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MACRO-ECONOMIC DETERMINANTS OF PROPERTY-TAX REVENUE IN SOUTH AFRICA

A Dissertation

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by

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ABSTRACT

The South African local governments are facing enormous issues that challenge their financial independence and the fulfilment of their constitutional powers in providing service delivery to communities within their jurisdiction areas, amongst other things. Although the National government provides grants to the local governments, they are not sufficient to meet the basic needs of communities within sub-national provinces – given the rapid growth in population and the high levels of unemployment. Property tax is one of the sources of municipalities' revenues, over which the local governments have full autonomy. A vast number of scholars in literature emphasize the potential and the importance of property tax revenues within local government spheres, its contribution towards the improvement of community lives, and in providing the public infrastructures with the services they require – if they are fully utilised.

This study examines the impact of macro-economic factors (gross domestic product, inflation, the unemployment rate, and the population rate) on property-tax revenues in South African municipalities across the nine provinces, from the year 2005 to 2018. The panel-data model was estimated by using fixed and random effect-estimation techniques.

The findings provide evidence to suggest that there is a negative and positive relationship between property tax revenues and macro-economic determinants, depending on each sub-category from which the total property-tax revenue is based. The main results of the study indicate that the variation in economic activities does not improve property-tax revenue mobilization across South African local governments. Inflation was found to have a discouraging impact on the property-tax revenues derived by municipalities. Although the population rate reflected a stable trend during the study period, the results indicated that it has had a negative impact on property-tax revenues. Generally, the unemployment rate has depicted an unstable trend over the study period; and the findings show that it has had a negative effect on property-tax revenues across South African municipalities.

The study suggests some policy recommendations for achieving optimal property-tax revenues. In addition, the study has contributed to the body of knowledge; and it has provided an analysis of the various macro-economic determinants – by sing widely accepted indicators in an emerging market. This research also recommends further exploration of the impact of other macro-economic determinants on property-tax revenues, in any future research studies. These include macro-economic determinants, such as the interest rate and household income, amongst other issues, which are not part of this study.

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GLOSSARY OF TERMS

CPI - Consumer Price Indices

DBSA – Development Bank of Southern Africa

FE- Fixed Effects

GDP - Gross Domestic Product

IMF - International Monetary Fund

MFMA – Municipal Finance Management Act

MPRA – Municipal Property Rates Act

OECD – Organisation for Economic Co-operation and Development

OLS – Ordinary Least Squares

RE - Random-Effects

ROA – Return on Assets

SALGA – South African Local Government Association

SAPOA - South African Property Owners' Association

SARB - South African Reserve Bank

SSA – Sub-Saharan Africa

STATS SA – Statistics South Africa

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CHAPTER 1

INTRODUCTION

1.1 The Background of the Study

The study focuses on local government, with emphasis particularly on the property-tax revenues for municipalities in the South African context. Municipalities are distinguished in various categories, in alignment with the criteria outlined in Local Government: Municipal Structures Act 117 of 1998, which was guided by the Constitution of the Republic of South Africa, 1996 (the Constitution). According to Riel and William (2017), property tax is imposed in all African Countries, except the Seychelles and Burkina Faso. Property tax is considered as a constitutional, guaranteed source of local government revenue in countries, such as Uganda, Kenya, Eswatini, South Africa, Ghana, and Nigeria. However, a myriad of studies have revealed that property tax is the most underutilised and poorly managed source of revenue in developing countries.

The study delves primarily into property tax as a source of operating revenue in municipalities across the 9 provinces within South Africa. Section 229 of the Constitution provides municipalities with the authority, amongst others, to impose taxes, levies, and duties within their jurisdictions, as provided for in the Municipal Fiscal Powers and Functions Act 12 of 2007. The provisions of the Act mentioned above do not consider the regulation of income tax, value-added tax, customs duties, and sales tax, as being an integral part of the powers granted to municipalities. The administration of property tax in South Africa is further governed by the Municipal Property-Rates Act (MPRA) promulgated in 2004.

