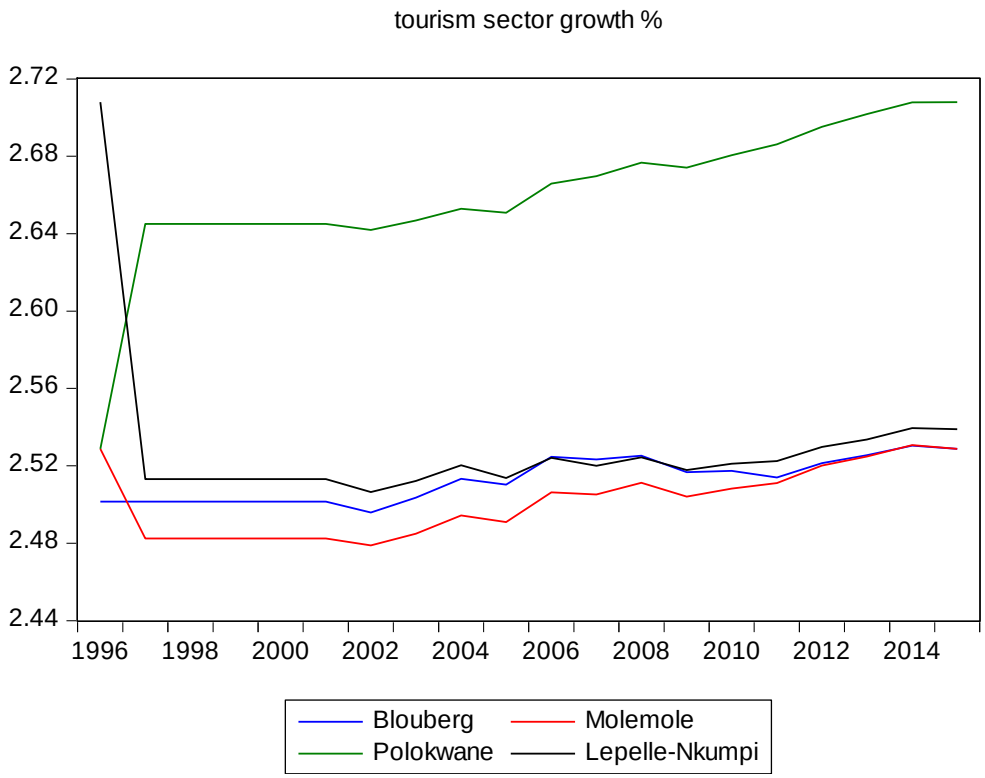


Source: Own compilation

5.2.11 Productivity trend of tourism sector

Figure 5.11 shows a sharp decline from 1996 to 1997 for Lepelle-Nkumpi Municipality. This has been attributed to economic shocks. During the same period the tourism growth rate for Polokwane Municipality grew by 0.2 percent. For Blouberg, Lepelle-Nkumpi and Molemole the sector growth has been stable from 1997 to 2015. Polokwane Municipality has the highest output compared to other municipalities. The tourism in the Limpopo Province has been struggling and the Capricorn also shows a similar trend (Capricorn District Municipality, 2016). The province and district lack the tourism marketing strategies to boost the productivity of the sector. These trends are similar to the studies done in North West municipalities (Statistics South Africa, 2016).

Figure 5.11: Tourism sector productivity trend in Capricorn District Municipality

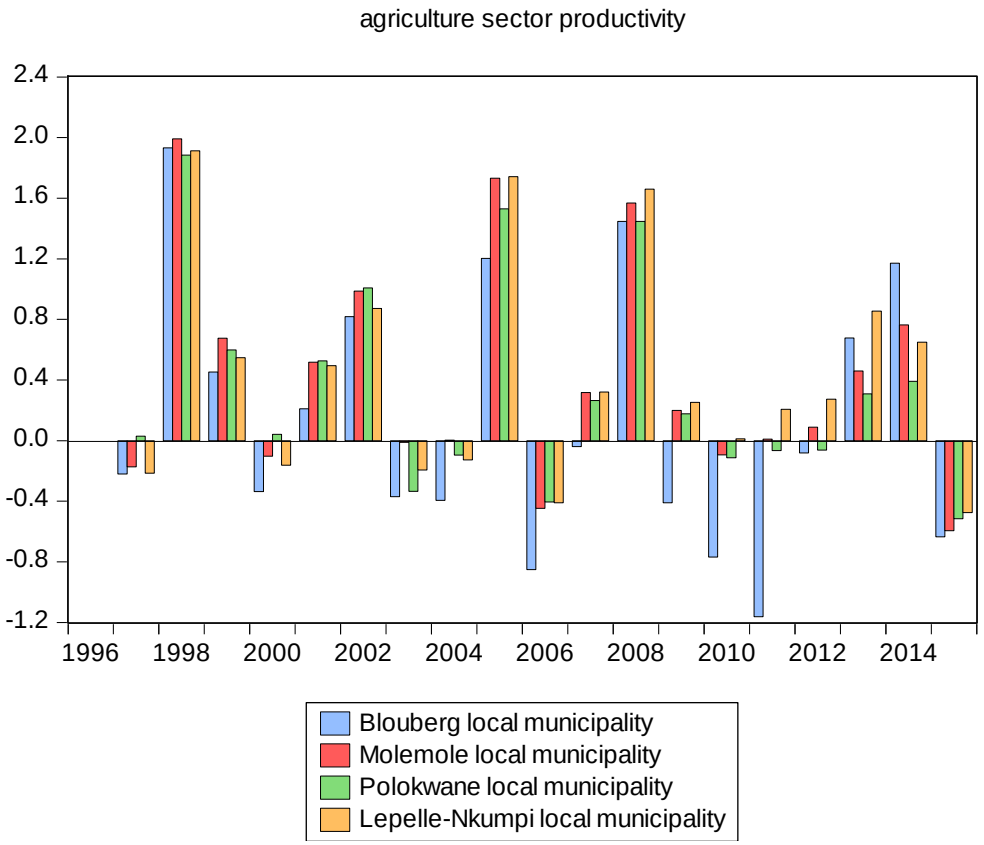


Source: Own compilation

5.2.12 Agriculture sector productivity

The agriculture sector trend has been fluctuating over the period of the study. Figure 5.12 shows a decline from 1996 to 1997 of 0.2 percent in all local municipalities. From 1998 to 1999 the agriculture growth increased to 2 percent. The increase in the productivity was attributed to subsidies by the government. However, in 2000 and 2001 all the municipalities except Polokwane Local Municipality had a negative productivity growth. These results are in line with the study done by the Capricorn District Municipality (2016). Since 2001, the agriculture sector trend has been fluctuating and Lepelle-Nkumpi has been contributing much to the agriculture compared to other local municipalities. On the other hand, the Blouberg Municipality struggled to maintain positive growth rates in the sector. This has been caused by the policies in the municipality that failed to promote the sector. In addition, the drought also played a significant role. Statistics South Africa (2016) has also shown similar trends in the agriculture sector of the study done in Mpumalanga Province.

Figure 5.12: Trend in agriculture productivity

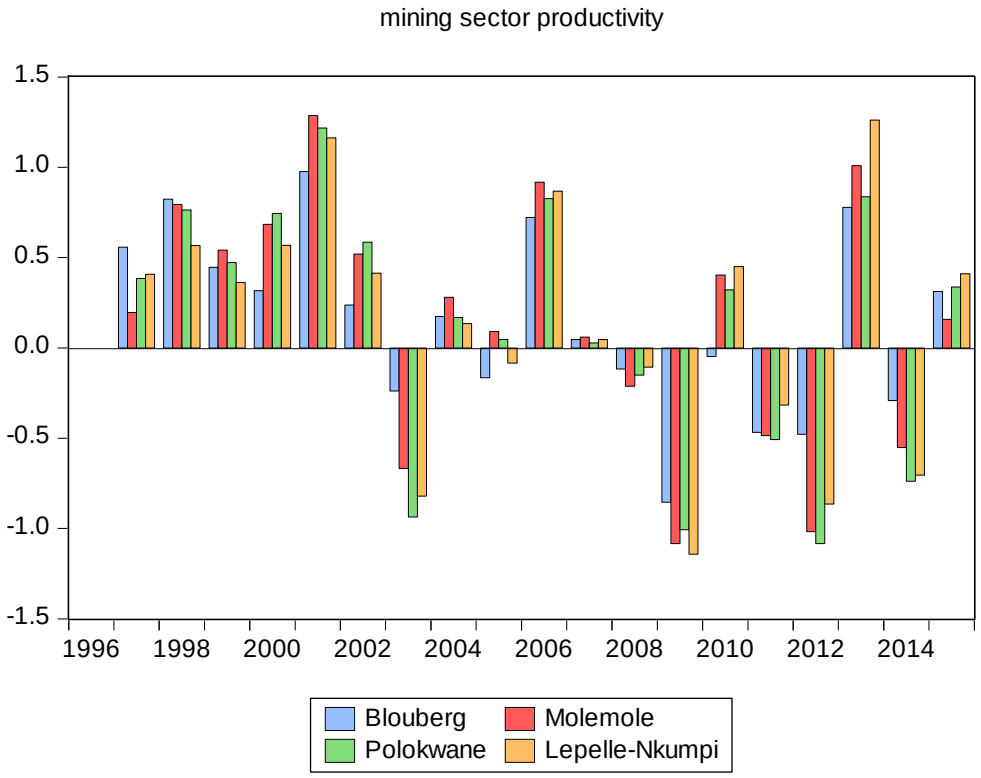


Source: Own compilation

5.2.13 The mining sector productivity

The mining sector trend has been fluctuating over the period of the study. Figure 5.13 shows an average positive growth of 0.8 percent from 1996 to 2002 in all local municipalities. In 2003, the mining growth declined in all the sectors. This was caused by the mining strikes and drought. After 2003, there was a great improvement in all the municipalities due to improvement in the production methods used in the mining sector. These findings are similar to the findings of the Capricorn District Municipality (2016). Lepelle-Nkumpi and Molemole local municipalities are the most contributing sectors to the mining sector in the Capricorn District Municipality. The Capricorn District Municipality trends are in line with the national mining trends (Statistics South Africa, 2016).

Figure 5.13: Mining sector productivity trend

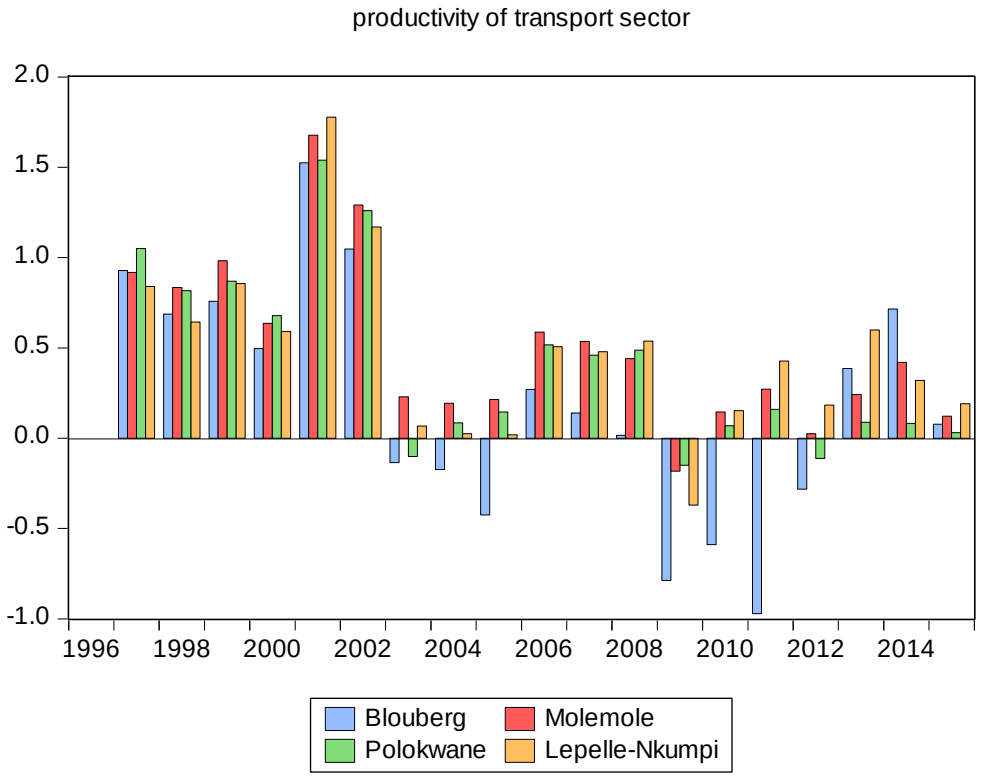


Source: Own compilation

5.2.14 Transport sector productivity

Figure 5.14 shows the growth rate in the transport sector. The results show that from 1996 to 2001 all the municipalities' transport sector productivity were positive. The sector recorded an average of 1.5 percent of transport sector productivity. The increase in output was attributed to new skills acquired in the sector and the productivity of transport sub-sectors. From 2002 to 2010 the Blouberg Local Municipality experienced negative productivity growth while the Lepelle-Nkumpi Local Municipality has been stable. Blouberg Municipality was affected by the economic shocks in the local municipality. The Lepelle-Nkumpi and Polokwane local municipalities are the highest contributors to the transport sector output. Another municipality that experienced a similar trend is the Table Bay Local Municipality (Provincial Treasury, 2016). Its productivity trend improved up to a certain stage and eventually declined due to economic shocks in the local municipality.

Figure 5.14: Productivity trend of transport sector



Source: Own compilation

5.3 ANALYSIS OF DESCRIPTIVE STATISTICS

The descriptive statics are done before the econometrics analysis to describe the characteristics of the variables used in the study. The study used economic growth, employment, poverty, local development measures, trade, the transport sector, construction sector, mining sector, manufacturing sector, tourism sector, finance sector, electricity sector and community service sector. This section analyses the mean, median, maximum and minimum standard deviation and the number of observations. The results are shown in the appendix B and table 5.1.

Table 5.1: Summary of descriptive statistics

Variable	MEAN	MEDIAN	MAX	MIN	SD	OBS
lnLEDI	3.702315	3.781254	4.24479	3.223848	0.304418	80
lngrowth	3.278343	3.267707	4.199908	2.581495	0.455661	80
lnemploy	4.307549	4.267066	4.886321	3.962009	0.284343	80
lnnonpoor	3.145949	3.203938	3.810879	2.358329	0.376480	80
lntrade	13.90127	13.64707	15.80476	12.59254	1.056074	80
lntrans	12.53333	12.32052	14.55255	10.89131	1.131477	80
lnconstr	12.27171	11.94417	14.17149	11.02778	0.989055	80
lnmining	13.17173	12.93174	14.32209	12.32402	0.948992	80
lnmanufac	12.23354	11.94680	14.12443	10.81967	1.069577	80
lntourism	12.85764	12.43752	14.99882	11.92841	0.948992	80
lnfinance	13.94058	13.47114	16.01995	13.01446	1.032206	80
lnelectr	11.51613	11.14909	13.18485	10.55770	0.888378	80
lncomus	14.43882	14.24620	16.17036	13.23871	0.910396	80

Source: Compiled by author

Table 5.1 summarises the descriptive statistics of all the variables used in this study. The results of the descriptive statistics shows significant variations in minimum and maximum values of local economic development. For economic growth (lngrowth) the minimum and maximum values are 2.58 and 4.20 accordingly, employment (lnemploy) minimum and maximum values are 3.96 and 4.87 respectively and poverty alleviation (lnnonpoor) minimum and maximum are 2.36 and 3.81 respectively. The average value of economic growth (lngrowth) is 3.28 percent, which is the lowest for the Capricorn District. On the other hand, employment (lnemploy) has the highest average value of 4.3 percent. For the key economic sectors, the community service sector has the highest average of 14.4 percent in all four municipalities. Other sectors that also have a higher average output are trade (lntrade) 13.9 percent, finance (lnfinance) 13.9 percent, and tourism (lntourism) 12.8 percent suggesting a greater contribution to LED. The highest standard deviation is 1.13 and

the lowest standard deviation is 0.91. Therefore, the smaller the standard of deviation the closer the values to the mean. The values of this study are closer to the mean.

5.4 CORRELATION ANALYSIS

Correlation analysis is a numeric method that checks the degree of interaction between two or more variables (Freeman & Young, 2009:31). The association between variables can be either positive or negative. A positive and closer to 1 signifies a strong relationship between variables while a negative coefficient closer to 1 signifies a strong negative linear relationship (Brooks, 2014:151). In the event that the variable is zero, it means there is no relation between variables (Freeman & Young, 2009:31). Furthermore, Ritchie (2014) specifies that if the correlation is between 0.1 and 1.5 the relationship is weak and between 0.9 and 1 it is very strong. Appendix C and figure 5.2 illustrates the correlation analysis of all the variables used in the study.

Table 5.2 shows a positive relationship between economic growth (lngrowth) and all the key economic sectors. The lngrowth is closely related to the construction sector (0.8540), finance sector (0.7186), agriculture sector (0.9404) and electricity sector (0.7242). All these sectors have a significant p-values of 0.0000. In other words, there is a strong economic relationship and the variables are moving in a similar way. Such a relationship is in line with the economic theory which states that the higher the sectorial output the higher the economic growth (Dlamini, 2012; Ojakaiye *et al.,* 2016). The employment sector (lnemploy) also show a positive association with the key sectors. All the correlations range from 0.1086 to 0.5330, thus: the agriculture sector (0.5330), community service sector (0.1291) and construction sector (0.2917). This relationship shows a strong link between employment and key economic sectors as all the p-values are significant at 0.0000. The association is in line with the economic theory which states that output growth improves employment (Seyfriend, 2005; Zalk 2014).

All correlations are positive between LED, poverty and key economic sectors. This shows that LED, poverty and key economic sectors move in the same direction. Godog and Dewbre (2010) emphasised that key economic sectors should improve economic development and poverty. Therefore, based on the correlation analysis the researcher conclude that economic growth, poverty, employment and the key economic sectors are associated. Despite the correlation confirming this, it does not provide the direction of the relationship but rather confirms that variables are associated. Thus, the study continued the panel unit root tests.

Table 5.2: Correlation analysis

Probability	lnagric	lncomus	lnconstr	lnLEDI	lnelectr	lnemploy	lnfinance	lngrowth	lnmanufac	lnminin	lnnonpoor	lntrans
lnagric	1.000											
lncomus	0.882	1.000										
	0.000	-----										
lnconstr	0.9409	0.9775	1.000									
	0.0000	0.0000	-----									
lnLEDI	0.8350	0.5370	0.6766	1.000								
	0.0000	0.0000	0.0000	-----								
lnelectr	0.8757	0.9653	0.9577	0.5185	1.000							
	0.0000	0.0000	0.0000	0.0000	-----							
lnemploy	0.5355	0.1291	0.2917	0.8901	0.1086	1.000						
	0.0000	0.2535	0.0086	0.0000	0.3374	-----						
lnfinanc	0.8727	0.9375	0.9334	0.5111	0.9789	0.1240	1.000					
	0.0000	0.0000	0.0000	0.0000	0.0000	0.2729	-----					
lngrowth	0.9404	0.7753	0.8544	0.9184	0.7242	0.6790	0.7186	1.000				
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-----				
lnmanufac	0.9365	0.9793	0.9811	0.6458	0.959	0.27561	0.94163	0.85081	1.000			
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0133	0.0000	0.0000	-----			
lnminin	0.7722	0.9443	0.8983	0.3604	0.9475	-0.0767	0.8920	0.6244	0.9082	1.000		
	0.0000	0.0000	0.0000	0.0010	0.0000	0.4988	0.0000	0.0000	0.0000	-----		
lnnonpoor	0.7722	0.6916	0.7865	0.7208	0.7251	0.4081	0.6573	0.7112	0.6864	0.6564	1.000	
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0000	0.0000	0.0000	0.0000	-----	
lntrans	0.9795	0.9445	0.9716	0.7397	0.9350	0.3909	0.9144	0.8997	0.9785	0.8744	0.7584	1.000
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0003	0.0000	0.0000	0.0000	0.0000	0.0000	-----

Source: Eviews

5.5 RESULTS OF THE STUDY

5.5.1 Panel unit root test

The panel unit root test is the first step in model estimation. It is a concept that is used to check if the variables are integrated in the same order or not. This process is vital since it determines the estimation method to be used in the study. To achieve this, the LLC, IPS, ADF and PP and Hadri panel unit root tests were used to check for stationarity. All the above mentioned methods set their null hypothesis at non-stationary and stationary as null hypothesis except Hadri. The rule of thumb is that we reject the null hypothesis if the p-values are less than 0.05 and accept the null hypothesis if the p-values are more than 0.05. Appendix D and table 5.3 present results of panel unit root test at level and first difference.

Table 5.3 shows a mixture of variables that are integrated of order zero and order one. The LLC, IPS, ADF and PP method shows that p-values of lnagric, lnmining, lngrowth, lntourism, lntrans and lnemploy are less than 0.05. Since, the null hypothesis confirms non-stationarity, therefore we reject the null hypothesis at 0.05 significance level. Therefore, lnagric, lnmining, lngrowth, lntourism, lntrans and lnemploy variables are stationary at levels or integrated of order 1(0). Because lnagric, lnmining, lnrgdp and lnemploy are stationary at significance level, they is no need to test for first difference but rather carry the results of levels forward. Likewise, the panel unit root test results reveal that p-values for lncomus, lnconstr, lnelectr, lnfinance, lnmanufac, lnLEDI and lntrade p-values are greater than 0.05 at significance level when estimated with an individual intercept or individual intercept and trend. Thus, the null hypothesis cannot be rejected, suggesting that lncomus, lnconstr, lnelectr, lnfinance, lnLEDI lnmanufac, lntourism and lntrade are not stationary. Non-stationarity of variables at level gives the researcher a basis to test unit root test at first difference. Using the LLC, IPS, ADF and PP method, the p-values of lncomus, lnconstr, lnelectr, lnfinance, lnmanufac, lntourism and lntrade are greater than 0.05 and the researcher rejects the null hypothesis and accepts the alternative hypothesis. This indicates that the panel series contains one unit root and is of integrated of order 1(1). Therefore, lncomus, lnconstr, lnelectr, lnfinance, lnmanufac, lnLEDI and lntrade are stationary at first difference or 1(1).

Table 5.3: Panel unit root tests

Variables	Level & Difference	Intercept/ trend	LLC	IPS	ADF	Fisher/ P	Decision
Lnagric	Level	intercept	0.0004	0.0179	0.0131	0.0053	1(0)
		Intercept & trend	0.0012	0.0771	0.0286	0.0034	
Lncomus	Level	intercept	0.6830	0.9723	0.8838	0.9199	1(1)
		Intercept & trend	0.7991	0.3650	0.3627	0.0161	
	1st difference	intercept	0.0000	0.0000	0.0000	0.0000	
		Intercept & trend	0.0000	0.0000	0.0000	0.0000	
Lnconstr	Level	intercept	0.9175	0.9929	0.9780	0.9601	1(1)
		Intercept & trend	0.2618	0.1432	0.2030	0.5391	
		intercept	0.0837	0.0000	0.0000	0.0001	
		Intercept & trend	0.7147	0.0003	0.0023	0.0033	
lnelectr	Level	intercept	0.0697	0.7469	0.6112	0.6201	1(1)
		Intercept & trend	0.9540	0.9889	0.9801	0.9670	
	1st difference	Intercept	0.0000	0.0004	0.0010	0.0001	
		Intercept & trend	0.0000	0.0000	0.0005	0.0005	
lnfinance	Level	Intercept	0.6964	0.9596	0.6766	0.7859	1(1)
		Intercept & trend	0.0549	0.0823	0.1274	0.9596	
		Intercept	0.0023	0.0047	0.0122	0.0115	

Variables	Level & Difference	Intercept/ trend	LLC	IPS	ADF	Fisher/ P	Decision
	1st difference	Intercept & trend	0.0149	0.0571	0.0996	0.0964	
lnmanufac	Level	Intercept	0.2365	0.9129	0.9102	0.7827	1(1)
		Intercept & trend	0.0219	0.1659	0.2302	0.4758	
	1st difference	intercept	0.0000	0.0000	0.0000	0.0000	
		Intercept & trend	0.0000	0.0000	0.0001	0.0000	
lnmining	Level	intercept	0.0009	0.0092	0.0213	0.0190	1(0)
lngrowth	Level	intercept	0.0698	0.6443	0.6908	0.4821	1(0)
		Intercept & trend	0.0000	0.0000	0.0038	0.0004	
lnemploy	Level	intercept	0.6159	0.9646	0.9626	0.9468	1(0)
		Intercept & trend	0.0000	0.0000	0.0000	0.8803	
lntourism	Level	intercept	0.0000	0.0002	0.0003	0.9084	1(0)
		Intercept & trend	0.1169	0.0446	0.0652	0.0409	
	1st difference	intercept	0.0000	0.0000	0.0000	0.0000	
		Intercept & trend	0.0000	0.0000	0.0000	0.0000	
lntrade	Level	intercept	0.1158	0.7332	0.4023	0.6653	1(1)
		Intercept & trend	0.0044	0.0423	0.0505	0.7528	
		intercept	0.0000	0.0000	0.0001	0.0146	

Variables	Level & Difference	Intercept/ trend	LLC	IPS	ADF	Fisher/ P	Decision
	1st difference	Intercept & trend	0.0032	0.0000	0.0002	0.1493	
lntrans	Level	intercept	0.0000	0.0000	0.0000	0.0000	1(0)
		Intercept & trend	0.0943	0.8751	0.9370	0.9468	
LnLEDI	Level	intercept	0.2931	0.8192	0.8306	0.4903	1(1)
		Intercept & trend	0.9988	1.0000	0.9992	0.9970	
	1st difference	intercept	0.9989	0.0007	0.0018	0.0000	
		Intercept & trend	0.0000	0.0000	0.0000	0.0000	

Source: Own compilation

Note: 1(1) shows stationarity at first difference

1(0) shows stationarity at level

The Hadri panel unit root test confirms the results of other panel unit root tests to avoid bias (Nosier, 2012:213). In testing for the unit root test, the Hadri method assumes a language multiplier instrument test where the null hypothesis is set as panel has not unit root test while an alternative hypothesis is that there is unit root test (Nosier, 2012:213). If the hypothesis tested on the existence of unit root is accepted this means that the time series is non-stationary. On the other hand, if the hypothesis tests the existence of panel unit root is rejected then the time series is stationary**.** Appendix E and table 5.4 gives results for Hadri panel unit root test. Results show that lnagric, lntrans, lnmining, lngrowth and lnemploy are integrated of order 1(0), whereas lncomus, lnconstr, lnelectr, lnfinance, lnmanufac, lntourism, lnLEDI and lntrade are stationary at first difference. Thus, Hadri panel unit root tests show a mixture of 1(0) and 1(1) and no 1(2) and this is the justification for running the ARDL model. Since panel ARDL is the new cointegration procedure, the researcher ran both the short-run and long-run without testing for cointegration.

Table 5.4: Hadri panel unit root test

lncomus	Hadri Z-stat	0.59824 (0.2748)	1(1)
	Heteroscedastic Consistent Z-stat	0.21128 (0.4163)	
lnconstr	Hadri Z-stat	-0.03797 (0.5151)	1(1)
	Heteroscedastic Consistent Z-stat	-0.07350 (0.5293)	
lnelectr	Hadri Z-stat	1.16123 (0.1228)	1(1)
	Heteroscedastic Consistent Z-stat	0.96371 (0.1676)	
lnfinance	Hadri Z-stat	0.59918 (0.2745)	1(1)
	Heteroscedastic Consistent Z-stat	0.29552 (0.3838)	
lnmanufac	Hadri Z-stat	0.08090 (0.4678)	1(1)
	Heteroscedastic Consistent Z-stat	0.84351 (0.1995)	
lnmining	Hadri Z-stat	4.66201 (0.0000)	1(0)
	Heteroscedastic Consistent Z-stat	4.73561 (0.0000)	
lngrowth	Hadri Z-stat	5.57964 (0.0000)	1(0)
	Heteroscedastic Consistent Z-stat	4.15761 (0.0000)	
lnemploy	Hadri Z-stat	4.94989 (0.0000)	1(0)
	Heteroscedastic Consistent Z-stat	4.82028 (0.0000)	
lntourism	Hadri Z-stat	4.36097 (0.0000)	1(1)
	Heteroscedastic Consistent Z-stat	2.17673 (0.0000)	
lntrade	Hadri Z-stat	0.78744 (0.2155)	1(1)
	Heteroscedastic Consistent Z-stat	0.81254 (0.2082)	
lntrans	Hadri Z-stat	5.04911 (0.0000)	1(0)
	Heteroscedastic Consistent Z-stat	4.16552 (0.0000)	
lnLEDI	Hadri Z-stat	1.18913 (0.1172)	1(1)
	Heteroscedastic Consistent Z-stat	0.59891 (0.2746)	
lnagric	Hadri Z-stat	5.82650 (0.0000)	1(0)
	Heteroscedastic Consistent Z-stat	5.08136 (0.0000)	

Source: Own Compilation

Note: 1(1) shows stationarity at first difference

1(0) shows stationarity at level

5.5.2 Analysis of the long-run equation

In analysing the long-run relationship the researcher considers the probability values (p-values), the coefficient and the sign of the coefficient. The p-values are set on three significant levels, 1 percent, 5 percent and 10 percent, respectively. However, Eviews 9.5 set an automatic 0.05 significance for better results. In the event that the coefficient value is negative, then an inverse relationship is established. On the other hand, if the coefficient value is positive, then a positive relationship is established. Thus, this section provides the long-run relationship analysis of both dependent and independent variables.

The study estimated the local economic development index (LEDI) and key economic sectors with the objective of identifying the key sectors that are contributing to local development in the Capricorn Municipality. Since the local economic development index (LEDI) is made up of three variables, it is of paramount importance to estimate these three variables individually to identify the key sectors that also contribute to each variable. Hence the study estimates three more models, namely: the economic growth model, employment model and poverty alleviation model. This is in line with the empirical objective to identify the key sectors that contribute to economic growth, employment and poverty alleviation. Overall, the study considered four dependent variables: local economic development (LEDI), economic growth (lngrowth), employment (lnemploy) and poverty alleviation (lnnonpoor) and all the key economic sectors in the Capricorn District Municipality as independent variables. The study employed a panel ARDL to estimate which key sectors contributed to local economic development. An automatic lag selection with a linear trend and the AIC model selection criteria was employed. All these variables are analysed in logs, thus a percentage change in an independent variable leads to a change in the dependent variable. Therefore, the subsequent section presents and analyses the long-run relationship among LED and the key sectors in the Capricorn District municipalities.

5.5.2.1 Long-run analysis of LDEI as a measure of local economic development (Model 1)

To achieve the main objective of the study this section presents and analyses the long-run relationship between key sectors and local economic development (LEDI). This is a new contribution in the form of a new index designed to measure local economic development in the

Capricorn District Municipality. Appendix F1 and table 5.5 shows the long run results for LEDI and key economic sectors.

Table 5.5: Local economic development long run analysis

Variable	Coefficient	Probability
lncomus	0.0157	0.6034
lntrade	0.4227	0.0000*
lnagric	-0.0973	0.0000*
lnfinance	0.0231	0.3010
lnconstr	0.0434	0.0033*
lnelectr	0.1688	0.0000*
lnmanufac	-0.4872	0.0000*
C	1.1553	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

In analysing the relationship between local economic development and key economic sectors, the researcher formulated an LEDI long-run equation:

Model 1: Local Economic Development (lnLEDI) = 1.1553+ 0.0157 lncomus + 0.4227 lntrade - 0.0973 lnagric + 0.0231 lnfinance + 0.0434 lnconstr + 0.1688 lnelectr - 0.4872 lnmanufac ... 5.1

The long-run equation 5.1 was estimated using (2, 1, 1, 1, 1, 1, 1, 1) based on Akaike Information Criterion (AIC). The results of the local economic development panel ARDL model showed a positive relationship between the productivity of community service sector, trade sector, construction sector, the finance sector, electricity sector and local economic development. This means that an increase in the productivity of these sectors leads to an increase in local economic development. For instance, the coefficient of the trade sector carries a positive sign (0.4227) and it is significant at one percent level of significance. Thus, an increase in the productivity of trade sector by one percent leads to an increase in local development index by 0.42 percent. The results showed that the trade sector and local development have a strong positive long-run relationship.

The results were consistent with the export base theory that local economic development can be promoted through exports (Giordani, 2012). In addition, the construction sector also carries a positive coefficient (0.0433) and it is statistically significant at one percent significance level. Holding all other things constant, a one percent increase in the productivity of the construction sector leads to a 0.04 percent increase in local economic development index. Thus, the productivity of construction sector has a significant influence on local economic development and the results were in line with the structural change theories that view the modern sectors as more productive and lead to economic development and the results were also in line with the literature (Nel & Bins, 2003). The other sector that influenced local economic development positively was the electricity sector (0.1689), which is statistically significant at the one percent significance level. Quantitatively, a one percent increase in the productivity of electricity sector leads to a 0.16 percent increase in local development in the region. The results were consistent with the structural change theory that promotes sectors with more productivity (Dang & Pheng, 2015). The study further found out that the coefficients of community service sector and the finance sector were positive but statistically insignificant. The statistical coefficients mean that the productivity community service sector, finance sector and local economic development are independent of each other. As a result, the finance sector and community service does not affect local economic development. This findings were consistent with the findings of Notre (2011) who found out that finance and community service sectors are not related to local development.

In contrast, the productivity in the agriculture sector (lnagric) and manufacturing sector (lnmanufac) has a long-run negative effect on local economic development. A negative relationship implies that a one percent increase in these sectors' productivity leads to a decrease in local development index. For instance, a 1 percent increase in the productivity of agriculture sector leads to 0.097 percent decrease in local economic development index. Similar conclusions were made by Van Rooyen (2007) who found that the productivity of agriculture has decreased the living standards of individuals in an economy. The negative relationship was experienced because the growth in the agriculture sector was driven by capital intensive production. Furthermore, the manufacturing sector shows a negative coefficient (– 0.4872) and it is statistically significant at one percent significance level. Consequently, a one percent increase in the manufacturing sector drops the level of local development by 0.49 percent. This might have been caused by lack of coordination in the sector. The empirical results also support the big push theory that prescribes to the idea that lack of coordination brings unfavourable output and local development (Borooah, 2003).

Overall, the most contributing sectors to local development were the trade sector, construction sector and the electricity sector. The results were in line with the empirical literature (Nel & Binns, 2003). The study also found similar results that the trade sector and electricity sector were the pillars of local economic development in a region. The results are also supported by the export base theory and structural change theories that expect a positive contribution of trade and modern sectors to local economic development. Therefore, the electricity sector, trade sector and the construction sector policies support the local economic development (LED) initiative in improving people's lives. However, the study expected the community service sector to contribute more to local economic development but the p-value was statistically insignificant. The results of the study are conflicting with the empirical literature (Capricorn District Municipality, 2016; Development Policy Research, 2006; Notre, 2011). The probable reasons that led to this are: lack of defined policies that influence local economic development and poor management in the district municipality. Furthermore, the agriculture sector and manufacturing sector revealed an unexpected link to local economic development. The literature had prescribed a positive link (Miejerink & Roza, 2007; Van Rooyen, 2007; Zalk, 2014). The negative link was attributed to drought and less productivity by manufacturing sub-sectors.

Since local economic development pertains to economic growth, employment and poverty alleviation, it is of paramount significance to check how key sectors influence these dependent variables separately. Therefore, the subsequent sections present and analyse the economic growth model, employment model and poverty alleviation model.

5.5.2.2 Long-run analysis of economic growth as a measure of local economic development (model 2)

This section discusses the long-run relationship between key economic sectors and economic growth (lngrowth) to achieve the empirical objective. Appendix F2 and table 5.6 shows the long run results for economic growth and the productivity of key economic sectors.

Table 5.6: Economic growth long-run analysis

Variables	Coefficient	Probability
lncomus	0.2959	0.0000*
lnconstr	0.0546	0.0000*
lnfinance	0.3107	0.0000*
lnmanufac	0.0404	0.3379
lnmining	-0.1314	0.0000*
lntourism	-0.0273	0.0000*
lntrade	0.1890	0.0002*
lntrans	0.3160	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

In analysing the long-run results shown in the table 5.6, an economic growth long-run model relationship is composed:

Model 2: Economic growth (lngrowth) = -5.4991+ 0.2959 lncomus + 0.0546 lnconstr + 0.3107 lnfinance + 0.0404 lnmanufac – 0.1314 lnmining -0.0273 lntourism + 0.1890 lntrade + 0.3160 lntrans 5.2

With regard to equation 5.1, the long-run equation was estimated using (1, 1, 1, 1, 1, 1, 1, 1) based on Akaike Information Criterion (AIC). The results revealed both positive and negative relationships between economic growth and the productivity of key economic sectors. A positive relationship between the productivity of construction sector (lnconstr), community service sector (lncomus), finance sector (lnfinance), manufacturing sector (lnmanufac), trade sector (lntrade) and transport sector (lntrans) was established. These sectors carry a positive sign and are statistically significant at one percent level of significance except manufacturing. Accordingly, an increase in productivity of these sectors by one percent leads to an increase in economic growth. A one percent increase in the productivity of community service sector (lncomus) leads to a 0.2959 percent increase in economic growth. The results were in line with the study done by the Development

Policy Research (2006) who found out that community service sector contributed more to economic growth. In addition, the coefficient of construction sector (lnconstr) is 0.0546. Thus, a one percent increase in the productivity of construction sector will cause a 0.0546 percent increase in economic growth. This empirical findings were consistent with the findings of Nel & Binns (2003). Moreover, the coefficient of finance (lnfinance) is 0.3107. The finance sector coefficient implies that the productivity of finance sector and economic growth depend on each other; thus, a one percent increase in the production of finance sector leads to a 0.3107 percent increase in economic growth. This is in line with the structural change theory that prescribes that the modern sector such as the finance sector is more productive and is positively related to economic growth (Todaro & Smith, 2006).

Furthermore, the study found out that the trade sector (lntrade) is associated with economic growth. The study showed a coefficient of 0.1890, implying a one percent increase in the production of trade sector increases economic growth by 0.1890 percent. The trade results were in line with the export base theory that states that export growth promotes economic growth and development (Kacar *et al.*, 2016: 235). Also the transport sector (lntrans) has a positive coefficient of 0.3160. This means a one percent increase in the production of transport sector leads to 0.3160 percent increase in economic growth. Similar conclusions were drawn by Haine & Margo (2005). The coefficients of manufacturing (lnmanufac) and economic growth were positive (0.0404) but statistically insignificant. This means that the production of manufacturing sector and economic growth were independent. Such a relationship might have been caused by poor manufacturing policies, drought and some economic shocks.

Conversely, the productivity mining sector (lnmining) and tourism sector (lntourism) revealed a negative relationship on economic growth. A coefficient of the mining sector was negative (–0.1314) and statistically significant at one percent level of signifance. Quantitatively, a one percent increase in the mining sector decreases the economic growth by 0.1314 percent. Such a relationship might have been caused by mining strikes, low productivity and economic shocks in the sector. For tourism the coefficient is -0.0273, implying a one percent increase in the production of tourism sector leads to a -0.0273 percent increase in economic growth. Musakwa (2009) also found the same results.

From the results of the study, the productivity of transport sector was the most contributing sector to economic growth in the Capricorn District Municipality. Since the transport sector was one of the contributing sectors to local economic development in the analysis above, it was also expected

to contribute to the local economic growth. The findings were consistent with the findings of Haine & Margo (2006) and Valdes & Foster (2005). Moreover, there were other sectors that contributed to economic growth such as the finance sector, community service sector, trade sector and construction sector. This results were consistent with the structural change theories, export base theory and modern theories (Kacar *et al.*, 2016). The theories prescribe that all these sectors should promote economic growth. The Development Policy Research (2006), Haine and Margo (2006) & Nel and Binns (2003) also confirm that the finance sector, community service sector, trade sector and construction sector have a positive link with economic growth.

On the other hand, the productivity of tourism sector and mining sector influenced economic growth negatively. The study expected a positive relationship between productivity of tourism, the mining sector and economic growth (International Labour Organisation, 2015; Pedrana, 2013). However, the study's findings are parallel to the literature and this might have been attributed to mining strikes, job losses in the sectors, and poor policies that failed to promote economic growth. The subsequent section discusses the long-run analysis of employment.

5.5.2.3 Long-run analysis of employment as a measure of local economic development (model 3)

The second model pertains to employment and the key economic sectors. Appendix F3 and table 5.7 shows the long-run relationship between employment (lnemploy) and the key economic sectors.

Table 5.7: Employment long-run results

Variables	Coefficient	Probability
lnagric	-0.0624	0.0106**
lncomus	-0.4648	0.0007*
lnconstr	-0.1941	0.0000*
lnfinance	0.2557	0.0003*
lnmanufac	-1.7551	0.0000*
lnmining	-0.0043	0.9280
lntourism	0.4106	0.0000*

lntrade	1.4864	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

In analysing the long-run results shown in the table 5.7, the employment long-run model relationship is composed of:

Model 3: Employment (lnemploy) = 2.2678 - 0.0624 lnagric - 0.4648 lncomus -0.1941 lnconstr + 0.2557 lnfinance - 1.7551 lnmanufac - 0.0043 lnmining + 0.4106 lntourism + 1.4864 lntrade 5.3

The long-run equation 5.3 was estimated using (1,1,1,1,1,1,1,1) based on Akaike Information Criterion (AIC). The results of the employment ARDL model showed a positive relationship between the productivity of trade sector, tourism sector, finance sector and employment. This means that an increase in sectorial output in these sectors leads to an increase in employment. The coefficient of tourism sector carries a positive sign (0.4106) and it is statistically significant at one percent level of significance. Hence, an increase in the productivity of tourism sector by one percent leads to an increase in employment by 0.4 percent. The results showed that productivity of tourism and employment have a positive long-run relationship. The results were supported by the economic development modern theories that propound that a sector should be competitive for it to improve employment. The empirical results were also consistent with the studies done by the International Labour Organisation (2015) and Pedrana (2013) who also confirmed a positive relationship between tourism and employment.

The finance sector also carries a positive coefficient (0.2557) and it is statistically significant at one percent level of significance. Holding all other things constant, a one percent increase in the productivity of finance sector leads to a 0.26 percent in employment. Thus, the productivity of finance sector has a strong influence on employment and the results are in line with the structural change theories that view the modern sectors (finance sector) as more productive and employing sector. In addition, the results were also in line with the study by Notre (2011). Another sector that influenced employment positively was the productivity of trade sector (1.4864). Consequently, a one percent increase in the productivity of trade sector leads to a 1.49 percent increase in employment in the region. The trade sector is strongly related to employment compared to other

sectors. This result supports the export base theory which subscribes to the idea that a region should specialise in exports for economic growth and employment (Yoon, 2000:40).

Contrariwise, the productivity of construction sector (lnconstr), mining sector (lnmining), agriculture sector (lnagric), community service sector (lncomus) and manufacturing sector (lnmanufac) reveal an inverse relationship to employment. A negative relationship implies that a one percent increase in the productivity of these sectors leads to a decrease in employment. For instance, a one percent increase in the productivity of construction sector leads to 0.19 percent decrease in employment. These results were similar to the findings of Nel and Binns (2003). Another sector that contributed negatively was the manufacturing sector that shows a coefficient of - 1.7551, implying a one percent increase in the productivity of manufacturing sector drops the level of employment by 1.76 percent. This might have been caused by lack of coordination in the sector; thus, the study supports the coordination theories of economic development that prescribe to the idea that lack of coordination brings unfavourable output and employment (Borooah, 2003).

The study further found out that the productivity of agriculture sector (lnagric) and the community service sector (lncomus) are inversely associated with employment. Quantitatively, a one percent increase in the productivity of agriculture sector and community service sector leads to 0.0624 and 0.4648 percent decrease in employment respectively. These results were similar to the findings of Notre (2011) and Wyngaard (2006). The coefficient of the mining sector is negative (- 0.0043) and statistically insignificant. Thus, the mining sector and employment are independent. This means that the mining sector policies do not support employment.