Amongst other things, the MPRA intends to guide municipalities in the collection of property taxes, whilst ensuring acceptable practices in the fair and equitable administration process of property taxes. For the purposes of this study, the term property rates will be used interchangeably with the term of property tax. In terms of the MPRA, Municipal property rates are defined as a Cent amount in the Rand that is levied on the market value of immovable property, (that is land or buildings or both).

South African Municipal Finance guidelines for local governments emphasise that property tax may be imposed on various types of immovable properties, such as residential properties,

commercial or business properties, State, and agricultural properties. Riel and William, (2017), asserted that in terms of the amended property tax law of 2015, local governments in South Africa can exempt or grant rebates to properties utilised and owned by the Organs of State for public services. These properties may include public facilities, such as hospitals, clinics, correctional and police facilities. On the other hand, the Constitution indicates that tribal or communal land should be exempted from local government property-tax bases, (Riel & William, 2017). Therefore, the decisions on the land-use rights of town-planning zones are likely to have an impact on the property-tax revenues derived by local governments. For instance, different property rates are imposed on land and buildings, on the basis of the type of land use.

Local governments have autonomy on how they utilise the operating revenue derived from property taxation. Most municipalities use this revenue to finance the basic service delivery and infrastructure within their areas of jurisdiction. For example, municipalities expend funds on a range of public services, which include, but are not limited to, the provision of basic services and infrastructures, such as water and sanitation, fire protection, waste disposal and refuse, health transportation, housing, recreation, education, and social services. According to the Community Survey conducted by Stats SA in 2016, the lack of safe and reliable water supply, cost of electricity and inadequate housing formed part of the five leading challenges facing municipalities. It is normal that local governments should address the above-mentioned challenges or similar issues in using their own operating revenues.

According to Slack (2011), there is a wide variation on how local governments across the world allocate their own operating revenues, in an attempt to improve public services and the infrastructure. For example, in Nordic countries, a large proportion of the expenditure is allocated to social services, while Central and Eastern European countries spend large amounts on education, as compared with the Organisational for Economic Co-operation and Development (OECD) countries.

A number of studies indicate that the most challenges in local government emerge as a result of inadequate funding for the provision of service delivery and infrastructure; furthermore, the mismanagement and abysmal expenditure by local governments remains a problem. This is very clear from the Auditor-General's comments in the 2017/18 report on municipality's performance. The Auditor General stated that during the 2017/18 fiscal year, community

protests and turmoil increased, due to failures in service delivery promises, which also links to several municipalities spending less of their grant funding for basic service-delivery targets (Auditor General South Africa, 2018). Mantzaris (2014) asserted that in all the municipalities, financial-management systems are vital components of efficient and effective service delivery. Therefore, it is important that in their financial planning, municipalities explore strategies of leveraging their own revenue sources, such as property tax, which have the potential of being used as mechanisms in attaining the optimal functioning of local governments.

1.2 Problem Statement

National Treasury reported, in the Analysis of Local Government Revenue and Expenditure Report (2013), that municipalities largely depend on two main sources of revenue: intergovernmental fiscal transfer, and their own revenue. Own revenue instruments comprise property rates, user charges for municipal services rendered, and other local taxes. Due to economic disparities across South Africa, certain municipalities generate negligible revenues. Therefore, intergovernmental transfers in the form of grants normally bridge the disparity, to ensure that all municipalities have adequate funds to fulfil their service-delivery mandates.

Despite the provision of intergovernmental transfers, the financial health of most of the municipalities is in distress, thereby challenging the provision of basic service delivery to these communities. According to a quarterly report issued by the National Treasury on the state of local government finances and financial management in June 2018, financial distress in municipalities refers to the sustained inability of local governments to finance their basic public goods and service delivery, as well as other needs, in accordance with the constitutional mandate.

Some of the common indicators of municipality financial distress are liquidity issues, which are manifested by local governments' incapacity in effectively collecting the revenue due, and if providing basic service delivery to communities (National Treasury, 2018). This, subsequently, results in the increase in outstanding debts, and challenges the in maintaining viable cash flows to pay creditors.

As in June 2018, the National Treasury stated that there has been a significant decline in the municipal-revenue collection rate. This remains one of the main sources of municipal failures

in providing public services and goods. For instance, a total of 121 non-metropolitan municipalities and 3 metropolitan municipalities were not able to meet prudent standards, due to the inadequate cash coverage required to fund operations during the fiscal year of 2017/18. Only, 15 district and 55 local municipalities had more than 3 months of cash coverage for operational expenditure during the fiscal year of 2017/18 (National Treasury, 2018). This is evidence that either, municipalities are unable to generate their own revenues; or they are not sufficiently capacitated to manage their finances properly. Moreover, the National Treasury report stated that during the fiscal year of 2017/18, the decline in local government financial performance is amongst other things, attributable to a significant decrease in their own revenues that are generated by non-metropolitan municipalities.

According to Netswera and Kgalane (2014), failures in service delivery trigger protests, which are estimated to have escalated from 41.6% in 2007 to 54.0 % of violent protests in 2010, which have become more dominant than non-violent protests. Morudi (2017) also concurred that in most cases, protests tend to escalate, with the diminishing provision of basic services, such as electricity, sewerage, and sanitation and refuse removal, amongst others. Therefore, local governments are expected to address the issues around service delivery with haste; and adequate financing and a reliable source of funding are issues that need to be prioritized.

Bahl and Bird (2008) highlighted the fact that a majority concern in emerging economies is the continuous inability to administer property taxes effectively, thus, to some extent, affecting the necessary probable maximum revenues required urgently, to boost the economy.

This study, therefore, attempts to examine the impact of macro-economic determinants in property-tax revenue derived by municipalities. In consideration of the service delivery and infrastructural challenges facing South African municipalities, improved property tax revenues and the like, administered and derived by municipalities, should be a significant instrument towards financing municipal service delivery and infrastructure in local government.

1.3 Research Objective, Question, and Hypotheses

The objective of this research is to examine the impact of macro-economic determinants on the property tax revenue derived by municipalities in South Africa, which is an effective source of revenue towards financing service delivery and the infrastructure. This research has the following objective:

- To examine the impact of macro-economic factors (i.e., GDP rate, inflation rate, population rate, and unemployment rate) on property-tax revenue at the local government level.

There is a need for in-depth understanding of the relationship between property-tax revenues in local government and macro-economic determinants. Thus, in alignment with the problem statement above, the following research question has been designed to address the study:

- How do macro-economic factors affect the property-tax revenue derived by local governments in South Africa?

Based on the research question, the preceding contextual background and academic studies contained in the literature review in the next section, the following hypothesis will be examined:

H_0: Property tax revenue is not affected by macro-economic factors (i.e., GDP rate, inflation rate, population rate, and unemployment rate).

H_1: Property tax revenue is affected by macro-economic factors (i.e., GDP rate, inflation rate, population rate, and unemployment rate).

1.4 Justification for the Study

Notwithstanding the vast amount of literature on property-tax revenues and tax in general, based on OECD countries, there is very little literature available in the African context. Property-tax revenue is becoming a desperate remedy for local governments, in order to enable them to fulfil their responsibilities in serving communities. There are several studies about taxes in relation to the economic conditions; however, they do not vigorously explore property tax as a critical source of revenue in local authorities; but instead, they delve into administrative aspect of this tax revenue.

For example, Norregaard (2013) examined the impact of various macro-economic variables on the revenue levels derived from property taxes in selected OECD countries.