Overall, the trade sector, the productivity of tourism sector and finance sector were the most contributing sectors to employment in the Capricorn District Municipality. The trade and finance sector were expected to contribute to the employment sector since there were statistically significant for the local economic development. Furthermore, the trade and finance sectors were in line with the findings by the International Labour Organisation (2015) and Notre (2011). Thus, trade and finance sector policies should be maintained to keep on growing employment in the region. The productivity of tourism sector was found to be insignificant for economic growth and significant for employment. The results were also in line with the studies by Musakwa (2009) and Pedrana (2013). The productivity of mining sector was found to be statistically insignificant. This means that the productivity of mining sector did not contribute to job creation, rather people lost their jobs in the sector. On the other hand, the productivity of agriculture sector, community service sector, construction sector and the manufacturing sector revealed a negative relationship on

employment. The study expected the productivity of all these key sectors to contribute positively to employment (Notre, 2011; Van Rooyen, 2007; Zalk, 2014). However, the results of the study were not consistent with the literature review due to policies that did not support employment in the region. In addition, the construction sector was significant for economic growth and local economic development but insignificant for the employment model. Thus, proper policies should be put into place to promote employment in the sector.

5.5.2.4 Long-run analysis of poverty alleviation as a measure of local economic development (model 4)

To achieve the empirical objective, the study identified key economic sectors that alleviate poverty. Thus, the study considered the number of non-poor as poverty alleviation. Appendix F4 and table 5.8 shows the poverty alleviation long-run results.

Table 5.8: Poverty alleviation long-run results

Variables	Coefficient	Probability
lnconstr	-0.0149	0.8085
lntourism	0.0387	0.0542***
lnfinance	0.4079	0.0040*
lnagric	-0.3364	0.0000*
lnelectr	0.8135	0.0000*
lntrade	0.6120	0.0066*
lnmanufac	-1.2684	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

In analysing the relationship between poverty alleviation and key economic sectors, the researcher formulated a long-run poverty model equation:

Model 4: poverty alleviation (lnnonpoor) =-1.025 - 0.0149 lnconstr + 0.0387 lntourism + 0.4079 lnfinance - 0.3364 lnagric + 0.8135 lnelectr - 1.2684 lnmanufac 5.4

The long-run equation 5.4 was estimated using (1,1,1,1,1,1,1,1) based on Akaike Information Criterion (AIC). The poverty alleviation ARDL model showed how the independent variables (productivity of key sectors) are related to poverty alleviation in the long-run. The results of this model showed that tourism (lntourism), the finance sector (lnfinance), electricity sector (lnelectr) and trade sector (lntrade) are positively related to poverty alleviation. Holding all other things constant, a one percent increase in the productivity of aforementioned sectors leads to an increase in the number of people who are not poor. The results in equation 5.3 showed that the productivity of tourism is statistically significant at the ten percent level of significance and carries a coefficient of 0.0387. This signifies a positive relationship and, as the productivity of tourism sector increases by one percent, the number of people who are above the poverty line increases by 0.0387 percent. Therefore, the Capricorn District tourism policies support poverty alleviation and this is consistent with the neoclassical theory. The study is also in line with the literature (International Labour Organisation, 2015 & Stiftung, 1999).

As mentioned earlier, the coefficient of finance carries a positive sign (0.4079) and it is statistically significant at one percent level of significance. Quantitatively, a one percent increase in the productivity of finance sector raises about 0.408% out of poverty. Therefore, the results suggest that the finance sector and poverty alleviation have a strong link in the long-run. This is consistent with the structural change that subscribes to modern sectors for poverty reduction (Lewis, 1950). Also, the productivity of electricity sector carried a positive sign (0.8135) and it is statistically significant at one percent level of significance. This means that a one percent increase in the production of electricity sector leads to 0.81% decrease in poverty. The sign of the electricity sector supports the theoretical conclusion that the electricity sector contributes to poverty reduction according to the stages of growth theory.

The results in equation 5.4 showed a negative association among the productivity of manufacturing sector, agriculture sector and construction sector and poverty alleviation. A coefficient of 1.2684 for the productivity of manufacturing sector revealed that a one percent increase in the manufacturing sector leads to 1.26 percent decrease in the number of people who are non-poor. The results were consistent with the big push O-ring theory that attached all the failures in the economy to lack of coordination and failure to use current production methods (Monsted, 1974). The study also found out that the agriculture coefficient is statistically significant at one percent level of significance and with the coefficient of -0.3364. As a result, a one percent increase in the production of agriculture sector leads to 0.34 percent decline in the number who are not poor. Some of the factors that could have attributed include: drought, economic shocks, poor policies

and low productivity. Similar conclusions were made by Miejerink & Roza (2007). On the other hand, the coefficient of the construction sector is negative at 0.8085 and statistically insignificant. The statistical coefficient explains that poverty and the construction sector remain independent in the long run.

Overall, key sectors that influenced poverty alleviation were tourism, the finance sector, electricity sector and trade sector. The findings are similar to the findings by Triegaardt (2014), Musakwa (2009) and Nel & Binns (2003). The tourism sector was consistent in contributing to economic growth and employment. However, it influenced local economic development negatively. Thus policies of the tourism sector should be aligned with the LED. The trade sector has been consistent throughout and this is in line with the study done by the International Labour Organisation (2015) and Nel & Binns (2003). Conversely, the construction sector, manufacturing sector and agriculture sector were negatively related to poverty alleviation. The study did not expect such a relationship according to the literature (Miejerink & Roza, 2007; Zalk, 2014). The possible reasons that have led to negative relationship are poor policies that do not support poverty alleviation, drought and economic shocks.

5.5.3 The error correction model results

After a long-run relationship has been established between LED and the productivity of key economic sectors, the study examines the short run analysis. The purpose of the short run analysis was to cater for economic shocks and analyse the equilibrium of the study. This was achieved by analysing the error correction model or the speed of adjustment. An error correction model is a model that explains the nature of a relationship or behaviour of variables in the short-run (Boef, 2013:82; Dunge, 2014). Semosa (2016) further highlights that the error correction model corrects the long-run disequilibrium via the short-run adjustments. In other words, the error correction model specifies the notch to which the equilibrium is reached in the short-run. In analysing the error correction model, Mokotsanyane (2016:96) emphasises the importance of the Error Correction Term (ECT). The most important elements on the error term are: negative sign, the coefficient and the significance of p-value. If the error correction term carries a negative sign, then the degree of equilibrium is confirmed and the higher the error correction term the more stable the long-run relationship (Bannerjee *et al*., 1998). For the purpose of the study the error term is under the specific municipality. Therefore, this section discusses the four error correction error correction models.

5.5.3.1 Local economic development index error correction model

This section presents and analyses the short-run relationship between local economic development and the key economic sectors in the Capricorn District Municipality. Appendix F1 and table 5.9 shows the Local Economic Development Index (LEDI) Error Correction model for the Capricorn District Municipality.

Table 5.9: Local Economic Development Index error correction model

Variable	Coefficient	Probability
ECT	-0.6857	0.0000*
lncomus	0.3249	0.0007*
lntrade	0.1893	0.0000*
lnagric	0.0639	0.0000*
lnfinance	-0.0598	0.4992
lnconstr	-0.0803	0.0157**
lnelectr	-0.0492	0.3145
lnmanufac	0.0986	0.0000*
C	1.1553	0.0000*
@TREND	0.0119	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

The results in table 5.9 and appendix F1 show the error correction model for the Local Economic Development Index (lnLEDI). The error term shows the short run relationship and by which percentage can equilibrium be restored in the upcoming year. The results showed the error correction term of -0.6857 and significant p-value of 0.0002. This means that 68% of disequilibrium in the municipality will be reinstated in the next period provided these sectors improve to influence local economic development. Thus, it takes about 1.45 (1/0.6857) years for local economic development to adjust to change in the productivity of the key sectors. Bannerjee *et al.* (1998) mention that the higher the ECT the more stable the relationship between economic

growth and key economic sectors in all the municipalities. In other words, the higher the ECT, the shorter the period for equilibrium to be restored. Five independent variables were statistically significant at one percent and five percent, namely: agriculture sector, trade sector, construction sector and manufacturing and community service sector.

The productivity of agriculture sector is positively related to local economic development in the short run. It shows a coefficient of 0.0368 and a p-value of 0.000 level of significance. Accordingly, an increase in output by one percent leads to an increase in local development by 0.037 percent. This result is consistent with the traditional theories of economic development that outline that agriculture is the major sector for local economic development (Smith, 1976). The results of the study further found that the productivity of community service sector and trade sector have positive coefficients of 0.3249 and 0.1893 and are both statistically significant at one percent level of significance. Quantitatively, a one percent increase in the sectorial output of community service and trade sector leads to a 0.3249 percent and 0.189 percent in local economic development. The empirical results were in line with other researchers such as the Development Research (2006) and the International Labour Organisation (2015). The empirical results also support the export base theory.

On the other hand, the finance sector, construction sector and electricity sector were negatively related to local economic development. The coefficient of construction sector is negative (-0.0803) and statistically significant at five percent. The statistical coefficient means that the productivity of construction sector and local economic development are negatively related in the short run. A one percent increase in the production of construction sector output leads to a 0.080 percent decrease in the local economic development. This means the construction sector policies do not support local economic development. In addition, the productivity of finance sector and electricity sector reveal a negative coefficient and statistically insignificant p-values. This means the productivity of financial sector and the electricity sector do not influence local economic development in the short run. Therefore, the speed of adjustment confirms that these key sectors move to the equilibrium in the upcoming year.

In the short-run analysis the productivity of community service sector, trade sector, agriculture sector and manufacturing sector contributed to local economic development index in the short-run. The results were similar to the findings of Development Policy Research (2006), International Labour Organisation (2015), Van Rooyen (2007) and Zalk (2014). Furthermore, the study is in line with the Capricorn District Municipality (2016) that identified the productivity of community

service sector as the most contributing sector in local economic development. However, the community service sector was not significant in the long-run analysis; accordingly, the sector reinstates to the equilibrium in the long within 1.45 years. The productivity of finance sector, construction sector and electricity sector, however, were negatively related to local economic development index. The productivity of finance sector and the electricity sector were statistically insignificant. Thus, they were not related to local economic development at all. The findings of the study were contrary to the empirical literature (Molemole District Municipality; Notre, 2011; Rodgerson, 1996). On the other hand, the productivity of construction sector contributed negatively to local economic development index. The results might have been attributed to policies that failed to support the LED.

5.5.3.2 Economic growth error correction model

This section presents and analyses the results of the economic growth error correction model. The results of the economic growth error correction model are shown in table 5.10 and appendix F2.

Table 5.10: Economic growth error correction model

Variable	Coefficient	Probability
ECT	-0.4879	0.0330**
lncomus	0.0323	0.7665
lnconstr	0.0404	0.0000*
lnfinance	0.2301	0.0000*
lnmanufac	0.0727	0.0000*
lnmining	0.0960	0.0000*
lntourism	0.0117	0.0000*
lntrade	0.1890	0.8500
lntrans	0.3160	0.3916
C	-5.4991	0.0434**
@TREND	-0.0093	0.1077

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

The results in table 5.10 and appendix F2 showed the error correction model for economic growth (lngrowth). The error term shows the short run relationship and by which percentage equilibrium can be restored in the upcoming year. The results showed the error correction term of -0.4879 and significant p-value of 0.0330. This means that economic growth moves back to its equilibrium at a rate of 48.79%. In other words, the speed of adjustment means a change in key sectors influencing economic growth to move back to the equilibrium at a rate of 48.76% each year. It takes about 2.05 (1/0.4879) years for the economic growth to fully adjust to change in the productivity of the key sectors. Bannerjee *et al.* (1998) mention that the higher the ECT the more stable the relationship between economic growth and key economic sectors in all the municipalities. In opposition, the lower the ECT the longer the equilibrium point is reached. The study also found that six independent variables are statistically significant at one percent namely: the construction sector (lnconstr), the finance sector (lnfinance), the manufacturing sector (lnmanufac), the mining sector (lnmining) and the tourism sector (lntourism).

In the short run the productivity of construction sector is positively related to economic growth with the coefficient of 0.0404 and statistically significant at one percent level of significance. Quantitatively, a one percent increase in the production of construction sector leads to a 0.0040 percent in the economic growth in the short run. In addition, the productivity of finance sector, manufacturing sector, mining sector and tourism sector are statistically significant at one percent level of significance and have positive coefficients of 0.2301, 0.0727, 0.0960 and 0.0118 respectively. This means that a one percent increase in the productivity of finance sector, manufacturing sector, mining sector and tourism sector leads to a 0.2301 percent, 0.0727 percent, 0.0960 percent and 0.0118 percent increase in economic growth, respectively. On the other hand, the community service sector, the trade sector and the transport sector were positively related to economic growth but statistically insignificant. Thus, economic growth is independent of the community service sector, trade sector and the transport sector in the short run.

Overall, the key sectors that promoted economic growth in the short-run include the productivity of community service sector, construction sector, finance sector, manufacturing sector, mining sector, tourism sector, trade sector and transport sector. The most contributing sectors to economic growth were the productivity transport sector, finance sector and trade sector. The results were consistent with the export base theory, Keynesian theory and structural change theories (Dang & Pheng, 2015; Giordani, 2012; Shapirov, 2015). Furthermore, the results were consistent with other

studies such as Rodgerson, (1996) and Molemole District Municipality (2011). However, community service sector, trade sector and transport sector are statistically insignificant. The results are inconsistent with other previous studies (Development Policy Research, 2006; Haine & Margo, 2006; Nel & Binns, 2003). This implies that the productivity of community service sector, trade sector and transport sector policies do not support economic growth in the short-run. Despite the disequilibrium in these sectors it takes about 2.05 (1/0.4879) years for the economic growth to fully adjust to change in the productivity of the key sectors.

5.5.3.3 Employment error correction model

This section presents and analyses the results of employment error correction model. Therefore, appendix F3 and table 5.11 shows the results of the employment panel ARDL model.

Table 5.11: Employment error correction model

Variables	Coefficient	Probability
ECT	-0.4693	0.0121**
Lnagric	0.0978	0.0684***
Lncomus	0.3452	0.0334**
Lnconstr	-0.1595	0.0000*
lnfinance	-0.7429	0.0004*
lnmanufac	0.1363	0.0727***
Lnmining	-0.0922	0.1192
lntourism	-0.0644	0.0402**
Lntrade	-0.0692	0.7500
C	2.2678	0.0056*
@TREND	6.7900	0.9825

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

The employment model indicates a speed of adjustment of 0.4693 and it is statistically significant at five percent. This implies that 46.99 percent of disequilibrium in the model is reinstated in the next period provided these sectors improve to influence employment. Thus, the speed of adjustment confirms the reality of the long run relationship between employment and key economic sectors. Thus, it takes about 2.13 (1/0.4693) years for the employment to fully adjust to change in the productivity of the key sectors. Bannerjee *et al*. (1998) state that a lower significance error correction term is evidence of a low stable relationship among variables. These results are in line with Sekuma (2011). Six independent variables were found to be significant at one percent, five percent and ten percent levels while two independent variables were not significant in the short-run.

The study found that the productivity of agriculture sector was statistically significant at ten percent level of significance and had a positive coefficient of 0.0976. The statistical coefficient means that the productivity of agriculture and employment are positively related in the short run. Hence, an increase in the productivity of agriculture sector by one percent leads to an increase in employment by 0.0979 percent. The agriculture sector influences employment in the short run and the results are consistent with the absolute advantage theory that puts more emphasis on agriculture as the key driver of employment in a region (Smith, 1976). Other key sectors that were significant and positively related to employment include the community service sector (0.3452) and the manufacturing sector (0.1363). This implies that a one percent increase in the productivity of community service sector and manufacturing sector raises employment by 0.3452 percent and 0.1363 percent in the short run. The results were in line with the Kaldor second law that states that an increase in the manufacturing output will lead to an increase in employment in the sector (Kaldor, 1957).

Conversely, the productivity construction sector, finance sector and tourism sector are statistically significant at one percent and five percent level and reveal a negative coefficients of -0.1595,-0.7429 and -0.4106. Quantitatively, a one percent increase in the productivity of construction sector, finance sector and the tourism sector leads to a decrease in employment by 0.1595 percent, 0.7429 percent and 0.4106 percent respectively. Although these sectors showed a negative relationship in the short run, its effects turns out to be positive in the long run. The probability of it happening is about 47 percent shown by the speed of adjustment. The study further concluded that mining and trade were negatively related to employment but statistically insignificant.

The key sectors that contributed to employment in the short-run were the productivity of agriculture, community service sector and manufacturing sector. The study expected a positive relationship between these sectors and employment. The findings are similar to the findings by Brand (1969), Miejerink and Roza (2007) and Wyngaard (2006). The results also support the structural change theory and the absolute advantage theory. A positive relationship was also attributed to good production methods and the productivity of sub-sectors. The productivity construction sector, finance sector, mining sector, tourism sector and trade sector, however, influenced employment negatively. The results were in line with the study done by Mogalakwena Local Municipality (2006). However, the study expected a positive relationship on these key sectors and employment. Such a relationship might have been caused by loss of jobs, the fall of asset prices and poor policies.

5.5.3.4 Poverty alleviation error correction model

The results in Table 5.12 and appendix F4 show the error correction model of poverty (lnnonpoor).

Table 5.12: Poverty alleviation error correction model

Variable	Coefficient	Probability
ECT	-0.6750	0.0000
lnconstr	0.1575	0.1467
lntourism	-0.1408	0.0107
lnfinance	0.4015	0.0394
lnagric	-0.0004	0.9964
lnelectr	-0.1639	0.1457
lntrade	-0.2037	0.7022
lnmanufac	0.6311	0.0190
C	-1.0247	0.0000
@TREND	0.0197	0.0001

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

Table 5.12 and appendix F4 shows the poverty short run results. The study found a negative speed of adjustment of -0.6750 and it is statistically significant at one percent. The speed of adjustment confirmed the reality of the long run relationship between poverty and the productivity of key economic sectors. This means poverty alleviation moves back to its equilibrium at a rate of 67.5 percent in the long run. Thus, it takes 1.4 years for poverty alleviation to be reinstated with the productivity of key sectors. Bannerjee et al. (1998) mention that the higher the ECT the more stable the relationship between poverty and key economic sectors in all municipalities. Three independent variables were statistically significant at five percent level of significance, namely tourism sector, finance sector and the manufacturing sector. Conversely, the productivity of construction sector, agriculture sector, electricity sector and the trade sector were statistically insignificant.

The coefficient of the tourism sector is negative (-0.1408) and statistically significant at five percent level of significancy. This means tourism influences the number of people above the poverty line negatively. A one percent increase in the productivity of tourism sector leads to a 0.1408 percent decrease in number of people above the poverty line. This might be attributed to drought, loss of jobs in the sector and economic shock. However, these economic shocks might be fixed in the long run. Furthermore, the finance sector and manufacturing sector showed positive coefficients of 0.4015 and 0.6311 respectively. Holding all other things constant, a one percent increase in the production of finance sector and manufacturing sector leads to poverty alleviation by 0.4015 percent and 0.6311 percent. The results were in line with the structural change theory. On the contrary, the coefficient of the construction sector to economic growth is positive while the agriculture sector, electricity sector and the trade sector were negative but are statistically insignificant. This means that the production of construction sector, agriculture sector, electricity sector and trade sector do not influence poverty alleviation in the short run. Therefore, poverty alleviation remains independent of these sectors.

The overall contributing sectors to poverty alleviation are the manufacturing sector and finance sector. The results are consistent with the theoretical expectation (Notre, 2011; Zalk, 2014). The findings were also in line with the economic development theories such as the structural change theory and Kaldor`s theory (Kaldor, 1966; Todaro & Smith, 2006). Furthermore, the productivity of construction sector, agriculture sector, electricity sector and trade sector were found to be insignificant to poverty alleviation. This means that these sectors did not contribute to poverty alleviation. The findings of the study are inconsistent with the theoretical expectations (Haine & Margo, 2006; Miejerink & Roza, 2007; Nel & Binns, 2003). Such a relationship might have been

caused by the poor policies that failed to promoted poverty alleviation, drought and economic shocks in the region. However, the productivity of these sectors takes 1.4 years to influence poverty alleviation.

5.6 KEY ECONOMIC ANALYSIS OF EACH MUNICIPALITY

This section provides a short run analysis of dependent and independent variables for each municipality. The aim of this section is to check which key sectors contributed to economic growth, employment, poverty alleviation and local economic development in the Capricorn District Municipality.

5.6.1 Analysis of Blouberg municipality

Table 5.13 and appendix G shows the error correction models for Blouberg Local Municipality economic growth, employment, poverty, local economic development and the productivity of key economic sectors. The Blouberg economic growth error correction model showed a positive relationship between the productivity of community service sector, construction sector, finance sector, manufacturing sector, tourism and transport sector. The most contributing sectors to economic growth were the community service sector (0.3127), finance sector (0.2613) and mining sector (0.1487). Thus, a one percent increase in the productivity of community service sector, finance sector and mining sector leads to a 0.31 percent, 0.26 percent and 0.14 percent increase in economic growth respectively. These results were in line with other researchers such as the Development Policy Research (2006) & Notre (2011). On the contrary, the productivity of trade sector coefficient is negative (-0.077) implying that a one percent increase in the productivity of trade sector leads to a low economic growth by 0.077 percent. Although the trade sector shows a negative effect on economic growth in the short run, its effects will reveal a positive effect in the long-run. This is explains the negative speed of adjustment of -0.033 which transcends to 3%. This means that the 3% disequilibrium of economic growth in Bloemburg Municipality will be restored to equilibrium the following year.