Over the past years, South African local authorities have been confronted by an increasing rate of service-delivery needs, unemployment, lower disposable income, rising tariffs, and a myriad

of other socio-economic challenges that cannot be hastily resolved, due to the lack of funding from the government. In addition to the challenges mentioned above, grants offered by national government have not been adequate over the past years, to address the social challenges in local government spheres. Furthermore, borrowing mechanisms in municipalities cannot be guaranteed or efficiently exploited due to the financial position, and the municipal amounts owed to various stakeholders. For instance, the Auditor-General report stated that the financial distress of municipalities weighted excessively on municipal creditors during the fiscal year of 2017/18; since 87% of the municipalities did not fulfil their payment obligations to their creditors, which in turn had a negative impact on service delivery.

Furthermore, 39% of the municipalities had current liabilities in excess of their current assets, thereby implying that they were unable to pay their creditors timeously (Auditor-General South Africa, 2018).

There are very few studies that delve into the operations of local government authorities and the extent to which public funds are utilised. Chauke (2016) conducted a study on municipal revenue-collection functions; however, his study was a comparison of the efficiency and the effectiveness of the Tshwane metropolitan municipality and the South African Revenue Services. His findings were based on a smaller scope, and the study area was also limited to Tshwane; and it excludes any possible impact of the economic factors; thus, these findings cannot be generalized for the whole country. Daud et al. (2013) also conducted a study assessing the capacity and quality assurance, as it relates to property tax in Malaysia and South Africa.

Although their study intended to address administrative issues, it lacks any exploration of the degree of responsiveness by property-tax revenues to macro-economic factors.

Consequently, this research is aimed at investigating whether the selected macro-economic factors have an impact on South African local governments from deriving optimal revenues from the taxes imposed on immovable properties. Moreover, the justification in conducting this research is due to the rapid failure of municipalities in providing basic public services to citizens. Significant financial distress in the majority of municipalities requires vigorous interventions in the improvement of municipalities' operating revenues. The significance of this study lies in examining the impact of macro-economic factors on property-tax revenue, which has not been explored adequately in South Africa.

This study further intends to fill the academic literature gap that does not sufficiently consider the impact of macroeconomics on property-tax revenue in South African local governments, by using widely accepted macro-economic indicators. The key beneficiaries of the research in South Africa includes local government officials, taxpayers, policymakers and other key private-sector stakeholders in the property industry.

1.5 Research Scope and Assumptions

This research is limited only to municipalities in the nine provinces across South Africa, which have the power to impose property taxes within their areas of jurisdiction. Furthermore, the relationship is examined between property-tax revenue, which is one of the significant sources of revenue in local governments and various macro-economic determinants (the GDP rate, inflation rate, population rate, and the unemployment rate) in South Africa. This implies that other municipalities 'sources of revenue are excluded from this study.

The main assumptions in executing the study are that:

i) The statistics provided by all the sources during the period of study (2005 to 2018) are accurate;
ii) All municipalities employ the same procedures in collecting, recording and administering property taxes;
iii) All municipalities use the same accounting standards, particularly in regard to property-tax revenue.
iv) All municipalities adhere to the guidelines outlined in MPRA and Municipal Finance Management Act (MFMA) in administering, regulating and managing their own operating revenues, such as property-rates revenue.

1.6 Organization of the Study

The research is organised into five chapters. Chapter 1 discusses the background of the research area of property tax revenues in local governments, as well as the macro-economic determinants. It has identified the problem that the study seeks to investigate, as well as the gaps in the existing literature that on which research seeks to improve. The significance of this study and its value, in addition to the current literature in the area of study, has also been

described. Finally, this chapter has outlined the assumptions that will be tested to respond to the research question and to achieve the study's objectives.

Chapter 2 explores views around the area of study, which will be explored through the existing academic literature review on the theoretical and empirical findings of the subject under research. Chapter 3 outlines the research methodology undertaken in conducting the study, as well as the model used to analyse the data and validate the research hypothesis. Chapter 4 analyses and discusses the findings; while Chapter 5 consolidates an overview of the study, provides a conclusion, as well as some policy recommendations, based on the findings. It further makes some recommendations for future research.