The employment model shows a positive relationship with the productivity of community service sector and manufacturing sector. The community service sector has a positive coefficient but it is statistically insignificant. This means the productivity of community service sector does not affect employment in the short run. Thus, employment is independent of the community service sector in the short run. In addition, the coefficient of the manufacturing sector in the short run is positive (0.27) and statistically significant at one percent level of significancy. Quantitatively, a one percent

increase in the productivity of manufacturing sector leads to a raise in employment by 0.27 percent. As the productivity of manufacturing sector increases, it increases the number of employed people in the region. The findings are in line with the Kaldor's second law theory that an increase in the manufacturing sectorial output leads to employment (Kaldor, 1957). On the other hand, the productivity of construction sector, finance sector, mining sector, tourism and trade sector are negatively related to employment. Their coefficients are as follows: the construction sector (-0.139), finance sector (-1.1000), tourism sector (-0.887) and trade sector (-0.0417). Therefore, a one percent increase in the productivity of construction sector, finance sector, tourism sector and the trade sector leads to a decrease in employment by 0.13 percent, 1.1 percent, 0.887 percent and 0.04 percent respectively. Although these sectors show a negative effect in the short run, the negative effects will be turned to positive effects in the long-run. This is explained by the speed of adjustment of 0.905 which transcends to 90.5 percent. Thus, it takes about 1.10 (1/0.905) years for the employment to fully adjust to change in the productivity of the key sectors.

The sectors that promoted the alleviation of poverty include finance, manufacturing and construction. These sectors show positive coefficients and they are statistically significant at one percent level of significance. Therefore, an increase in the productive of these sectors by one percent leads to an increase in people who lives above the poverty line. The results were consistent with the stages of growth theory that subscribe to the idea that an increase in the sectorial output reduces poverty. On the contrary, the tourism sector and trade sector are negatively related to poverty alleviation. In other words, the productivity of tourism sector and the trade sector do not support poverty alleviation in the region. However, this can be fixed in the upcoming year and 62.5 percent of the disequilibrium can be reinstated, holding all other things constant. Accordingly, it takes about 1.6 (1/0.625) years for the poverty alleviation to fully adjust to change in the productivity of the key sectors.

The Blouberg LEDI model showed a positive relationship among the community service sector, trade sector, agriculture sector and manufacturing sector. The community service sector has a positive coefficient of 0.5231 and it is statistically significant at one percent. This means the productivity of community service sector affects local economic development positively in the short run. Thus, one percent increase in the productivity of community service sector output leads to 0.52 percent in local economic development. The empirical results support the neoclassical development theory that propounds that an increase in the sectorial output leads to an increase in the local economic development (Kacar, Curic and Ikic, 2016). In addition, the agriculture and manufacturing show coefficients of 0.090 and 0.1227 and they are statistically significant at one

percent level of significance. Hence, a one percent increase in the sectorial output of the agriculture sector and manufacturing sector leads to an increase in local economic development by 0.09 percent and 0.1227 percent. This findings support the traditional theories and the structural change economic development theories.

On the other hand, the productivity of finance sector, construction sector and the electricity sector affected the local economic development negatively. The finance sector, construction sector and electricity sector show a negative coefficients of -0.3020, -0.1740 and -0.1791 respectively and they are all statistically significant. Holding all other things constant, an increase in the sectorial output by one percent in the finance sector, construction sector and electricity sector leads to a decrease in the local economic development by 0.30 percent, 0.17 percent and 0.18 percent. However, all these can be corrected in the long run and a speed of adjustment of 1.012 confirms that. The speed of adjustment proposes how long can the equilibrium be reached and it takes about 0.98 (1/1.012) years for the local economic development to fully adjust to change in the productivity of the key sectors. Thus, Bannerjee et al. (1998) mention that the higher the ECT the more stable the relationship between poverty and key economic sectors in all municipalities.

In Blouberg Local Municipality, the key sectors that contributed to economic growth, employment, poverty alleviation and local economic development are the community service sector and manufacturing sector. The findings of the study were supported by the economic development theories such as Kaldor's theory, modern theories and the structural change theory (Dang & Pheng, 2015; Kaldor, 1966). The empirical findings are consistent with the literature (Development Policy Research, 2006; Notre, 2011; Zalk, 2014). In addition, the trade sector only influenced economic growth and this is in line with the export base theory (Giordani, 2012). Moreover, the productivity of construction sector and finance sector influenced economic growth and poverty alleviation positively. The empirical findings were in line with Notre (2011). The findings were also supported by the structural change theory that promotes modern sectors such as the construction sector and finance sector for local economic development (Todaro & Smith, 2006). On the other hand, the productivity of construction sector and finance sector have influenced employment and local economic development negatively. The results were contrary to the literature review (Dang & Pheng, 2015; Kaldor, 1966).

The least contributing sectors include mining, trade and tourism. These sectors were negatively related to employment and poverty alleviation. Thus, the policies of these sectors did not support

employment and poverty alleviation in a region. The results are inconsistent with other studies (International Labour Organisation, 2015; Notre, 2011).

Table 5.13: Blouberg Municipality error correction models

Variables	Economic growth model		Employment model		Poverty model		LEDI model	
	coef	prob	Coef	prob	coef	Prob	coef	Prob
ECT	-0.033	0.0003*	-0.905	0.0000*	-0.625	0.000*	-1.012	0.0000*
lncomus	0.3127	0.0000*	0.0311	.0733***			0.5231	0.0000*
lnconstr	0.0598	0.0000*	-0.139	0.0000*	0.3609	0.0053*	-0.174	0.0000*
lnfinance	0.2613	0.0000*	-1.100	0.0000*	0.9080	0.0052*	-0.302	0.0000*
lnmanufac	0.0933	0.0000*	0.2772	0.0000*	1.2200	.0106**	0.1228	0.0001*
lnmining	0.1487	0.0000*	-0.253	0.0000*				
lntourism	0.0129	0.0000*	-0.887	0.0000*	-0.255	0.0034*		
lntrade	-0.077	0.0002*	-0.046	0.0000*	-1.504	0.1089	0.1655	0.0015*
lntrans	0.0152	0.0002*						
lnelectr					-0.195	.0761***		
lnagric							0.0907	0.0000*
C	-0.345	0.1603*	3.977	.0951***	-1.218	0.3987	1.4533	0.0142*
@TREND	2.4200	0.0000*	-0.010	0.0000*	0.0119	0.0000*	0.0152	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

5.6.2 Analysis of Molemole municipality

Table 5.14 and appendix H shows the error correction models for Molemole municipality economic growth, employment, poverty, local economic development and the key economic sectors. The most contributing sectors to economic growth are financial sector (0.126) and trade

(0.1277). Thus, an increase in the sectorial output leads to a change in economic growth in Molemole Local Municipality by 0.126 percent and 0.1277 percent respectively. The empirical results support the structural change theory and the export base theory (Kacar *et al.*, 2016). Similar findings were also found by Nel and Binns (2003) and Notre (2011). There were other sectors that contributed positively to Molemole economic growth, namely: the construction sector, manufacturing sector, tourism sector and the transport sector. The findings were in line with the literature review (Pedrana, 2013; Musakwa, 2009). Conversely, the productivity of community service sector contributed to economic growth negatively. An increase in the sectorial output of the community service sector by a percent leads to a decrease in economic growth. Although, the productivity of community service sector shoes a negative relationship in the short run, the speed of adjustment confirms the reality that community service contributes positively in the long run and it takes about 1.45 (1/0.687) years for the economic growth to fully adjust to change in the productivity of the key sectors.

The most contributing sectors to employment are the community service sector (0.279), manufacturing sector (0.2146) and the agriculture sector (0.001). Thus, all the coefficients of the aforementioned sectors are positive and statistically significant at the one percent level of significancy. Quantitatively, a percent increase in sectorial output of the community service sector, manufacturing sector and the agriculture sector increases employment by 0.28 percent, 0.2146 percent respectively. The empirical results were similar to Notre (2011). The results also support the traditional theories and structural change theories. On the other hand, the productivity of trade sector, tourism, finance, mining, tourism and construction sector influenced employment negatively. Therefore, an increase in output in these sectors leads to a decrease in employment. This might have been attributed to poor policies that failed to promote employment in these sectors. However, this can be fixed in the long-run and it takes about 2.27 (1/0.44) years for the local economic development to fully adjust to change in the productivity of the key sectors.

The construction sector, finance sector, manufacturing sector, trade sector and the agriculture sector are the sectors that have contributed to poverty alleviation in the Molemole Local Municipality. All these sectors are statistically significant at one percent level of significancy. Accordingly, a one percent increase in the productivity of the aforementioned sectors leads to poverty alleviation. The results of the study support the export base theory, stages of growth theory and Kaldor`s theory (Todaro & Smith, 2006). The electricity sector and the tourism sector, however, revealed negative coefficients of 0.133 and 0.170 and are statistically significant. This confirms a negative relationship between tourism, electricity sector and poverty alleviation. As

these key sectors increase in output, poverty increases. However, in the long run the equilibrium will be reinstated and this was confirmed by the speed of adjustment of 70.1 percent. It takes about 1.42 (1/0.701) years for the poverty alleviation to fully adjust to change in the productivity of the key sectors.

The sectors that promoted local economic development in the Molemole Local Municipality were the community service sector (0.3248), agricultural sector (0.06), trade sector (0.1868) and manufacturing sector (0.1357) and are statistically significant at one percent level of significancy. This signifies a positive relationship between these key sectors and the local economic development index. An increase in the sectorial output of these sectors by one percent leads to an increase in local economic development. The results tally with the literature review (Stiftung, 1999 & Van Rooyen, 2007). On the other hand, the productivity of finance sector and the electricity sector influenced local economic development negatively. Thus, an increase in the sectorial output of finance and electricity sectors leads to a decrease in the local economic development. The study shows a speed of adjustment of -0.677; thus, it takes about 1.47 (1/0.677) years for the local economic development to fully adjust to change in the productivity of the key sectors.

Overall, the most contributing sector to local economic development, economic growth, employment and poverty alleviation was the manufacturing sector. Thus, the manufacturing sector is the pillar of economic development in Molemole Local Municipality. The findings were consistent with the literature and economic development theories (Notre, 2011; Zalk, 2014). The second sector that contributed to Molemole was the agriculture sector. The agriculture sector contributed to employment, poverty alleviation and local economic development. Brand (1969) and Miejerink and Roza (2007) also found similar results. Furthermore, the trade sector is the second contributing sector in Molemole Local Municipality. The sector contributed more to economic growth, poverty alleviation and local economic development. The results are in line with both the literature review and economic development theories (International Labour Organisation, 2010; Nel & Binns, 2003). However, the trade sector influenced employment negatively and this might have been caused by job losses in the sector. Likewise, construction and finance were also pillars for economic growth and poverty alleviation while they negatively influenced employment and local economic development. The results were in line with other previous studies such as that of Musakwa (2009) and Notre (2011).

Table 5.14: Molemole error correction models

Variables	Economic growth model		Employment model		Poverty model		LED model	
	coef	Prob	coef	prob	coef	Prob	coef	Prob
ECT	-0.687	0.0000*	-0.442	0.0000*	-0.701	0.0000*	-0.677	0.0000*
lncomus	-0.067	0.0006*	0.2796	0.0000*			0.3248	0.0046*
lnconstr	0.0396	0.0000*	-0.182	0.0000*	0.0313	0.0035*	-0.050	0.0000*
lnfinance	0.1262	0.0000*	-0.897	0.0000*	0.2892	0.0002*	-0.063	0.0000*
lnmanufac	0.0338	0.0001*	0.2146	0.0000*	0.5056	0.0007*	0.1357	0.0000*
lnmining	0.0731	0.0000*	-0.089	0.0000*				
lntourism	0.0140	0.0000*	-0.136	0.0000*	-0.170	0.0000*		
lntrade	0.1277	0.0001*	-0.369	0.0002*	0.4212	0.0111**	0.1868	0.0001*
lntrans	0.0071	0.0048*						
lnelectric					-0.133	0.0088*	-0.044	0.0001*
lnagric			0.0097	0.0005*	0.1013	0.0000*	0.0610	0.0000*
C	-7.127	0.0249*	2.3990	0.0174			1.4000	0.0018*
@TREND	-0.006	0.0000*	-0.000	0.0000*			0.0140	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

5.6.3 Analysis of Polokwane municipality

Table 5.15 and appendix I shows the error correction models for Polokwane Municipality economic growth, employment, poverty, LED and the productivity of key economic sectors. The sectors that contributed to economic growth in Polokwane Local Municipality were the construction sector (0.025), finance sector (0.2834), manufacturing sector (0.0714), mining sector (0.085), tourism sector (0.006) and transport sector (0.0220). These sectors have positive coefficients and they were all statistically significant at one percent level of significancy. The most

contributing sectors to the economic growth of the local municipality were the finance sector (0.2834) and mining sector (0.085) in the short run. A percent increase in the productivity of finance sector and mining sector leads to an increase in economic growth by 0.2834 percent and 0.085 percent. These results were in line with other researchers such as Nel & Binns (2003). On the other hand, the productivity of trade sector and community services negatively affected economic growth. The coefficients of the trade and community service sectors were 0.198 and 0.190. This implies that a percent increase in sectorial output of the trade sector and community service sector decreases the economic growth by 0.198 and 0.190 respectively. The findings are similar to the findings by the Development Policy Research (2006). The estimated speed of adjustment is highly significant at 99.5 percent and has an expected sign. This means about 99.5 percent of the disequilibrium from the previous year converges back to equilibrium in the long-run. In other words, it takes about one (1/0.995) year for the economic growth to fully adjust to change in the productivity of the key sectors.

For the employment model, the community service sector (0.3068), trade sector (0.4543) and the agriculture sector (0.0170) contributed to employment. Thus, an increase in the sectorial output of the community service sector, trade sector and agriculture sector leads to an increase in employment by 0.31 percent, 0.45 percent and 0.02 percent respectively. The most contributing sector to employment is the trade sector followed by community service sector and agriculture sector. The findings of the study were similar to the findings by the International Labour Organisation (2015). On the other hand, the manufacturing sector, finance sector, mining sector and construction sector show a negative relationship with employment. The study further showed an error correction term of -0.062 which transcends to 6.2%. This means that 6% disequilibrium of employment in Polokwane Municipality will be in equilibrium in the upcoming year.

The study reveals that the finance sector, manufacturing sector, trade sector, electricity sector and agriculture sector are positively related to poverty alleviation. Thus, an increase in the mentioned sectors leads to poverty alleviation. For instance, an increase in sectorial output by one percent in the agriculture sector leads to an increase in poverty alleviation by one percent. These results were in line with other researchers such as Miejerink & Roza (2007). The findings of the study also support the traditional theories (Smith, 1976). On the other hand, the productivity of tourism and the construction sector negatively affect poverty alleviation. Accordingly, an increase in the productivity of tourism and construction sector output leads to an increase in the number of people who are poor. The policies of tourism and the construction sector do not support the poverty alleviation mandate. The results show the error correction term 52 percent and thus it takes about

1.92 (1/0.520) years for the poverty alleviation to fully adjust to change in the productivity of the key sectors.

The community service sector, finance sector, manufacturing sector, trade sector and the agriculture sector influenced local economic development positively. The most contributing sectors were the community service sector (0.3439) and trade sector (0.1588). Accordingly, a one percent increase in the productivity of community service and trade sectors leads to 0.3439 percent and 0.1588 percent increase in local economic development. The findings of the study were consistent with the export base theory and the neoclassical development theories (Blakely & Leigh, 2010). On the contrary, the electricity sector and construction sector revealed a negative relationship. The study further found an error correction term of 54 percent which transcends implying that it takes about 1.85 (1/0.54) years for the local economic development to fully adjust to change in the productivity of the key sectors.

In Polokwane Local Municipality, agriculture was the major contributor to employment, poverty alleviation and local economic development. The study was in line with other studies (Brand, 1969; Miejerink & Roza, 2007; Valdes & Foster, 2006 and Van Rooyen, 2007). The results further support the traditional theories that emphasise the agriculture sector as the major contributor to employment, poverty alleviation and local economic development (Smith, 1976). Furthermore, the trade sector, manufacturing sector, finance sector and community service sector were major contributors to local economic development in the Polokwane Local Municipality. The results were consistent with the economic development theories and the past studies done on LED (Development Policy Research, 2006; International Labour Organisation, 2015; Notre, 2011). There are other sectors that are lagging behind such as the construction sector and tourism sector. Their policies should be aligned to LED.

Table 5.15: Polokwane error correction models

Variables	Economic growth model		Employment model		Poverty model		LED model	
	Coef	Prob	coef	prob	coef	Prob	coef	Prob
ECT	-0.995	0.0000*	-0.062	0.0000*	-0.516	0.0000*	-0.541	0.0000*
Lncomus	-0.190	0.0000*	0.3068	0.0001*			0.3439	0.0000*
Lnconstr	0.0250	0.0000*	-0.142	0.0000*	-0.074	0.0002	-0.052	0.0000*

Variables	Economic growth model		Employment model		Poverty model		LED model	
	Coef	Prob	coef	prob	coef	Prob	coef	Prob
Lnfinance	0.2834	0.0000*	-0.266	0.0002*	0.0123	0.2300*	0.0270	0.0000*
lnmanufac	0.0714	0.0000*	-0.073	0.0004*	0.0024	0.8889	0.0737	0.0000*
Lnmining	0.0851	0.0000*	-0.023	0.0001*				
Lntourism	0.006	0.0000*	-0.017	0.0000*	-0.004	0.0000*		
Lntrade	-0.198	0.0000*	0.4543	0.0001*	0.8541	0.004**	0.1588	0.0000*
Lntrans	0.022	0.0000*						
Lnelectric					0.1041	0.0040*	-0.003	0.0000*
Lnagric			0.0170	0.0003*	0.9970	0.0000*	0.0331	0.0000*
C	-12.03	0.0001*	0.3531	0.0002				
@TREND	-0.025	0.0000*	-0.000	0.0000*				

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

5.6.4 Analysis of Lepelle-Nkumpi municipality

Table 5.16 and appendix J shows the error correction models for Lepelle-Nkumpi Municipality economic growth, employment, poverty, LED and the key economic sectors. Construction sector, electricity sector, trade sector, mining sector, tourism sector, community service sector and agriculture sector contributed positively to economic growth in Lepelle-Nkumpi. These sectors are all statistically significant. These results were in line with the studies of Haine and Margo (2006) & Valdes and Foster (2005). The results show the error correction term of 23.5 percent implying that it takes about 4.25 (1/0.235) years for the economic growth to fully adjust to change in the productivity of the key sectors.

The most contributing sectors to employment in the Lepelle-Nkumpi Local Municipality were the trade sector, community service sector, manufacturing sector and agriculture sector. The empirical findings are consistent with the traditional theories and the structural change theories (Smith,

1976). On the other hand, the construction sector, mining sector and tourism sector show a negative relationship with employment. The results show an error correction term of 0.467 which transcends to 46.7 percent. Thus, it takes about 2.14 (1/0.677) years for the employment to fully adjust to change in the productivity of the key sectors.

The results further revealed that the manufacturing sector, electricity sector, finance sector and construction sector are the most contributing sectors to poverty alleviation. The results are in line with Notre (2011) and Zalk (2014). Conversely, tourism, trade and the electricity sector contributed to poverty. Accordingly, any output increase in these sectors leads to poverty. However, these sectors are to improve in the upcoming year and the speed of adjustment of 51 percent confirms that. For local economic development, the most contributing sectors are trade sector, community service sector and the agriculture sector. These results were in line with the literature (Development Policy Research, 2006; Nel and Binns, 2003). The error correction term of local economic development is 51.2 percent. Therefore, it takes about 1.95 (1/0.512) years for the local economic development to fully adjust to change in the productivity of the key sectors.

In Lepelle-Nkumpi Local Municipality, the community service sector, manufacturing sector and agricultural sector were the main contributors to economic growth, employment, poverty alleviation and local economic development. The study is in line with other studies (Development Policy Research, 2006; Wyngaard, 2006; Zalk, 2014). The results further support the traditional theories and Kaldor`s theory that emphasises that agriculture and the sector are the major contributors to economic growth, employment, poverty alleviation and local economic development (Kaldor, 1966; Smith, 1976). Furthermore, the trade sector and finance sector contributed to economic growth, employment and local economic development. The results are consistent with the economic development theories and the past studies done on LED (Development Policy Research, 2006; International Labour Organisation, 2015; Notre, 2011).

Table 5.16: Lepelle Nkumpi error correction model

Variable	Economic growth model		Employment model		Poverty model		LED model	
	Coef	Prob	coef	prob	coef	Prob	Coef	Prob
ECT	-0.235	0.0000*	-0.467	0.0000*	-0.856	0.0000*	-0.512	0.0000*
lncomus	0.0747	0.0006*	0.7632	0.0000*			0.1077	0.0008*
lnconstr	0.0374	0.0000*	-0.174	0.0000*	0.3120	0.0000*	-0.004	0.0000*
lnfinance	0.2495	0.0000*	-0.708	0.0000*	0.3965	0.0001*	0.099	0.0002*
lnmanufac	0.0922	0.0000*	0.1570	0.0000*	0.7963	0.0001*	0.0624	0.0016*
lnmining	0.0077	0.0000*	-0.002	0.0000*				
lntourism	0.0141	0.0000*	-0.014	0.0011*	-0.133	0.0000*		
lntrade	0.0900	0.0001*	0.1055	0.0000*	-0.586	0.0032*	0.2460	0.0005*
lntrans	0.0542	0.0000*						
lnagric			0.1442	0.0000*	0.0317	0.0010*	0.0706	0.0000*
lnelectr					-0.432	0.0003*	0.052	0.0014*
C	-2.483	0.0182*	2.3416	0.0094*	-1.203	0.5892	0.7839	0.0013*
@TREND	-0.005	0.0000*	0.0082	0.0000*	0.0261	0.0000*	0.0111	0.0000*

Source: Own compilation

NB: *, **, *** indicates 1%, 5% and 10% respectively

5.6.5 Discussion of the results comparing the municipalities under study

The key economic sectors that promoted local economic development (LED) in all the four local municipalities were the community service sector, manufacturing sector, finance sector, agriculture sector, trade sector, construction sector, electricity sector and transport sector. In Blouberg Municipality, local economic development was influenced by the community service sector and the manufacturing sector. These sectors have contributed to poverty reduction, economic growth and employment. On the other hand, Molemole Local Municipality's local

economic development was mainly influenced by agriculture and the manufacturing sector. The manufacturing sector and agriculture sector were the main pillars of LED in Molemole while agriculture and finance are the main drivers of local economic development in Polokwane Local Municipality. In Lepelle-Nkumpi the community service sector, manufacturing sector and the agriculture sector contributed to local economic development (LED).

From the analysis above, the manufacturing sector is consistent across all the municipalities. Thus, the Capricorn District has more manufacturing industries that are employing, reducing poverty and improving the region's economic growth. Furthermore, the manufacturing sector policies are well aligned to local economic development (LED). On the other hand, Lepelle-Nkumpi Local Municipality is the municipality that is benefiting from more sectors. The local municipality is benefiting from the community service sector, manufacturing sector and the agriculture sector. Thus, the sector should maintain good policies to keep on promoting local economic development. Therefore, the main key sectors that are consistent across all the municipalities are the community service sector, manufacturing sector, finance sector, trade and agriculture. These sectors are the main pillars for local economic development.

5.7 RESIDUAL TESTS

The cross-section dependency test is one of the vital tests in panel data used to check for serial correlation. The cross-dependency test used the Breusch-Pagan Chi-Square, Pearson LM normal and the Pearson CD to test for cross dependence. The null hypothesis is the existence of cross dependency while the alternative is the non-cross-section dependency. Tables 5.17, 5.18, 5.19, 5.20 and appendix K show the results of cross dependency tests. According to tables 5.17, 5.18, 5.19 and 5.20 the p-values are statistically insignificant. Therefore we reject the null hypothesis and accept the alternative hypothesis.

Table 5.17: LEDI cross-sectional dependence index

Test	Probability
Breusch-Pagan Chi-Square	0.1373
Pearson LM	0.9339
Pearson CD	0.1545

Source: Own compilation

Table 5.18: Poverty model cross-sectional dependence test

Test	Probability
Breusch-Pagan Chi-Square	0.1727
Pearson LM	0.7763
Pearson CD	0.0095

Source: Own compilation

Table 5.19: Economic growth model cross-sectional dependence test

Test	Probability
Breusch-Pagan Chi-Square	0.0585
Pearson LM	0.5328
Pearson CD	0.0772

Table 5.20: Employment model cross-sectional dependence test

Test	Probability
Breusch-Pagan Chi-Square	0.1944
Pearson LM	0.6962
Pearson CD	0.6439

Source: Own compilation

5.8 DISCUSSION OF THE MAIN FINDINGS OF THE STUDY

In achieving the objectives set in chapter one, the study combines the literature review on key sectors promoting LED and the results of this study. The study considered the key economic sectors in the Capricorn District municipalities, namely: the community service sector, manufacturing sector, mining sector, agriculture sector, construction sector, tourism sector, trade sector, electricity sector, transport sector and finance and business sector. These sectors were used as independent variables while economic growth, employment and poverty were used as LED

proxies. The findings and discussion of these were based on the empirical literature and the literature proposed four propositions:

P (1) A positive or negative relationship between economic growth and key economic sectors

P (2) A positive or negative relationship between poverty and key economic sectors

P (3) A positive or negative relationship between employment and key economic sectors

P (4) A positive or negative relationship between LED and key economic sectors.

5.8.1 Results of key economic sectors on economic growth

The empirical results of key economic sectors show both positive and negative effects on economic growth. Thus, the results of the study are in line with the proposition one. The study revealed that the construction sector, finance sector, trade sector, community service sector, manufacturing sector and transport sector have a positive long-run relationship with economic growth. Similar conclusions were drawn by the Development Policy Research (2006), Nel and Binns (2003) & Notre (2011). All the aforementioned variables were statistically significant except the manufacturing sector. In the short-run, five independent variables were statistically significant, namely: the construction sector, mining sector, finance sector, manufacturing sector and tourism sector, while the community service sector, trade sector and transport sector were statistically insignificant. Such findings were attributed to drought, low productivity, the financial crisis and job losses in the sector. The study shows an error correction term of 48.7 percent. Thus, it takes 2.05 (1/0.487) years for economic growth to fully adjust to productivity of key economic sectors.

5.8.2 Results of key economic sectors on employment

The employment model confirms the proposition two that there is either a positive or negative relationship. The study confirms a positive long-run relationship between the finance sector, tourism sector, trade sector and employment. The results support the export base theory, the neoclassical economic development theory and the Keynesian theory (Giordani, 2012; Kacar *et al*., 2016). This has been attributed to the World Cup and an increase in exports in the region. The agriculture sector, community service sector, mining sector and manufacturing sector, owever, reveal an inverse relationship on employment. These results are in line with Nel and Binns (2003). The mining sector is negatively related to employment but statistically insignificant. In the short-run, the manufacturing sector, finance, agriculture sector, construction sector, finance sector and

tourism sector are significant while trade and mining are not significant. The study shows an error correction term of 46.9 percent. Thus, it takes 2.13 (1/0.469) years for employment to fully adjust to the productivity of key economic sectors.

5.8.3 Results of key economic sectors on poverty alleviation

The third proposition confirms a negative and positive relationship between key economic sectors and poverty. The agriculture sector and manufacturing sector are negatively related to poverty alleviation. As key sectorial grow, no poor are people are benefiting. These results are in line with Miejerink & Roza (2007). This might have been caused by poor policy that failed to support poor people. The tourism sector, finance sector, electricity sector and trade sector have a positive relationship with poverty alleviation. An increase in the sectorial output will alleviate poverty. The results are consistent with the modern theories and the neoclassical theories. The results are similar to the study done by Musakwa (2009). In the short-run, three independent variables are significant, namely the finance sector and manufacturing sector and the tourism sector. The agriculture sector, electricity sector and trade sector are not statistically significant. These variables did not have an impact in the short-run. The study shows a speed of adjustment of 67.4 percent, implying that it takes 1.48 (1/0.674) years for poverty alleviation to fully adjust to productivity of key economic sectors.

5.8.4 Results of key economic sectors on LED

The last proposition is confirmed by a positive and negative relationship between key economic sectors and the Local Economic Development Index. A positive relationship between the construction sector, finance sector, trade sector, electricity sector, tourism sector and LED was established. Similar conclusions were drawn by the Capricorn District Municipality (2016). In opposition, the agriculture sector and manufacturing sector show a negative relationship with local economic development. This might have been attributed to the mining strike, job losses and low productivity. The community service sector was found to be insignificant. In the short-run five independent variables were statistically significant at 1%, namely: the construction sector, trade sector, manufacturing sector, agriculture sector and community service sector. On the other hand, the finance sector and electricity sector were found to be insignificant. Thus, the finance and electricity sectors did not have an impact on local economic development. The study shows a speed of adjustment of 0.6857 percent, implying that it takes 1.46 (1/0.6857) years for local economic development to fully adjust to the productivity of key economic sectors.

5.9 SUMMARY

This chapter bridged a research gap on lack of panel analysis on LED. The study tested all the essential econometric tests, namely the panel unit root test, short-run and long-run analysis. The first step of estimation, that is panel unit root test, confirmed that the agricultural sector, mining sector, economic growth and employment were stationary at levels while the community service sector, construction sector, electricity and utility sector, finance sector, manufacturing sector, tourism and trade were not stationary at levels but stationary at first difference. The results confirmed that the variables used in the study were integrated of order zero and one. Since variables were integrated at order zero and one, panel ARDL was preferred to run the economic growth model, employment model, poverty model and local economic development model. The first model (economic growth) has revealed a positive relationship with the construction sector, finance sector, trade sector, community service and transport sector. Conversely, the mining sector and tourism sector revealed a negative relationship to economic growth.

The employment panel ARDL model revealed a positive relationship between the trade sector, tourism sector and finance sector. On the other hand, the agriculture sector, community service sector, construction sector, manufacturing sector and mining sector revealed an inverse relationship on employment. All the variables were found to have a significant effect on employment except the mining sector. The poverty panel ARDL model results have shown that the community service sector, construction, manufacturing and agriculture were positively related to poverty while tourism, finance and trade sectors reduced poverty. For the LED model a positive relationship between the construction sector, finance sector, manufacturing sector, trade sector, agriculture sector and LED was established. On the other hand, the mining sector and tourism sector shows a negative relationship on local economic development. For short-run analysis all the error correction terms were negative and statistically significant.

CHAPTER 6
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The study has examined LED as a multidimensional process that addresses economic growth, poverty reduction and job creation in a local area. The subsequent result emanating from the study is that, for LED goals to be successfully brought to fruition, key economic sectors are to play a pivotal role in improving the living standards. In other words, key economic sectors can support economic growth, alleviate poverty and create jobs for the local residents. In light of such findings, the study explored the role of key economic sectors to economic growth, poverty reduction and job creation. Hence, this chapter presents the summary of the thesis by succinctly presenting the main aims of the study, theoretical objectives of the study, methodology of the study, the realisation of objectives, conclusions, strategy development, limitations and areas of future research.

6.2 SUMMARY OF THE THESIS

As highlighted above, the main objectives of the study were to identify the key sectors that contribute to LED, to compare how different sectors contributed to job creation, economic growth and poverty reduction and to develop and test the new local economic development index for measuring LED. The subsequent section presents in an abstract manner the theoretical background of the study, research methodology and empirical findings.

6.2.1 Theoretical background

Of paramount importance is that the concept of LED was implemented in the early 1970s with the aim of improving economic activity in a community and solving the economic challenges faced by a local area. In South Africa, it was thrust into the limelight through the Constitution of 1996 and became common around the late 1990s where local governments were given the authority to control, guide and oversee the social and economic development of their communities. The main objective of such a paradigm shift was and is to improve economic growth, employment and reduce poverty. On that note, in achieving the objective(s) of the study, economic development theories were applied to build the foundation of the study, namely: traditional theories, the classical theories, the Keynesian model, Kaldor`s theory, the location theories, the modern theories and the theories of coordination.

It is important to note that the traditional theorists prescribe to the idea that agriculture is the major sector that contributes to economic growth and development. This brings out the proposition that all the local governments should specialise in the sector(s) in which they have an absolute advantage for local economic development to be successfully achieved. A local municipality should export a product it has an absolute advantage in and import a product it has an absolute disadvantage in. The success of the traditional theorists is accredited to specialisation, division of labour, costs of production and lower opportunity cost. Thus, the lower the cost of production and opportunity cost the more exports a municipality has and the better the living standards. On the same note, the more the division of labour and specialisation a municipality has, the more sectorial output and better living standards it provides. The regional economic development theorists further propound the argument that factors of production such as labour and capital should be in abundance and mobile for a region to grow. Thus, factors of production should flow without restrictions in order for sectorial output to grow.

Conversely, the classical theories of economic development focus more on two strands, namely: stages of growth and structural change theory. The stages of growth theorists preach the notion that a region or local government has to pass through five stages of economic development. These are export specialisation, export complex, export maturation, regional metropolis and technical virtuosity. The five stages of production pertain to production, that is, sectorial output. Noteworthy is that a sector should export at least one product to broaden its production. Hence, if a firm was producing 1000 units of goods, it should increase its production to 1500 units. This should lead to a replacement of imports in a region. Eventually a local industry becomes a source for many regions. On the other hand, the structural change theorists are of the view that local government should move from traditional sectors such as agriculture to modern sectors such as manufacturing and services sectors. The modern sectors are high productivity sectors compared to the traditional sectors. Therefore, labour should be transferred from a zero productivity sector to a high productivity sector to reduce poverty, increase economic growth and create employment.

In addition, the Keynesian model and Kaldor`s theory also laid the foundation of the study. The Keynesian theory envisions all the key sectors as components of economic growth and employment. To bulwark the Keynesian theory is Kaldor`s theory. This theory puts more emphasis on the manufacturing sector as the major determinant of economic growth. The theory strongly suggests that the manufacturing sector is positively related to economic growth. The theory further states that an increase in the manufacturing output will lead to an increase in employment in the

sector. On the same note, a constant increase in manufacturing output will improve other sectors through labour transfer that will solve the unemployment problems.

On the other hand, economic development theorists argue that industries in a municipality should be located at a close proximity to raw materials, transport and labour for better sectorial output. A growth in the sectorial output should further lead to growth in other areas. The theories of coordination, however, opine that, in order to expand sectorial growth, all the economic activities in a local municipality should be coordinated and all the market failures should be corrected and investment should be promoted. To achieve this the modern theories propound that a municipality should have good policies coupled with good skills, knowledge of the business, knowledge of other institutions and rivals. Hence, the basic idea is to move the market from urban regions to small restricted markets in poor regions.

The research on the analysis of key economic sectors promoting job creation and local economic development cannot be separated from the previous literature. The literature linking economic sectors and LED is very limited. Researchers have dealt much with the contribution of LED to poverty reduction, employment and the community. Research on LED in Europe has shown that agriculture, business sector, construction, tourism and mining have improved employment and poverty reduction while the mining and manufacturing sectors have made a great impact on economic growth. A survey done in South Africa has shown that government officials prefer LED to be introduced to curb unemployment and poverty and foster economic growth. In light of this survey, the key sectors that promoted employment, poverty reduction and economic growth are agriculture, tourism, small business sector, manufacturing, mining, and the construction and community service sectors. However, it is worth mentioning that all the studies done on LED lack an econometric analysis such as models and statistical analysis. Therefore this study filled such lacuna by analysing LED using the panel ARDL model.

6.2.2 Research methodology

The literature review in chapters two and three indicated a lack of panel quantitative studies in South Africa on key economic sectors promoting LED. To this end, the study used the quantitative method to analyse the key economic sectors promoting LED. A quantitative approach was deemed fit as it gives reliable statistical conclusions and it accommodates large sample sizes. A sample size of nineteen years was used, that is from 1996 to 2015. The researcher chose 1996 because the LED in South Africa became prominent and highly recognised in that particular year. In addition, the LED data became more consistent as a result of the popularity it gained after South Africa`s

democratic elections in 1994. Noteworthy is that the Capricorn District was the focus area of the study because the district is dominated by a rural area that experienced absolute poverty, unemployment and stagnant growth. There is no study that has been conducted in the area on the key sectors contributing to LED using a panel quantitative approach.

In addition, the study used a balanced panel data approach that contained a combination of time-series and cross-sectional observations. A panel ARDL model was adopted and four models were estimated, namely the local economic development model, economic growth model, the employment model and the poverty alleviation index model. Economic growth, employment, poverty and the Local Economic Development Index were used as dependent variables while key economic sectors were used as independent variables. The Local Economic Development Index was developed using three variables, namely economic growth, employment and poverty. These three variables were chosen because they define LED. Weights were put on each component and economic growth contributed most (0.4) while poverty and employment had an equal share of 0.3 each respectively.

Before the models were estimated, statistical tests were performed, namely graphical analysis, descriptive statistics, correlation and the unit root tests. The graph analysis showed the trends of the variables under investigation while the descriptive statistics provided a summary of both dependent and independent variables expressed in a quantitative state. Descriptive statistics analysed the mean, median, maximum and minimum of both dependent and independent variables. Furthermore, the study carried out the correlation analysis to check for the degree of interaction of variables. The association can be either positive or negative. A positive and closer to 1 coefficient signifies a strong relationship between variables while a negative coefficient closer to 1 signifies a strong negative linear relationship.

To test for panel unit root test, the literature suggested the Levin, Lin and Chu (20002), Perasan and Shin (2003), Maddala & Wu (1999) and Hadri (2000) tests. These tests attempt to answer questions such as: What is the null and alternative hypothesis? What is heterogeneous and homogeneous? How do you treat small sample properties? All the panel unit root tests except the Hadri set the null hypothesis at unit root test. If the hypothesis tested on the existence of unit root is accepted, this means that the time series is non-stationary. On the other hand, if the hypothesis tests the existence of panel unit root is rejected then the time series is stationary. The results of the panel unit root tests outlined the estimation method used in the study. If all the variables are stationary at levels, a researcher may run a panel simple regression. In the event that variables are

integrated and of a different order, for instance 1(0) and l(1), then panel ARDL can be performed. In addition, if all the variables are integrated of the same order, for instance 1(1), then cointegration tests can be performed. In the event that variables are integrated of different orders, for instance, 1(0) and 1(1) then there is no need to test for cointegration. One would thus rather move and test for panel ARDL.

The panel ARDL is a panel estimation method that was introduced by Pesaran, Shin & Smith (1999). Such a method operates successfully on condition that variables are integrated at order zero and order one and if the data is free from heteroscedasticity and autocorrelation. The panel ARDL analysed both the short-run (ECM) and long-run relationship of the variables under investigation. This process involved two stages: first stage is to check the presence of a short run relationship and, secondly, if the relationship exists then the long-run coefficients can be estimated. In analysing these two stages the econometric theory prescribes that the researcher should analyse the coefficient, the sign of the coefficient, the probability values and (ECT) which is the speed of adjustment. If the sign of the coefficient is negative, it means the existence of a negative relationship between variables. Conversely, if the sign of the coefficient is positive then a positive relationship is established. In the short run, the econometric theory subscribes that the coefficient of error correction term should be significant at the same time negative and less than 2. The error term or speed of adjustment shows the percentage of equilibrium that will be attained in the upcoming year.

Furthermore, the appropriate lag length and residual tests were chosen to avoid serial correlation and spurious results on panel parameters. The smaller the lag length used the more precise the error correction parameters. Conversely, the larger the lag length chosen the lower the problem serial correlation. The researcher used the automatic lag length and the Akaike Information Criterion (AIC) using the statistical software EViews 9.5. The study used the histogram-normality test to check if the residuals were normally distributed. The normality test sets the null hypothesis on the existence of normal distribution and alternative hypothesis on no normal distribution. A small probability value rejects the existence of normal distribution whilst a large probability value does not reject the existence of normal distribution.

6.2.3 The empirical findings of the study

Chapter five bridged the research gap concerning the lack of panel analysis on LED. The study tested all the essential econometric tests, namely the panel unit root test, short-run and long-run analysis. The first step of estimation which is the panel unit root test confirmed that the agricultural

sector, mining sector, economic growth and employment were stationary at levels whilst the community service sector, construction sector, electricity and utility sector, finance sector, manufacturing sector, tourism and trade were not stationary at levels but stationary at first difference. Thus, the results confirmed that the variables used in the study were integrated at order zero and one. Considering the fact that variables were integrated at order zero and one, panel ARDL was preferred to run the economic growth model, employment model, poverty model and local economic development model.

The results of the first model (LEDI) show a positive relationship between the community service sector, trade sector, construction sector, the finance sector, electricity sector and local economic development. In contrast, the agriculture sector (lnagric) and manufacturing sector (lnmanufac) reveal an inverse relationship on local economic development. The short run shows the error correction term of -0.6857 and significant p-value of 0.0002. This means that 68% of disequilibrium in the municipality will be reinstated in the next period provided these sectors improve to influence local economic development. Thus, it takes about 1.45 (1/0.6857) years for local economic development to adjust to change in the productivity of the key sectors. In the short-run analysis, the community service sector, trade sector, agriculture sector and manufacturing sector contributed to local economic development in the short-run. The finance sector, construction sector and electricity sector, however, were negatively related to local economic development.

The second model (economic growth) revealed a positive relationship between the construction sector (lnconstr), community service sector (lncomus), finance sector (lnfinance), manufacturing sector (lnmanufac), trade sector (lntrade) and transport sector (lntrans) and economic growth in the long-run. The mining sector (lnmining) and tourism sector (lntourism), however, revealed a negative relationship on economic growth. For the economic growth error correction model, the results show the error correction term of -0.4879 and significant p-value of 0.0330. It takes about 2.05 (1/0.4879) years for the economic growth to fully adjust to change in the productivity of the key sectors. The key sectors that promoted economic growth in the short-run include the community service sector, construction sector, finance sector, manufacturing sector, mining sector, tourism sector, trade sector and transport sector. The most contributing sectors to economic growth are the transport sector, finance sector and trade sector. In addition, the community service sector, trade sector and transport sector are statistically insignificant.

The results of the third model, employment ARDL model, shows a positive relationship between the trade sector, the tourism sector, the finance sector and employment in the long-run. On the

other hand, the construction sector (lnconstr), mining sector (lnmining), agricultural sector (lnagric), community service sector (lncomus) and manufacturing sector (lnmanufac) reveal an inverse relationship with employment. In the short-run, the employment model indicates a speed of adjustment of 0.4693 and it is statistically significant at five percent. Thus, it takes about 2.13 (1/0.4693) years for the employment to fully adjust to change in the productivity of the key sectors. The key sectors that contributed to employment in the short-run are agriculture, community service sector and manufacturing sector. In contrast, the construction sector, finance sector, mining sector, tourism sector and trade sector influenced employment negatively.

Furthermore, the results of the poverty alleviation model show that the tourism sector (lntourism), finance sector (lnfinance), electricity sector (lnelectr) and trade sector (lntrade) are positively related to poverty alleviation in the long-run. Conversely, a negative association between the manufacturing sector, agriculture, construction sector and poverty was established. For short run, the study found a negative speed of adjustment of -0.6750 and it is statistically significant at one percent. The speed of adjustment confirms the reality of a long run relationship between poverty and key economic sectors. Thus, it takes 1.4 years for poverty alleviation to be reinstated with the productivity of key sectors. In addition, the overall contributing sectors to poverty alleviation are the manufacturing sector and finance sector. Furthermore, the construction sector, agriculture sector, electricity sector and trade sector were found to be insignificant to poverty alleviation.

6.3 REALISATION OF STUDY OBJECTIVES

This section gives a synopsis of how the study's objectives were achieved.

6.3.1 Primary objective

The primary objective of the study was to analyse the contribution of key sectors to LED for strategy development in the Capricorn District. The primary objective of the study was achieved in chapter five, sections 5.5.2.1 and 5.5.3.1. The results have shown that a positive relationship exists between the trade sector, construction sector, electricity sector and local economic development in the long-run. Furthermore, the community service sector, trade sector, agriculture and manufacturing sector have contributed to local economic development in the short-run. In other words, the trade sector, the construction sector, the community service sector, the agriculture sector, the manufacturing sector and the electricity sector have contributed to local economic development.

6.3.2 Theoretical objectives

The study came up with four theoretical objectives outlined in chapter one. All the theoretical objectives are discussed below and how they were achieved.

- **To provide a theoretical contextualisation of LED**

The study provided the theoretical contextualisation of local economic development (LED) in chapter two, section 2.2. The study identified an intertwined relationship between development economics and LED. Thus, LED fits well in development economics as it shares the common objective of improving the living standards of a region. In addition, section 2.5 provided the foundation of the study (seven economic development theories), namely the traditional theories, absolute and comparative advantage, the classical theories, the Keynesian model and Kaldor`s theory, the location theories, the modern theories and the theories of coordination.

- **To review the literature that explains the link between sectorial economic growth, job creation and LED**

The research on the analysis of key economic sectors promoting LED was not separated from previous studies. This theoretical objective was achieved in chapter two section 2.10. The current study was intertwined with the previous literature. The researcher found out that the literature linking economic sectors and LED is very limited. The limited studies identified were done on developed and developing countries with the main focus on South African municipalities. These studies were more qualitative than quantitative.

- **To review the empirical studies on LED in the South African context (case studies)**

The study achieved the third empirical objective in chapter three, section 3.8. The study could not do without the case studies on local economic development (LED). The study discussed South Africa's experience of local economic development in all nine provinces. The case studies highlighted the importance of local economic development and its contributions in the respective regions.

6.3.3 Empirical objectives

In accordance with the primary objective of the study, the following empirical objectives were formulated: to identify the key sectors that contribute to LED in the Capricorn District; to compare how different sectors contributed to job creation, economic growth and poverty reduction in the Capricorn District; to develop and test the new index for measuring development at a local level;

and to formulate LED strategies for Capricorn District municipalities. In achieving these empirical objectives, the literature proposed the following proposition:

P (1) A positive or negative relationship between economic growth and key economic sectors

P (2) A positive or negative relationship between employment and key economic sectors

P (3) A positive or negative relationship between poverty and key economic sectors

P (4) A positive or negative relationship between local economic development and key economic sectors.

Below are the discussions of empirical objectives based on the propositions and all these empirical objectives are built and expounded on in chapters four and five using the panel ARDL model.

- **To identify the key sectors that contribute to LED in the Capricorn District**

The key sectors that contributed to local economic development were presented in chapter five, sections 5.5.2 and 5.5.3. The study identified nine key sectors that contributed to LED, namely, the community service sector, the trade sector, the agriculture sector, the tourism sector, the construction sector, the finance sector, the mining sector, the manufacturing sector and the transport sector.

- **To identify the sectors that contributed to employment, economic growth and poverty reduction in the Capricorn District**

This empirical objective was achieved in chapter five, sections 5.5.2.2 and 5.5.3.2. The empirical results on key economic sectors and economic growth confirmed both a positive and negative effect on economic growth (proposition 1). The study revealed that the construction sector, community service sector, finance sector, manufacturing sector, trade sector and transport sector have a positive long-run relationship with economic growth whilst the tourism and mining sectors revealed a negative relationship. In addition, the construction sector, finance sector, manufacturing sector, mining sector and tourism sector have contributed to economic growth in the short-run

The second proposition was achieved in chapter five, sections 5.5.2.3 and 5.5.3.3. The study confirmed a positive relationship between the trade sector, the tourism sector, the finance sector and employment in the long-run. On the other hand, the construction sector, mining sector, agriculture sector, community service sector and manufacturing sector revealed an inverse

relationship with employment. Furthermore, the agriculture sector, community service sector and manufacturing sector contributed to employment in the short-run.

Furthermore, the third proposition was achieved in chapter five, sections 5.5.2.4 and 5.5.3.4. This confirmed a negative and positive relationship between key economic sectors and poverty alleviation. The results confirmed that the tourism sector, finance sector, electricity sector and trade sector are positively related to poverty alleviation in the long-run. As key sectors improve, the number of poor people decreases. On the contrary, a negative association with poverty alleviation between the manufacturing sector, agriculture sector and construction sector was established.

- **To compare how different sectors contributed to employment, economic growth and poverty alleviation in the Capricorn District**

This empirical objective was achieved in chapter five, section 5.4.4. From the results, it is evident that the manufacturing sector was consistent across all the municipalities. Thus, the Capricorn District has more manufacturing industries that are employing people, reducing poverty and improving the region's economic growth. Lepelle-Nkumpi Local Municipality is the municipality that is benefiting from more sectors such as the community service sector, manufacturing sector and the agriculture sector.

- **To develop and test the new measure for measuring development at local level**

The local economic development index (LEDI) was developed in chapter four, section 4.3.1.1. The local economic development index is a measure of development that takes into account economic growth, poverty alleviation and employment. Weights were attached to each component: economic growth (0.4), employment and poverty alleviation (0.3).

- **To formulate LED strategies/recommendations for Capricorn District municipalities.**

The policy implications for strategy development were presented in chapter six, section 6.4. The study suggested that the local government should ensure the capacity of all essential services, increase the tourism awareness and set minimum wages.

6.4 POLICY IMPLICATIONS FOR STRATEGY DEVELOPMENT

It has been noted that economic growth, poverty alleviation and employment are the most important elements in local economic development. As a result thereof, anything that is a barrier to economic growth, poverty alleviation and employment should be eliminated. The results of the

study reveal key economic sectors that were a barrier to economic growth, poverty alleviation and employment. Thus, this section suggests strategies and recommendations to improve LED in the Capricorn District Municipality.

6.4.1 Restructuring of the agricultural sector

Agriculture sector was found to be negatively related with local economic development. To fix the problem, the agriculture authorities should restructure the agriculture sector. Thus, they should change the production methods. If the sector was capital intensive and it should also employ some labour intensive to create jobs in the region. Furthermore, the sector sector should identify a good there have an absolute advantage in and specialise for export purposes. This will increase the economic growth, alleviate poverty and increase employment. Thus, calls for better agriculture transformation policies that promote better output in the sector.

6.4.2 Infrastructure development in the Construction Sector

It is salient for the Capricorn District Municipality to engage in infrastructure development (construction sector) since a majority of its residents have no access to sanitation facilities, water, electricity and convenient shopping complexes. Providing sanitation facilities, water, electricity and shops creates employment in the district and improves the living standards of the district. Furthermore, residents will move from below poverty lines to above poverty lines through the income they get from infrastructure development projects. This will later increase the number of goods and services produced in the district through the multiplier effect.

6.4.3 Ensure capacity of all essential services in all key sectors

Noteworthy is that the electricity shortage has been a drawback to South Africa and the Capricorn District. This has resulted in a negative impact on economic growth, employment and poverty reduction. To curb this the Capricorn District has to develop innovative ways of substituting electricity with natural gas and solar. These substitutes are easier and less expensive to erect and maintain. The substitutes will allow production to continue even when there is no electricity and this will increase all the sectors productivity.

6.4.4 Improve production methods

Traditional production methods overlook the mounting demand for all key economic sectors. They ignore the current demands that arise and this will harbour local economic growth and

employment. To curb this the district municipality should explore new markets, introduce new innovations and come up with new lucrative methods. For instance, wholesale, retail and insurance banking should be explored in the finance sector.

6.4.5 Prioritising important projects

The district has ongoing projects and yet some do not contribute extensively to economic growth, poverty reduction and employment. Thus, the district should prioritise the projects that improve economic growth, employment and reduce poverty. Much focus should be extended on projects that employ more people and that pay better income and improve economic growth.

6.4.6 Investment in skill development and technical skills

The key economic sector operations are constantly changing. Better methods are being introduced to improve sectorial output. As new technology is introduced workers should receive regular education on the new technology to cope with demands of the sector. Furthermore, companies should provide more internships or on the job trainings in order to improve employment in the district municipality. This will increase the skills in a sector and prevent the district from hiring skills from other countries and provinces.

6.4.7 Increase the tourism awareness and development

The Capricorn District has some of the most beautiful scenery in South Africa. However, few are aware of the capabilities of the district. Thus, the provincial government should create and foster tourism awareness to boost economic growth. Awareness will create jobs for the local residents, increase the economic growth for the local government and bring revenue to the local government. Tourism also brings foreign currency into the region.

6.4.8 Improving economic growth

Economic growth is vital for economic development. One of the key elements to improve economic growth is for the unemployed graduates in the Capricorn District to volunteer as workers in the sectors they have studied for. This will increase the sectorial output in the respective sectors. Furthermore, volunteers can gain skills, make connections and acquire experience for the job. Another way of increasing economic growth is to cut unnecessary expenditure. One of the unnecessary expenditures is the spending on social security grants such as child grants. Such spending should be put off so as to pave the way for other items that can promote economic growth

such as funding micro-businesses. In addition, the government should reduce the salaries of government officials and redirect the funds to community based projects for economic development. The local government should also develop good policies that promote the use of technology within their economic sectors. Thus, the government can provide these sectors with grants and affordable loans to promote better sectorial output.

6.4.9 Education and training

The local government should invest in its people. It should come up with long-term goals of creating an employment base through educating and training its own residents. The local government should sponsor the vulnerable to go to colleges and universities that are practical oriented in order to acquire the knowledge of how to do a job. The local government can also sponsor those who are not academically gifted to do hands on jobs so as to reduce social problems such as poverty, prostitution and crimes.

6.4.10 Devising labour related technology

Many industries are moving away from labour intensive machines to capital intensive machines. This has compromised employment within the key sectors in the Capricorn District. To curb this problem, the local government should negotiate with the sectors to use the labour intensive technology.

6.4.11 Government should set minimum wages

A majority of the industries exploit poor people, especially in rural areas. Poor people work so hard and yet they live below the poverty line. To solve this problem the government should set a minimum wage that caters for an individual's basic commodities such as rent, food, transport and clothes.

6.4.12 Relationship between economic growth and development

The relationship between economic growth and economic development is intertwined. Economic growth pertains to an increase in the number of goods and services in the economy while economic development is the improvement of living standards for everyone in a region. It is important to note that economic growth tells less about economic development. However, a consistent increase in economic growth tells more about economic development. Thus, a persistent rise in economic growth leads to economic development. In other words, a persistent increase in economic growth

should benefit the majority of the people in a region. To spur this on all the components of economic growth should be promoted and maintained for economic development purposes.

6.5 CONTRIBUTIONS OF THE STUDY

The study has contributed to the current literature by investigating the impact of key sectors promoting local economic development. Thus, the study has identified the key economic sectors that contribute to economic growth, poverty alleviation and employment in the Capricorn District Municipality. This auxiliary broadens the latitude for policy making in the region and the province at large. The majority of the studies on LED have used the qualitative approach (Akah, 2000; Musakwa, 2009; Nel, 2003 and Human Science Research, 2010). However, the study has contributed immensely by using a quantitative method (panel ARDL model). Thus, the method and the analysis used in this study are firm and well founded. In addition, a new local economic development index was created to measure local development. The index/measure contributes to the existing research literature of development economics. Furthermore, the current study creates more avenues for new research topics in development economics for strategy development. The policies suggested by the researcher can be used by policy makers to reinforce the key economic sectors in the region.

6.6 LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

Even though all the objectives were achieved, the study has its limitations. The study only considered one district in a province. The study could have added more districts for comparison purposes. In addition, other sectors were not considered because they do not form part of key economic sectors. The study could also add a qualitative approach in the form of interviews to check real problems faced in the implementation of LED. The limitations of the study can be addressed by the following areas of research:

- Future studies can add more district municipalities for comparison purposes using the local economic development index.
- Future studies can further do a qualitative study to address the economic problems that are not captured quantitatively by means of interviews with key role players in the region.

6.7 CONCLUSION

It can therefore be safely concluded that local economic development is the process of improving local economic growth, employment and poverty alleviation. In that light, to improve local

economic growth and employment, and alleviate poverty, key sectors need to play a significant role. Thus, the study analysed the relationship between key economic sectors and LED using the panel ARDL model. The results of the study profoundly contribute to research as it suggests that the community service sector, trade sector, construction sector, finance sector and electricity sector contributed to local economic development. Conversely, the agriculture sector and manufacturing sector reveal an inverse relationship with local economic development. Sectors such as the agriculture sector and manufacturing sector call for improved production methods, continuous agricultural growth and education and training so as comprehensively contribute to local economic development. One should bear in mind that, although, the study was based on the Capricorn District, the suggested policies can be used by other developing regions. Furthermore, due to the exceptional nature of the study and methods used herein, the study encourages other researchers to carry out research on the same topic.

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APPENDIX A

ORIGINAL DATA

year	id	munic	non-poor	employ	growth	LEDI	agric	mining	manufac	electr	constr	trade	trans	finance	comus	tourism
1996	1	blouberg	12	54	15	26	43062	225037	70215	40524	72990	335374	53708	742583	723063	192514
1997	1	blouberg	11	53	16	26	42061	241061	69549	41625	73354	344236	59421	714357	839408	193635
1998	1	blouberg	11	53	16	25	51670	266968	68397	42728	68605	345649	64084	668816	864667	183097
1999	1	blouberg	11	53	16	25	54271	282238	67810	39903	63058	356917	69691	652718	859511	203976
2000	1	blouberg	11	53	15	25	52316	293680	71745	41430	70615	379894	73658	592123	846855	219876
2001	1	blouberg	11	53	16	26	53521	332069	72770	38472	69049	397709	87381	602770	823513	227456
2002	1	blouberg	12	53	16	26	58507	342213	71535	40066	74944	389708	98435	575015	810983	185881
2003	1	blouberg	12	54	15	26	56181	331950	66259	48112	61561	360352	96914	572633	779539	203901
2004	1	blouberg	15	55	15	27	53812	339404	66673	51512	61744	363052	95000	567715	756904	230066
2005	1	blouberg	18	57	15	29	61 339	332 310	65 521	54 152	64 652	363 795	90 486	604 508	730 598	221660
2006	1	blouberg	20	57	16	30	55 850	364 260	68 884	57 104	71 988	381 303	93 317	625 262	733 665	264913
2007	1	blouberg	21	58	16	30	55 608	366 415	70 366	60 000	78 608	380 197	94 816	613 836	727 936	260284
2008	1	blouberg	20	59	16	30	65 129	360 990	69 744	59 712	85 477	370 975	94 990	601 414	723 098	266738
2009	1	blouberg	20	62	15	31	62 228	323 578	58 536	56 731	85 311	349 410	86 789	600 644	699 559	239917
2010	1	blouberg	22	64	15	32	57 170	321 630	57 951	57 299	80 327	332 988	81 167	565 454	660 408	241737
2011	1	blouberg	23	68	14	33	50 339	303 121	51 374	56 054	70 604	299 883	72 725	522 551	602 797	232012
2012	1	blouberg	23	68	13	33	49 896	285 365	49 994	57 118	69 813	294 354	70 467	528 572	561 692	254156
2013	1	blouberg	25	69	14	34	53 685	314 639	51 688	54 351	74 673	303 681	73 575	563 828	562 391	267567
2014	1	blouberg	26	70	14	34	60 983	303 236	55 448	54 614	80 333	322 097	79 708	613 572	579 592	284687
2015	1	blouberg	29	69	14	35	56858	315441	55475	53708	81657	325810	80413	635535	581155	278898
1996	2	molemol	16	105	23	46	83 235	229 673	129 679	48 067	120 658	652 575	125 831	448 855	833 602	145294
1997	2	molemol	16	104	24	45	81 611	235 320	130 346	48 481	121 542	664 842	140 159	473 354	966 983	130852
1998	2	molemol	16	103	25	46	102 229	259 628	130 392	49 424	115 551	680 361	154 730	489 577	1 017 929	123692
1999	2	molemol	15	104	26	46	110 516	277 732	133 121	47 191	109 335	724 500	173 992	483 419	1 044 794	146241
2000	2	molemol	16	104	27	47	109 214	302 584	144 020	50 211	125 006	787 631	187 877	467 007	1 050 639	153980
2001	2	molemol	16	104	29	48	115 964	355 926	150 888	48 001	126 333	854 362	230 345	509 144	1 055 858	158047
2002	2	molemol	17	104	31	49	130 091	380 350	153 149	50 760	141 540	865 197	270 171	531 874	1 072 137	151510
2003	2	molemol	18	105	31	49	129 908	349 089	148 034	57 819	121 414	841 582	278 013	557 890	1 085 216	162652
2004	2	molemol	21	108	32	52	129 937	361 793	155 505	62 006	126 913	887 662	284 853	591 866	1 104 165	182537
2005	2	molemol	24	110	35	54	159 329	366 015	163 515	65 472	142 246	955 913	292 609	649 749	1 152 282	175053
2006	2	molemol	27	111	38	56	151 012	411 657	177 986	69 170	163 957	1 040 361	315 039	730 578	1 212 688	210860
2007	2	molemol	28	111	39	57	156 819	414 796	190 405	72 164	187 450	1 090 359	337 178	777 617	1 274 199	208024
2008	2	molemol	26	113	41	58	189 182	403 574	197 859	70 448	213 999	1 119 765	356 640	809 280	1 342 870	224077
2009	2	molemol	26	117	41	59	193 828	350 902	176 911	67 059	226 665	1 122 603	348 435	813 921	1 383 090	205532
2010	2	molemol	28	122	42	62	191 632	369 412	190 040	69 437	231 280	1 168 409	354 985	814 696	1 402 626	215836
2011	2	molemol	29	128	43	64	191 867	347 146	193 887	70 252	234 136	1 222 790	367 492	836 624	1 480 565	223888
2012	2	molemol	30	129	44	65	193 934	304 911	194 978	70 744	239 995	1 259 899	368 686	850 444	1 516 443	250338
2013	2	molemol	32	132	46	67	205 076	346 313	198 988	71 489	253 688	1 286 814	380 326	876 088	1 585 337	265210
2014	2	molemol	34	132	47	69	225 146	322 801	208 171	73 668	265 854	1 331 224	401 441	909 309	1 664 167	285445
2015	2	molemol	36	132	48	70	209 218	329 321	210 111	75 028	271 335	1 353 710	407 757	919 816	1 694 064	278953
1996	3	polokwan	24	76	67	57	206 187	911 411	837 700	296 647	697 980	3 838 993	688 318	4 801 367	5 043 271	118953
1997	3	polokwan	24	74	37	44	206 939	960 762	891 648	319 311	708 814	3 978 194	792 718	5 052 366	6 018 447	123089
1998	3	polokwan	25	73	38	44	260 614	1 067 358	901 080	338 763	680 405	4 111 590	885 697	5 087 195	6 411 355	139876
1999	3	polokwan	25	73	38	44	280 774	1 139 689	921 386	329 647	644 537	4 383 008	997 707	5 011 170	6 594 985	147037
2000	3	polokwan	26	72	38	45	282 207	1 264 330	1 013 748	367 983	749 419	4 847 784	1 095 743	4 796 960	6 751 009	127534
2001	3	polokwan	27	71	40	46	301 456	1 500 170	1 071 112	364 600	763 139	5 299 390	1 357 418	5 155 158	6 843 165	1307643
2002	3	polokwan	27	70	42	46	342 331	1 630 541	1 105 839	395 246	868 960	5 456 436	1 621 660	5 329 581	7 065 259	1252749
2003	3	polokwan	28	71	40	45	328 019	1 426 041	1 025 796	433 690	715 468	5 089 760	1 598 207	5 375 779	6 868 843	1341093
2004	3	polokwan	31	72	40	47	324 043	1 460 549	1 065 604	458 817	739 757	5 309 295	1 617 878	5 608 478	6 922 483	1462321
2005	3	polokwan	35	74	42	49	393 425	1 470 049	1 114 030	479 627	824 082	5 682 206	1 651 969	6 174 210	7 194 240	1420172
2006	3	polokwan	37	74	45	51	373 415	1 653 051	1 212 497	505 529	949 197	6 179 943	1 778 878	6 847 501	7 585 046	1761909
2007	3	polokwan	39	74	46	52	386 324	1 659 608	1 294 374	527 622	1 082 719	6 461 959	1 900 402	7 195 463	7 966 331	1859128
2008	3	polokwan	38	76	47	53	465 328	1 624 350	1 361 951	532 238	1 252 774	6 726 990	2 039 271	7 527 491	8 529 129	2058300
2009	3	polokwan	38	78	47	54	476 204	1 406 359	1 219 711	505 591	1 328 761	6 752 636	1 995 438	7 648 557	8 795 687	1980740
2010	3	polokwan	41	80	48	55	469 151	1 471 720	1 300 641	523 014	1 344 675	7 083 814	2 015 593	7 818 806	9 162 358	2176055
2011	3	polokwan	42	83	49	57	465 105	1 369 331	1 312 186	527 026	1 344 936	7 218 161	2 062 924	8 316 250	9 921 010	2364736
2012	3	polokwan	43	84	48	57	461 300	1 174 995	1 293 799	517 195	1 351 866	7 293 561	2 029 640	8 357 753	10 042 988	2701850
2013	3	polokwan	44	85	49	58	480 207	1 320 724	1 295 464	509 767	1 402 193	7 310 027	2 055 727	8 553 186	10 373 489	2980584
2014	3	polokwan	44	86	48	58	505 446	1 190 193	1 297 902	500 126	1 408 205	7 245 207	2 080 445	8 791 646	10 499 021	3258844
2015	3	polokwan	45	86	48	59	472 339	1 247 741	1 297 866	494 577	1 427 582	7 279 460	2 089 747	9 065 187	10 536 597	3265149
1996	4	lepele	18	56	15	28	48 261	410 752	122 733	59 781	134 542	530 771	91 277	507 511	1 294 613	204971
1997	4	lepele	17	54	16	28	47 158	432 968	123 344	63 275	131 431	526 760	100 468	522 531	1 481 297	238901
1998	4	lepele	17	54	17	28	57 936	465 964	120 759	63 194	122 774	528 166	108 187	528 676	1 530 954	240817
1999	4	lepele	17	53	17	28	61 525	488 502	121 338	59 575	114 740	553 869	119 472	521 638	1 549 116	202894
2000	4	lepele	17	53	18	28	60 437	526 254	129 995	62 975	130 477	597 616	128 007	491 980	1 545 710	230863
2001	4	lepele	18	53	19	29	63 819	613 361	135 384	59 724	131 262	643 704	157 754	521 212	1 547 933	229449
2002	4	lepele	18	53	20	29	70 287	648 126	136 727	62 413	145 834	645 253	181 440	518 348	1 555 908	211280
2003	4	lepele	18	54	20	29	68 778	580 691	129 653	69 565	122 919	614 570	182 926	532 470	1 545 979	226837
2004	4	lepele	21	56	20	31	67 812	591 101	134 046	73 202	126 765	637 634	183 467	554 326	1 550 760	250775
2005	4	lepele	24	57	21	33	82 312	584 468	138 925	76 147	140 522	677 115	183 884	603 769	1 597 278	231038
2006	4	lepele	26	58	23	34	78 573	655 841	151 420	80 331	162 447	737 340	195 546	667 062	1 678 381	262801
2007	4	lepele	27	58	23	35	81 473	659 952	162 146	84 712	186 017	772 472	207 288	703 016	1 758 849	250046
2008	4	lepele	26	60	24	36	98 281	650 659	171 643	85 318	216 769	808 104	221 387	736 232	1 886 235	263747
2009	4	lepele	26	62	24	36	101 164	558 351	151 725	81 781	228 631	805 055	211 507	744 117	1 935 962	243027
2010	4	lepele	28	65	25	38	101 304	592 659	165 567	86 532	236 721	848 388	215 519	752 967	2 002 641	253402
2011	4	lepele	29	68	26	40	103 741	568 231	173 019	90 390	245 816	907 725	227 149	785 904	2 175 867	257842
2012	4	lepele	30	70	26	40	107 057	506 712	177 478	93 005	257 620	954 912	232 327	805 468	2 223 661	282376
2013	4	lepele	33	71	28	42	118 199	598 072	189 438	98 211	284 694	1 019 255	250 200	856 711	2 358 084	296325
2014	4	lepele	33	72	28	43	127 519	544 624	194 474	99 692	294 006	1 040 127	260 345	876 642	2 389 743	319171
2015	4	lepele	35	72	29	44	120 599	574 993	198 001	101 632	303 373	1 067 062	266 588	903 906	2 437 271	317077

APPENDIX B

SUMMARY OF DESCRIPTIVE STATISTICS

	LNGROWTH	LNEMPLOY	LNNONPOOR	LNTRADE	LNTRANS	LNCONSTR	LNMINING
Mean	3.278343	4.307549	3.145975	13.90127	12.53333	12.27171	13.17173
Median	3.267707	4.267066	3.203938	13.64707	12.32052	11.94417	12.93174
Maximum	4.199908	4.886321	3.810879	15.80476	14.55255	14.17149	14.32209
Minimum	2.581495	3.962009	2.358329	12.59254	10.89131	11.02778	12.32402
Std. Dev.	0.455661	0.284343	0.376480	1.056074	1.131477	0.989055	0.604974
Skewness	-0.003730	0.551493	-0.295200	0.685183	0.568969	0.643638	0.649633
Kurtosis	1.573602	2.113799	2.389384	2.108527	2.094823	2.141301	2.072385
Jarque-Bera	6.782222	6.673108	2.404741	8.908746	7.047491	7.981479	8.495211
Probability	0.033671	0.035559	0.300481	0.011628	0.029489	0.018486	0.014298
Sum	262.2675	344.6039	251.6780	1112.102	1002.666	981.7372	1053.738
Sum Sq. Dev.	16.40254	6.387246	11.19724	88.10810	101.1390	77.28019	28.91350
Observations	80	80	80	80	80	80	80

	LNLEDI	LNMANUFAC	LNTOURISM
Mean	3.702315	12.23354	12.68477
Median	3.781254	11.94680	12.38593
Maximum	4.244793	14.12443	14.99882
Minimum	3.228348	10.81967	11.68648
Std. Dev.	0.304413	1.069577	0.914651
Skewness	-0.044033	0.686888	1.449660
Kurtosis	1.716062	2.130064	3.676911
Jarque-Bera	5.520840	8.813493	29.54755
Probability	0.063265	0.012195	0.000000
Sum	296.1852	978.6831	1014.781
Sum Sq. Dev.	7.320712	90.37563	66.09030
Observations	80	80	80

APPENDIX C

CORRELATION ANALYSIS

Covariance Analysis: Ordinary
Date: 11/13/17 Time: 11:46
Sample: 1996 2015
Included observations: 80

Correlation Probability	LNLEDI	LNGROWTH	LNAGRIC	LNCOMUS	LNCONSTR	LNELECTR
LNLEDI	1.000000					

LNGROWTH	0.918443	1.000000				
	0.0000	-----				
LNAGRIC	0.835080	0.940415	1.000000			
	0.0000	0.0000	-----			
LNCOMUS	0.537044	0.775374	0.882612	1.000000		
	0.0000	0.0000	0.0000	-----		
LNCONSTR	0.676644	0.854415	0.940990	0.977576	1.000000	
	0.0000	0.0000	0.0000	0.0000	-----	
LNELECTR	0.518574	0.724237	0.875772	0.965363	0.957769	1.000000
	0.0000	0.0000	0.0000	0.0000	0.0000	-----

Covariance Analysis: Ordinary
Date: 11/13/17 Time: 11:48
Sample: 1996 2015
Included observations: 80

Correlation Probability	LNEMPLOY	LNNONPOOR	LNTRADE	LNTRANS	LNMANUFAC	LNMINING
LNEMPLOY	1.000000					

LNNONPOOR	0.408150	1.000000				
	0.0002	-----				
LNTRADE	0.339170	0.720059	1.000000			
	0.0021	0.0000	-----			
LNTRANS	0.390955	0.758407	0.990574	1.000000		
	0.0003	0.0000	0.0000	-----		
LNMANUFAC	0.275614	0.686482	0.995662	0.978567	1.000000	
	0.0133	0.0000	0.0000	0.0000	-----	
LNMINING	-0.076724	0.656453	0.886212	0.874450	0.908208	1.000000
	0.4988	0.0000	0.0000	0.0000	0.0000	-----

APPENDIX D

PANEL UNIT ROOT TEST

D1: AGRICULTURE SECTOR

Panel unit root test: Summary
Series: LNAGRIC
Date: 11/13/17 Time: 11:33
Sample: 1996 2015
Exogenous variables: Individual effects
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.00020	0.0000	4	72
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.34908	0.0094	4	72
ADF - Fisher Chi-square	20.0561	0.0101	4	72
PP - Fisher Chi-square	21.8067	0.0053	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: LNAGRIC
Date: 11/13/17 Time: 11:35
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.93271	0.0000	4	72
Breitung t-stat	-2.06796	0.0193	4	68
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.05242	0.0011	4	72
ADF - Fisher Chi-square	23.7762	0.0025	4	72
PP - Fisher Chi-square	22.9482	0.0034	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D2: COMMUNITY SERVICE SECTOR

Panel unit root test: Summary
Series: LNCOMUS
Date: 11/13/17 Time: 11:53
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.83835	0.7991	4	75
Breitung t-stat	-0.25214	0.4005	4	71
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.34509	0.3650	4	75
ADF - Fisher Chi-square	8.76229	0.3627	4	75
PP - Fisher Chi-square	18.7688	0.0161	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNCOMUS)
Date: 11/13/17 Time: 11:54
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.24304	0.0000	4	70
Breitung t-stat	-0.66624	0.2526	4	66
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.69606	0.0000	4	70
ADF - Fisher Chi-square	40.0063	0.0000	4	70
PP - Fisher Chi-square	44.7370	0.0000	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D3: CONSTRUCTION SECTOR

Panel unit root test: Summary
Series: LNCONSTR
Date: 11/13/17 Time: 11:56
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.63794	0.2618	4	74
Breitung t-stat	-0.98020	0.1635	4	70
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.06589	0.1432	4	74
ADF - Fisher Chi-square	10.9769	0.2030	4	74
PP - Fisher Chi-square	6.97709	0.5391	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNCONSTR)
Date: 11/13/17 Time: 11:56
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.56721	0.7147	4	70
Breitung t-stat	-5.37521	0.0000	4	66
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.41604	0.0003	4	70
ADF - Fisher Chi-square	24.0243	0.0023	4	70
PP - Fisher Chi-square	23.0901	0.0033	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D4: ELECTRICITY SECTOR

Panel unit root test: Summary
Series: LNELECTR
Date: 11/13/17 Time: 11:58
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	1.68460	0.9540	4	76
Breitung t-stat	1.33486	0.9090	4	72
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	2.28671	0.9889	4	76
ADF - Fisher Chi-square	2.03019	0.9801	4	76
PP - Fisher Chi-square	2.38265	0.9670	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNELECTR)
Date: 11/13/17 Time: 11:59
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.48103	0.0000	4	71
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.38355	0.0004	4	71
ADF - Fisher Chi-square	26.2486	0.0010	4	71
PP - Fisher Chi-square	32.7422	0.0001	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D5: FINANCE SECTOR

Panel unit root test: Summary
Series: LNFINANCE
Date: 11/13/17 Time: 12:02
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	0.51409	0.6964	4	75
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	1.74644	0.9596	4	75
ADF - Fisher Chi-square	5.73743	0.6766	4	75
PP - Fisher Chi-square	4.73073	0.7859	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNFINANCE)
Date: 11/13/17 Time: 12:01
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.84001	0.0023	4	72
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.59467	0.0047	4	72
ADF - Fisher Chi-square	19.5517	0.0122	4	72
PP - Fisher Chi-square	19.7183	0.0115	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D6: MANUFACTURING SECTOR

Panel unit root test: Summary
Series: LNMANUFAC
Date: 11/13/17 Time: 12:03
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.01526	0.0219	4	74
Breitung t-stat	-1.46713	0.0712	4	70
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.97039	0.1659	4	74
ADF - Fisher Chi-square	10.5231	0.2302	4	74
PP - Fisher Chi-square	7.57692	0.4758	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNMANUFAC)
Date: 11/13/17 Time: 12:04
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-5.45592	0.0000	4	72
Breitung t-stat	-6.60863	0.0000	4	68
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.45747	0.0000	4	72
ADF - Fisher Chi-square	30.9522	0.0001	4	72
PP - Fisher Chi-square	46.4355	0.0000	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D7: MINING SECTOR

Panel unit root test: Summary
Series: LNMINING
Date: 11/13/17 Time: 12:05
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.10762	0.0009	4	76
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.35646	0.0092	4	76
ADF - Fisher Chi-square	17.9891	0.0213	4	76
PP - Fisher Chi-square	18.3182	0.0190	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D8: ECONOMIC GROWTH

Panel unit root test: Summary
Series: LNGROWTH
Date: 11/13/17 Time: 12:06
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.64613	0.0041	4	75
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-2.31144	0.0104	4	75
ADF - Fisher Chi-square	19.4607	0.0126	4	75
PP - Fisher Chi-square	23.2166	0.0031	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D9: EMPLOYMENT

Panel unit root test: Summary
Series: LNEMPLOY
Date: 11/13/17 Time: 12:14
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
User-specified lags: 1
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.93885	0.0000	4	72
Breitung t-stat	-2.20775	0.0136	4	68
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.89490	0.0000	4	72
ADF - Fisher Chi-square	36.0979	0.0000	4	72
PP - Fisher Chi-square	3.73375	0.8803	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D10: TOURISM SECTOR

Panel unit root test: Summary
Series: LNTOURISM
Date: 11/13/17 Time: 12:17
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.01424	0.0000	4	70
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.53406	0.0002	4	70
ADF - Fisher Chi-square	29.0878	0.0003	4	70
PP - Fisher Chi-square	3.37823	0.9084	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D11: TRADE SECTOR

Panel unit root test: Summary
Series: LNTRADE
Date: 11/13/17 Time: 12:29
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.19638	0.1158	4	68
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	0.62248	0.7332	4	68
ADF - Fisher Chi-square	8.32547	0.4023	4	68
PP - Fisher Chi-square	5.83844	0.6653	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNTRADE)
Date: 11/13/17 Time: 12:30
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 2 to 3
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.72633	0.0032	4	63
Breitung t-stat	-3.37293	0.0004	4	59
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-4.31001	0.0000	4	63
ADF - Fisher Chi-square	30.4713	0.0002	4	63
PP - Fisher Chi-square	12.0428	0.1493	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D12: TRANSPORT SECTOR

Panel unit root test: Summary
Series: LNTRANS
Date: 11/13/17 Time: 12:31
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-8.20662	0.0000	4	67
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.97916	0.0000	4	67
ADF - Fisher Chi-square	51.2679	0.0000	4	67
PP - Fisher Chi-square	38.8481	0.0000	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

D13: LOCAL ECONOMIC DEVELOPMENT INDEX

Panel unit root test: Summary
Series: LNLEDI
Date: 11/13/17 Time: 12:33
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	2.92343	0.9983	4	76
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	4.52222	1.0000	4	76
ADF - Fisher Chi-square	0.80810	0.9992	4	76
PP - Fisher Chi-square	1.16587	0.9970	4	76

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Panel unit root test: Summary
Series: D(LNLEDI)
Date: 11/13/17 Time: 12:34
Sample: 1996 2015
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0
Newey-West automatic bandwidth selection and Bartlett kernel
Balanced observations for each test

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-14.5114	0.0000	4	72
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.49787	0.0000	4	72
ADF - Fisher Chi-square	233.359	0.0000	4	72
PP - Fisher Chi-square	155.445	0.0000	4	72

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

APPENDIX E

HADRI UNIT ROOT

E1: COMMUNITY SERVICE SECTOR

Null Hypothesis: Stationarity
Series: D(LNCOMUS)
Date: 11/13/17 Time: 12:37
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	0.59823	0.2748
Heteroscedastic Consistent Z-stat	0.21128	0.4163

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNCOMUS)

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.3042	0.003247	1.0	19
2	0.1250	0.001187	1.0	19
3	0.1927	0.002031	1.0	19
4	0.1078	0.001562	2.0	19

E2: CONSTRUCTION SECTOR

Null Hypothesis: Stationarity
Series: D(LNCONSTR)
Date: 11/13/17 Time: 12:38
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	-0.03797	0.5151
Heteroscedastic Consistent Z-stat	-0.07350	0.5293

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNCONSTR)

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.0916	0.006771	0.0	19
2	0.1674	0.006150	1.0	19
3	0.1102	0.007263	1.0	19
4	0.2756	0.007668	1.0	19

E3: ELECTRICITY SECTOR

Null Hypothesis: Stationarity
Series: D(LNELECTR)
Date: 11/13/17 Time: 12:39
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	1.16123	0.1228
Heteroscedastic Consistent Z-stat	0.96371	0.1676

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNELECTR)

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.1918	0.003961	1.0	19
2	0.1227	0.002244	1.0	19
3	0.5386	0.002694	2.0	19
4	0.1009	0.001528	2.0	19

E4: FINANCE SECTOR

Null Hypothesis: Stationarity
Series: D(LNFINANCE)
Date: 11/13/17 Time: 12:40
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	0.59918	0.2745
Heteroscedastic Consistent Z-stat	0.29553	0.3838

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNFINANCE)

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.2949	0.003858	2.0	19
2	0.1261	0.002088	2.0	19
3	0.1382	0.001568	1.0	19
4	0.1956	0.001891	2.0	19

E5: MANUFACTURING SECTOR

Null Hypothesis: Stationarity
Series: D(LNMANUFAC)
Date: 11/13/17 Time: 12:41
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	0.08089	0.4678
Heteroscedastic Consistent Z-stat	0.84350	0.1995

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNMANUFAC)

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.0937	0.003681	1.0	19
2	0.1998	0.000539	5.0	19
3	0.2472	0.002167	2.0	19
4	0.3775	0.000560	5.0	19

E6: MINING SECTOR

Null Hypothesis: Stationarity
Series: LNMINING
Date: 11/13/17 Time: 12:42
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 80
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	4.66201	0.0000
Heteroscedastic Consistent Z-stat	4.73561	0.0000

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on LNMINING

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.1585	0.034737	3.0	20
2	0.1617	0.055297	3.0	20
3	0.1624	0.068643	3.0	20
4	0.1798	0.027824	2.0	20

E7: ECONOMIC GROWTH

Null Hypothesis: Stationarity
Series: LNGROWTH
Date: 11/13/17 Time: 12:43
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 80
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	5.57964	0.0000
Heteroscedastic Consistent Z-stat	4.15761	0.0000

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on LNGROWTH

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.3587	0.007415	3.0	20
2	0.6082	0.179022	3.0	20
3	0.3218	0.026732	2.0	20
4	0.6174	0.115536	3.0	20

E8: EMPLOYMENT

Null Hypothesis: Stationarity
Series: LNEMPLOY
Date: 11/13/17 Time: 12:45
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 80
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	4.94989	0.0000
Heteroscedastic Consistent Z-stat	4.82028	0.0000

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on LNEMPLOY

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.5504	0.037430	3.0	20
2	0.5526	0.028311	3.0	20
3	0.4639	0.015178	3.0	20
4	0.5369	0.042425	3.0	20

E9: TOURISM

Null Hypothesis: Stationarity
Series: LNTOURISM
Date: 11/13/17 Time: 12:46
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 80
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	4.36097	0.0000
Heteroscedastic Consistent Z-stat	2.17673	0.0148

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on LNTOURISM

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.0749	0.004739	0.0	20
2	0.0848	0.002371	3.0	20
3	0.1589	0.654403	2.0	20
4	0.1300	0.004854	1.0	20

E10: TRADE SECTOR

Null Hypothesis: Stationarity
Series: D(LNTRADE)
Date: 11/13/17 Time: 12:49
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	0.78744	0.2155
Heteroscedastic Consistent Z-stat	0.81254	0.2082

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNTRADE)

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.1731	0.003015	1.0	19
2	0.1788	0.000682	3.0	19
3	0.3772	0.001505	0.0	19
4	0.1799	0.000863	3.0	19

E11: TRANSPORT SECTOR

Null Hypothesis: Stationarity
Series: LNTRANS
Date: 11/13/17 Time: 12:49
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 80
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	5.04911	0.0000
Heteroscedastic Consistent Z-stat	4.16552	0.0000

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on LNTRANS

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.2038	0.079460	3.0	20
2	0.5727	0.410307	3.0	20
3	0.5500	0.378271	3.0	20
4	0.5821	0.310376	3.0	20

E12: AGRICULTURE SECTOR

Null Hypothesis: Stationarity

Series: LNAGRIC
Date: 11/13/17 Time: 12:50
Sample: 1996 2015
Exogenous variables: Individual effects
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 80
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	5.82650	0.0000
Heteroscedastic Consistent Z-stat	5.08136	0.0000

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on LNAGRIC

Cross section	LM	Variance HAC	Bandwidth	Obs
1	0.3630	0.019731	2.0	20
2	0.6074	0.293352	3.0	20
3	0.5951	0.236255	3.0	20
4	0.6161	0.276018	3.0	20

E13: LOCAL ECONOMIC DEVELOPMENT INDEX

Null Hypothesis: Stationarity
Series: D(LNLEDI)
Date: 11/13/17 Time: 12:52
Sample: 1996 2015
Exogenous variables: Individual effects, individual linear trends
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 76
Cross-sections included: 4

Method	Statistic	Prob.**
Hadri Z-stat	4.86450	0.0000
Heteroscedastic Consistent Z-stat	4.87734	0.0000

* Note: High autocorrelation leads to severe size distortion in Hadri test, leading to over-rejection of the null.
** Probabilities are computed assuming asympotic normality

Intermediate results on D(LNLEDI)

Cross Section	LM	Variance HAC	Bandwidth	Obs
1	0.1703	0.000286	0.0	19
2	0.1750	0.000193	0.0	19
3	0.1685	0.003226	0.0	19
4	0.1606	0.000316	0.0	19

APPENDIX F

PANEL ARDL

F1: LEDI MODEL 1

Dependent Variable: D(LNLEDI)
Method: ARDL
Date: 10/26/17 Time: 23:46
Sample: 1998 2015
Included observations: 72
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LNCOMUS LNTRADE LNAGRIC LNFINANCE LNCONSTR LNELECTR LNMANUFAC
Fixed regressors: C
Number of models evalulated: 2
Selected Model: ARDL(2, 1, 1, 1, 1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
LNCOMUS	0.015691	0.029872	0.525271	0.6034
LNTRADE	0.422716	0.032851	12.86760	0.0000
LNAGRIC	-0.097357	0.007687	-12.66508	0.0000
LNFINANCE	0.023058	0.021896	1.053025	0.3010
LNCONSTR	0.043360	0.013554	3.199007	0.0033
LNELECTR	0.168856	0.011150	15.14359	0.0000
LNMANUFAC	-0.487175	0.020100	-24.23773	0.0000
		Short Run Equation		
COINTEQ01	-0.685658	0.114603	-5.982885	0.0000
D(LNDEVI(-1))	0.152224	0.199104	0.764546	0.4507
D(LNCOMUS)	0.324865	0.085074	3.818597	0.0007
D(LNTRADE)	0.189277	0.019837	9.541391	0.0000
D(LNAGRIC)	0.063870	0.011971	5.335561	0.0000
D(LNFINANCE)	-0.059757	0.087324	-0.684312	0.4992
D(LNCONSTR)	-0.080312	0.031281	-2.567457	0.0157
D(LNELECTR)	-0.049232	0.048095	-1.023647	0.3145
D(LNMANUFAC)	0.098651	0.018000	5.480577	0.0000
C	1.155342	0.162185	7.123590	0.0000
@TREND	0.011868	0.001760	6.742127	0.0000

Mean dependent var	0.020467	S.D. dependent var	0.017306
S.E. of regression	0.006522	Akaike info criterion	-7.214146
Sum squared resid	0.001234	Schwarz criterion	-5.695604
Log likelihood	339.5658	Hannan-Quinn criter.	-6.605319

*Note: p-values and any subsequent tests do not account for model selection.

F2: ECONOMIC GROWTH MODEL

Dependent Variable: D(LNGROWTH)
Method: ARDL
Date: 10/25/17 Time: 07:41
Sample: 1997 2015
Included observations: 76
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LNCOMUS LNCONSTR LNFINANCE LNMANUFAC LNMINING LNTOURISM LNTRADE LNTRANS
Fixed regressors: C
Number of models evalulated: 1
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
LNCOMUS	0.295949	0.060385	4.901061	0.0000
LNCONSTR	0.054619	0.010919	5.002093	0.0000
LNFINANCE	0.310685	0.019462	15.96364	0.0000
LNMANUFAC	0.040489	0.041529	0.974948	0.3379
LNMINING	-0.131489	0.026943	-4.880158	0.0000
LNTOURISM	-0.027387	0.004844	-5.653539	0.0000
LNTRADE	0.188952	0.043784	4.315560	0.0002
LNTRANS	0.316001	0.037814	8.356644	0.0000
		Short Run Equation		
COINTEQ01	-0.487909	0.217582	-2.242417	0.0330
D(LNCOMUS)	0.032378	0.107998	0.299801	0.7665
D(LNCONSTR)	0.040424	0.007220	5.599170	0.0000
D(LNFINANCE)	0.230106	0.035342	6.510848	0.0000
D(LNMANUFAC)	0.072696	0.013899	5.230331	0.0000
D(LNMINING)	0.096026	0.017760	5.406865	0.0000
D(LNTOURISM)	0.011789	0.001876	6.282711	0.0000
D(LNTRADE)	-0.014446	0.075684	-0.190873	0.8500
D(LNTRANS)	0.013668	0.015706	0.870258	0.3916
C	-5.499073	2.599419	-2.115501	0.0434
@TREND	-0.009279	0.005583	-1.662025	0.1077

Mean dependent var	0.013739	S.D. dependent var	0.077903
S.E. of regression	0.005524	Akaike info criterion	-7.234842
Sum squared resid	0.000855	Schwarz criterion	-5.686525
Log likelihood	341.3937	Hannan-Quinn criter.	-6.614077

*Note: p-values and any subsequent tests do not account for model selection.

F3: EMPLOYMENT MODEL

Dependent Variable: D(LNEMPLOY)
Method: ARDL
Date: 10/25/17 Time: 07:56
Sample: 1997 2015
Included observations: 76
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LNAGRIC LNCOMUS LNCONSTR LNFINANCE LNGROWTH LNMANUFAC LNMINING LNTOURISM LNTRADE
Fixed regressors: C
Number of models evalulated: 1
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
LNAGRIC	-0.062443	0.022437	-2.783026	0.0106
LNCOMUS	-0.464841	0.117992	-3.939606	0.0007
LNCONSTR	-0.194050	0.033066	-5.868631	0.0000
LNFINANCE	0.255689	0.060035	4.258985	0.0003
LNGROWTH	0.327733	0.138865	2.360086	0.0271
LNMANUFAC	-1.755167	0.137681	-12.74810	0.0000
LNMINING	-0.004384	0.048000	-0.091343	0.9280
LNTOURISM	0.410576	0.039746	10.33008	0.0000
LNTRADE	1.486420	0.154515	9.619889	0.0000
		Short Run Equation		
COINTEQ01	-0.469324	0.172202	-2.725430	0.0121
D(LNAGRIC)	0.097630	0.051059	1.912089	0.0684
D(LNCOMUS)	0.345206	0.152541	2.263033	0.0334
D(LNCONSTR)	-0.159459	0.011019	-14.47148	0.0000
D(LNFINANCE)	-0.742858	0.177703	-4.180326	0.0004
D(LNGROWTH)	0.751094	0.399597	1.879629	0.0729
D(LNMANUFAC)	0.136257	0.072450	1.880710	0.0727
D(LNMINING)	-0.092200	0.056966	-1.618504	0.1192
D(LNTOURISM)	-0.064394	0.029607	-2.174928	0.0402
D(LNTRADE)	-0.069249	0.214706	-0.322530	0.7500
C	2.267792	0.742261	3.055251	0.0056
@TREND	6.79E-05	0.003063	0.022159	0.9825

Mean dependent var	0.011066	S.D. dependent var	0.018570
S.E. of regression	0.009146	Akaike info criterion	-6.621130
Sum squared resid	0.001924	Schwarz criterion	-4.923936
Log likelihood	321.8452	Hannan-Quinn criter.	-5.940676

*Note: p-values and any subsequent tests do not account for model selection.

F4: POVERTY ALLEVIATION MODEL

Dependent Variable: D(LNPOVERT__)
Method: ARDL
Date: 10/26/17 Time: 13:30
Sample: 1997 2015
Included observations: 76
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LNCONSTR LNTOURISM LNFINANCE LNAGRIC LNELECTR LNTRADE LNMANUFAC
Fixed regressors: C
Number of models evalulated: 1
Selected Model: ARDL(1, 1, 1, 1, 1, 1, 1, 1)
Note: final equation sample is larger than selection sample

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		Long Run Equation		
LNCONSTR	-0.014854	0.060788	-0.244365	0.8085
LNTOURISM	0.038674	0.019376	1.995937	0.0542
LNFINANCE	0.407949	0.131926	3.092256	0.0040
LNAGRIC	-0.336418	0.065565	-5.131085	0.0000
LNELECTR	0.813531	0.108236	7.516282	0.0000
LNTRADE	0.611958	0.210891	2.901771	0.0066
LNMANUFAC	-1.268379	0.240957	-5.263924	0.0000
		Short Run Equation		
COINTEQ01	-0.674983	0.071455	-9.446223	0.0000
D(LNCONSTR)	0.157543	0.105996	1.486305	0.1467
D(LNTOURISM)	-0.140812	0.052049	-2.705360	0.0107
D(LNFINANCE)	0.401549	0.187230	2.144679	0.0394
D(LNAGRIC)	-0.000361	0.079580	-0.004542	0.9964
D(LNELECTR)	-0.163929	0.110010	-1.490132	0.1457
D(LNTRADE)	-0.203680	0.528064	-0.385711	0.7022
D(LNMANUFAC)	0.631143	0.255798	2.467346	0.0190
C	-1.024685	0.107922	-9.494672	0.0000
@TREND	0.019702	0.004506	4.372206	0.0001

Mean dependent var	0.038751	S.D. dependent var	0.057790
S.E. of regression	0.033560	Akaike info criterion	-4.247457
Sum squared resid	0.037166	Schwarz criterion	-2.848017
Log likelihood	216.8983	Hannan-Quinn criter.	-3.686382

*Note: p-values and any subsequent tests do not account for model selection.

APPENDIX G

BLOUBERG LOCAL MUNICIPALITY

G1: ECONOMIC GROWTH

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.033202	0.001672	-19.86245	0.0003
D(LNCOMUS)	0.312685	0.000513	609.5584	0.0000
D(LNCONSTR)	0.059809	0.000428	139.8828	0.0000
D(LNFINANCE)	0.261267	0.001413	184.8778	0.0000
D(LNMANUFAC)	0.093362	0.001270	73.50578	0.0000
D(LNMINING)	0.148770	0.000525	283.6343	0.0000
D(LNTOURISM)	0.012866	0.000235	54.72793	0.0000
D(LNTRADE)	-0.077365	0.003528	-21.93182	0.0002
D(LNTRANS)	0.015161	0.000684	22.17184	0.0002
C	-0.345317	0.185941	-1.857130	0.1603
@TREND	2.42E-05	2.05E-07	118.0043	0.0000

G2 EMPLOYMENT MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.904762	0.009230	-98.02385	0.0000
D(LNAGRIC)	0.219594	0.001253	175.2559	0.0000
D(LNCOMUS)	0.031098	0.011483	2.708298	0.0733
D(LNCONSTR)	-0.139170	0.001068	-130.2735	0.0000
D(LNFINANCE)	-1.099011	0.027694	-39.68339	0.0000
D(LNGROWTH)	1.401714	0.092286	15.18877	0.0006
D(LNMANUFAC)	0.247178	0.005564	44.42203	0.0000
D(LNMINING)	-0.253605	0.003578	-70.87749	0.0000
D(LNTOURISM)	-0.088679	0.000631	-140.5904	0.0000
D(LNTRADE)	-0.467253	0.006932	-67.40875	0.0000
C	3.977404	1.651035	2.409037	0.0951
@TREND	-0.006718	7.69E-06	-873.3580	0.0000

G3 POVERTY ALLEVIATION MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.625637	0.020843	-30.01711	0.0001
D(LNCONSTR)	0.360942	0.049409	7.305202	0.0053
D(LNTOURISM)	-0.255022	0.029989	-8.503866	0.0034
D(LNFINANCE)	0.908048	0.123516	7.351653	0.0052
D(LNAGRIC)	-0.234090	0.020762	-11.27482	0.0015
D(LNELECTR)	-0.195057	0.073222	-2.663916	0.0761
D(LNTRADE)	-1.503921	0.665503	-2.259825	0.1089
D(LNMANUFAC)	1.220098	0.213160	5.723854	0.0106
C	-1.218834	1.241737	-0.981556	0.3987
@TREND	0.011872	3.94E-05	301.4916	0.0000

G4 LOCAL ECONOMIC DEVELOMENT INDEX

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-1.012156	0.009255	-109.3654	0.0000
D(LNLEDI(-1))	0.748453	0.012008	62.32783	0.0000
D(LNCOMUS)	0.523131	0.013345	39.20197	0.0000
D(LNTRADE)	0.165451	0.014819	11.16486	0.0015
D(LNAGRIC)	0.090729	0.000757	119.9060	0.0000
D(LNFINANCE)	-0.301966	0.006422	-47.02290	0.0000
D(LNCONSTR)	-0.174025	0.000987	-176.3457	0.0000
D(LNELECTR)	-0.179139	0.001322	-135.4849	0.0000
D(LNMANUFAC)	0.122754	0.003875	31.67794	0.0001
C	1.453322	0.282193	5.150094	0.0142
@TREND	0.015158	4.39E-06	3454.518	0.0000

APPENDIX H

MOLEMOLE LOCAL MUNICIPALITY

H1 ECONOMIC GROWTH MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.687567	0.016646	-41.30491	0.0000
D(LNCOMUS)	-0.067567	0.004347	-15.54284	0.0006
D(LNCONSTR)	0.039573	0.000276	143.1699	0.0000
D(LNFINANCE)	0.126198	0.002603	48.48824	0.0000
D(LNMANUFAC)	0.033845	0.001288	26.26862	0.0001
D(LNMINING)	0.073108	0.000395	185.2525	0.0000
D(LNTOURISM)	0.013960	0.000219	63.85884	0.0000
D(LNTRADE)	0.127672	0.004093	31.19490	0.0001
D(LNTRANS)	0.007174	0.000949	7.560969	0.0048
C	-7.127886	1.703319	-4.184703	0.0249
@TREND	-0.006865	2.23E-06	-3076.150	0.0000

H2 EMPLOYMENT MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.442890	0.004709	-94.04608	0.0000
D(LNAGRIC)	0.009654	0.000608	15.89001	0.0005
D(LNCOMUS)	0.279641	0.006914	40.44540	0.0000
D(LNCONSTR)	-0.182275	0.001017	-179.1674	0.0000
D(LNFINANCE)	-0.897260	0.015602	-57.50779	0.0000
D(LNGROWTH)	1.482846	0.105050	14.11561	0.0008
D(LNMANUFAC)	0.214634	0.004593	46.72757	0.0000
D(LNMINING)	-0.089815	0.001274	-70.52389	0.0000
D(LNTOURISM)	-0.136839	0.000820	-166.8740	0.0000
D(LNTRADE)	-0.369533	0.017114	-21.59209	0.0002
C	2.399070	0.501379	4.784947	0.0174
@TREND	-0.000754	2.04E-06	-370.1249	0.0000

H3 POVERTY ALLEVIATION MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.701078	0.005354	-130.9387	0.0000
D(LNCONSTR)	0.031312	0.003695	8.473294	0.0035
D(LNTOURISM)	-0.170050	0.002651	-64.13563	0.0000
D(LNFINANCE)	0.289224	0.012218	23.67258	0.0002
D(LNAGRIC)	0.101306	0.002283	44.37885	0.0000
D(LNELECTR)	-0.133519	0.021800	-6.124643	0.0088
D(LNTRADE)	0.421235	0.074929	5.621816	0.0111
D(LNMANUFAC)	0.505637	0.034417	14.69147	0.0007
C	-0.853639	1.314987	-0.649162	0.5625
@TREND	0.028796	1.67E-05	1721.923	0.0000

H4 LOCAL ECONOMIC DEVELOPMENT INDEX

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.676972	0.004033	-167.8431	0.0000
D(LNLEDI(-1))	-0.072412	0.009431	-7.677721	0.0046
D(LNCOMUS)	0.324765	0.007893	41.14511	0.0000
D(LNTRADE)	0.186829	0.006715	27.82119	0.0001
D(LNAGRIC)	0.060971	0.000208	292.9408	0.0000
D(LNFINANCE)	-0.063369	0.001136	-55.80342	0.0000
D(LNCONSTR)	-0.049560	0.000175	-283.5199	0.0000
D(LNELECTR)	-0.044237	0.001553	-28.48373	0.0001
D(LNMANUFAC)	0.135718	0.002306	58.86194	0.0000
C	1.399667	0.131507	10.64332	0.0018
@TREND	0.013990	1.76E-06	7957.567	0.0000

APPENDIX I

POLOKWANE LOCAL MUNICIPALITY

I1 ECONOMIC GROWTH MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.995536	0.000119	-8363.857	0.0000
D(LNCOMUS)	-0.190347	0.003288	-57.89652	0.0000
D(LNCONSTR)	0.024944	0.000171	146.1264	0.0000
D(LNFINANCE)	0.283430	0.001907	148.6277	0.0000
D(LNMANUFAC)	0.071389	0.000750	95.24261	0.0000
D(LNMINING)	0.085181	0.000184	462.1353	0.0000
D(LNTOURISM)	0.006222	6.64E-06	937.4196	0.0000
D(LNTRADE)	-0.197998	0.002201	-89.95951	0.0000
D(LNTRANS)	-0.021930	0.000564	-38.91699	0.0000
C	-12.03946	0.396021	-30.40106	0.0001
@TREND	-0.025457	2.64E-06	-9660.993	0.0000

I2 EMPLOYMENT MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.062468	0.000276	-226.5114	0.0000
D(LNAGRIC)	0.017027	0.000865	19.68395	0.0003
D(LNCOMUS)	0.306802	0.010025	30.60259	0.0001
D(LNCONSTR)	-0.142047	0.001791	-79.31213	0.0000
D(LNFINANCE)	-0.266307	0.012190	-21.84695	0.0002
D(LNGROWTH)	0.029151	0.000781	37.30746	0.0000
D(LNMANUFAC)	-0.073771	0.004324	-17.06188	0.0004
D(LNMINING)	-0.023657	0.000864	-27.36696	0.0001
D(LNTOURISM)	-0.017176	2.68E-05	-639.8654	0.0000
D(LNTRADE)	0.454257	0.017629	25.76831	0.0001
C	0.353122	0.016522	21.37272	0.0002
@TREND	-0.000423	4.56E-07	-926.2315	0.0000

I3 POVERTY ALLEVIATION MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.516486	0.004670	-110.5988	0.0000
D(LNCONSTR)	-0.074096	0.003146	-23.55141	0.0002
D(LNTOURISM)	-0.004582	5.11E-05	-89.66821	0.0000
D(LNFINANCE)	0.012345	0.008217	1.502325	0.2300
D(LNAGRIC)	0.099660	0.000870	114.4916	0.0000
D(LNELECTR)	0.104135	0.012925	8.057180	0.0040
D(LNTRADE)	0.854067	0.050403	16.94475	0.0004
D(LNMANUFAC)	0.002442	0.016080	0.151859	0.8889
C	-0.822676	1.032248	-0.796975	0.4837
@TREND	0.012039	5.97E-06	2016.273	0.0000

I4 LOCAL ECONOMIC DEVELOPMENT INDEX

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.541378	0.000637	-850.5509	0.0000
D(LNDEVI(-1))	-0.014614	4.22E-05	-346.1289	0.0000
D(LNCOMUS)	0.343908	0.000487	706.8995	0.0000
D(LNTRADE)	0.158805	7.48E-05	2124.211	0.0000
D(LNAGRIC)	0.033146	9.59E-06	3457.582	0.0000
D(LNFINANCE)	0.027014	0.000104	258.6312	0.0000
D(LNCONSTR)	-0.052834	6.92E-06	-7633.315	0.0000
D(LNELECTR)	-0.025859	2.82E-05	-916.0567	0.0000
D(LNMANUFAC)	0.073646	4.81E-05	1531.380	0.0000
C	0.984476	0.077089	12.77064	0.0010
@TREND	0.007262	2.31E-07	31408.00	0.0000

APPENDIX J

LEPELLE-NKUMPI LOCAL MUNICIPALITY

J1 ECONOMIC GROWTH MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.235331	0.004702	-50.05313	0.0000
D(LNCOMUS)	0.074740	0.004917	15.20116	0.0006
D(LNCONSTR)	0.037368	0.000426	87.81536	0.0000
D(LNFINANCE)	0.249531	0.001765	141.3960	0.0000
D(LNMANUFAC)	0.092188	0.001833	50.30391	0.0000
D(LNMINING)	0.077046	0.000425	181.1487	0.0000
D(LNTOURISM)	0.014109	0.000210	67.09765	0.0000
D(LNTRADE)	0.089907	0.003353	26.80991	0.0001
D(LNTRANS)	0.054268	0.001062	51.11703	0.0000
C	-2.483632	0.528359	-4.700649	0.0182
@TREND	-0.004817	1.44E-06	-3355.872	0.0000

J2 EMPLOYMENT MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.467176	0.000775	-602.6295	0.0000
D(LNAGRIC)	0.144245	9.32E-05	1548.458	0.0000
D(LNCOMUS)	0.763284	0.001798	424.5829	0.0000
D(LNCONSTR)	-0.174344	0.000211	-827.0364	0.0000
D(LNFINANCE)	-0.708854	0.004055	-174.7985	0.0000
D(LNGROWTH)	0.090667	0.004258	21.29078	0.0002
D(LNMANUFAC)	0.156988	0.000510	307.8378	0.0000
D(LNMINING)	-0.001722	0.000140	-12.33860	0.0011
D(LNTOURISM)	-0.014881	7.38E-05	-201.6925	0.0000
D(LNTRADE)	0.105532	0.000767	137.6099	0.0000
C	2.341574	0.392084	5.972117	0.0094
@TREND	0.008167	9.70E-07	8421.504	0.0000

J3 POVERTY ALLEVIATION MODEL

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.856733	0.006777	-126.4116	0.0000
D(LNCONSTR)	0.312012	0.003286	94.94461	0.0000
D(LNTOURISM)	-0.133592	0.002015	-66.29128	0.0000
D(LNFINANCE)	0.396580	0.011463	34.59577	0.0001
D(LNAGRIC)	0.031678	0.002426	13.05772	0.0010
D(LNELECTR)	-0.431274	0.021615	-19.95279	0.0003
D(LNTRADE)	-0.586102	0.067230	-8.717886	0.0032
D(LNMANUFAC)	0.796394	0.030417	26.18297	0.0001
C	-1.203593	1.996659	-0.602803	0.5892
@TREND	0.026101	1.44E-05	1816.653	0.0000

J4 LOCAL ECONOMIC DEVELOPMENT INDEX

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.512125	0.007643	-67.00809	0.0000
D(LNDEVI(-1))	-0.052530	0.012070	-4.352208	0.0224
D(LNCOMUS)	0.107656	0.007866	13.68540	0.0008
D(LNTRADE)	0.246023	0.014672	16.76824	0.0005
D(LNAGRIC)	0.070633	0.000576	122.5691	0.0000
D(LNFINANCE)	0.099294	0.003368	29.48168	0.0001
D(LNCONSTR)	-0.044830	0.000560	-80.02541	0.0000
D(LNELECTR)	0.052307	0.004532	11.54137	0.0014
D(LNMANUFAC)	0.062486	0.005712	10.93889	0.0016
C	0.783903	0.066086	11.86193	0.0013
@TREND	0.011064	2.79E-06	3969.464	0.0000

APPENDIX K

CROSS DEPENDENCY TEST

K1 MODEL 1: LOCAL ECONOMIC DEVELOPMENT INDEX MODEL

Cross-sectional dependence test for panel data
Equation: EQ02
Null hypothesis: Cross-sectional independence

Test	Statistic	d.f.	Prob.
Breusch-Pagan Chi-square	9.348378	6	0.1549
Pearson LM Normal	-0.188107		0.8508
Pearson CD Normal	2.000058		0.0455
Friedman Chi-square	25.52941	19	0.1438
Frees Q	-0.036730		
Asymtotic critical values*	1%	0.246825	
	5%	0.169520	
	10%	0.129386	

*Frees (1995) Q distribution

K2 MODEL 2: ECONOMIC GROWTH MODEL

Cross-sectional dependence test for panel data
Equation: ARDL_GDP
Null hypothesis: Cross-sectional independence

Test	Statistic	d.f.	Prob.
Breusch-Pagan Chi-square	12.26656	6	0.0563
Pearson LM Normal	0.654300		0.5129
Pearson CD Normal	1.527117		0.1267
Friedman Chi-square	27.86667	19	0.0860
Frees Q	0.231337		
Asymtotic critical values*	1%	0.246825	
	5%	0.169520	
	10%	0.129386	

*Frees (1995) Q distribution

K3 MODEL 3: EMPLOYMENT MODEL

Cross-sectional dependence test for panel data

Equation: ARDL_EMPLOYMENT
Null hypothesis: Cross-sectional independence

Test	Statistic	d.f.	Prob.
Breusch-Pagan Chi-square	43.60963	6	0.0000
Pearson LM Normal	9.702263		0.0000
Pearson CD Normal	6.574126		0.0000
Friedman Chi-square	56.25000	19	0.0000
Frees Q	1.503455		
Asymtotic critical values*	1%	0.246825	
	5%	0.169520	
	10%	0.129386	

*Frees (1995) Q distribution

K4 MODEL 4 POVERTY ALLEVIATION MODEL

Cross-sectional dependence test for panel data
Equation: ARDL-POVERTY
Null hypothesis: Cross-sectional independence

Test	Statistic	d.f.	Prob.
Breusch-Pagan Chi-square	33.16033	6	0.0000
Pearson LM Normal	6.685812		0.0000
Pearson CD Normal	4.187742		0.0000
Friedman Chi-square	37.46667	19	0.0069
Frees Q	0.971146		
Asymtotic critical values*	1%	0.246825	
	5%	0.169520	
	10%	0.129386	

*Frees (1995) Q distribution

APPENDIX L

CAPRICORN DISTRICT LOCALITY MAP