CHAPTER 2
THE LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature relating to property-tax revenue at the local government level. It begins with the role and relevance of property-tax revenue in municipalities. This is followed by an exploration of the sources of municipal revenue and a discussion of macro-economic indicators' performance selected for the purpose of the study. It further discusses the structure of municipalities in South Africa. Moreover, the context of service delivery and infrastructure in local governments, in which property-tax revenue plays an important role, is also discussed. The stylized facts about property-tax revenue and service delivery in local government outline and emphasise the importance of property-tax revenue and its vital role in service delivery.

Lastly, this chapter outlines in its context, the theoretical framework, as it relates to the current study. The theoretical framework provides an exploration of the 3 main theories related to the area of study; and it identifies the relevant theory of this study. Furthermore, the relevance and the theory of the selected macro-economic indicators are also explored.

2.2 The role and relevance of property-tax revenue at local government level

Property taxes are commonly utilised as the main source of locally generated revenue, which differentiates them from various other types of taxes by being one major tax category that is geographically regulated. As a primary source of revenue in local government, property tax plays a crucial role in the decentralization and the sovereignty of local governments. Sole sovereignty is granted to local governments in regulating property; and this tax permits them to raise revenues independently, and at their discretion to employ the same, based on the powers vested to them in fulfilling the constitutional mandates. In addition to the advantages and the disadvantages of property-tax revenue highlighted in the literature, property-tax revenues' role in local government must be examined and viewed from various perspectives, such as an examination of those external factors that have an impact on deriving the maximum possible revenue in consideration of the macro-economic factors within a country.

Additionally, the mechanisms that local governments have in place to guide and monitor the allocation of revenues in developing the local communities are equally important.

Bahl and Martinez-vazquez (2008) asserted that local governments rely on property tax to finance the expenditures related to the provision of public services. Mabe and Kuusaana (2016) highlighted the fact that property tax is distinctive, due to its determination, inelasticity and inescapability; since it is associated with immovable property ownership, which is reflected in local government registers. Municipalities in South Africa enjoy substantial sovereignty over local resources; however, revenue collection remains a major concern. Municipal accumulated debtor accounts, mostly in metropolitan municipalities, have been increasing in recent years by about 3% of the annual expenditure (Bahl & Martinez-vazquez, 2008).

These insights place the emphasis on the importance of property tax, as the main source of revenue in local governments without addressing any possible external factors that may have an impact on property-tax revenues and their utilisation in enhancing local service delivery and development of the infrastructure.

Slack (2011) highlighted the fact that property tax is considered to be a good tax for local governments, mostly due to its utilisation to fund certain services at the local government level and the subsequent benefit to property values. He further asserted that almost all local governments, worldwide, rely to some extent on property taxes to pay for the provision of local services. In South Africa, insufficient financial assistance from the national government to local governments and the inability of municipalities to generate their own revenues and enhance financial management, have largely resulted in poor service delivery.

For instance, the Auditor-General report published in 2018 stated that local governments confront a notable cash-flow distress, due to their failure in maximising the billing of revenue from rates and services charges, including failure in collecting the outstanding amounts from consumers (Auditor General South Africa, 2018).

In his study, Bahl (2001) asserted that South African local governments rely heavily on property tax for public services; and they do collect significant revenues. His assertions highlight the fact that property tax revenue is the second-largest local revenue source after the revenue derived from service charges; and it accounts for approximately 20% of the total local

government revenues in South Africa. Much of the literature highlights the fact that, despite its underutilisation; property tax is an important source of revenue for local government spheres; and it and plays a significant role in financing the provision of service delivery to the communities. For example, the Auditor General's report of 2018 asserted that municipalities are mainly funded through rates and taxes; however, they are struggling financially; and they frequently lack adequate cash to meet the payment obligations to creditors. This leads to their failure to maintain service delivery or the infrastructure.

Bahl and Martinez-Vazquez (2008), when conducting their analysis, found that in developing countries, higher levels of expenditure decentralization result in an increased utilisation of property tax; and this has a consequence for financial planners, so that the demand for property-tax financing intensifies the demand for municipalities to improve the delivery of public services.

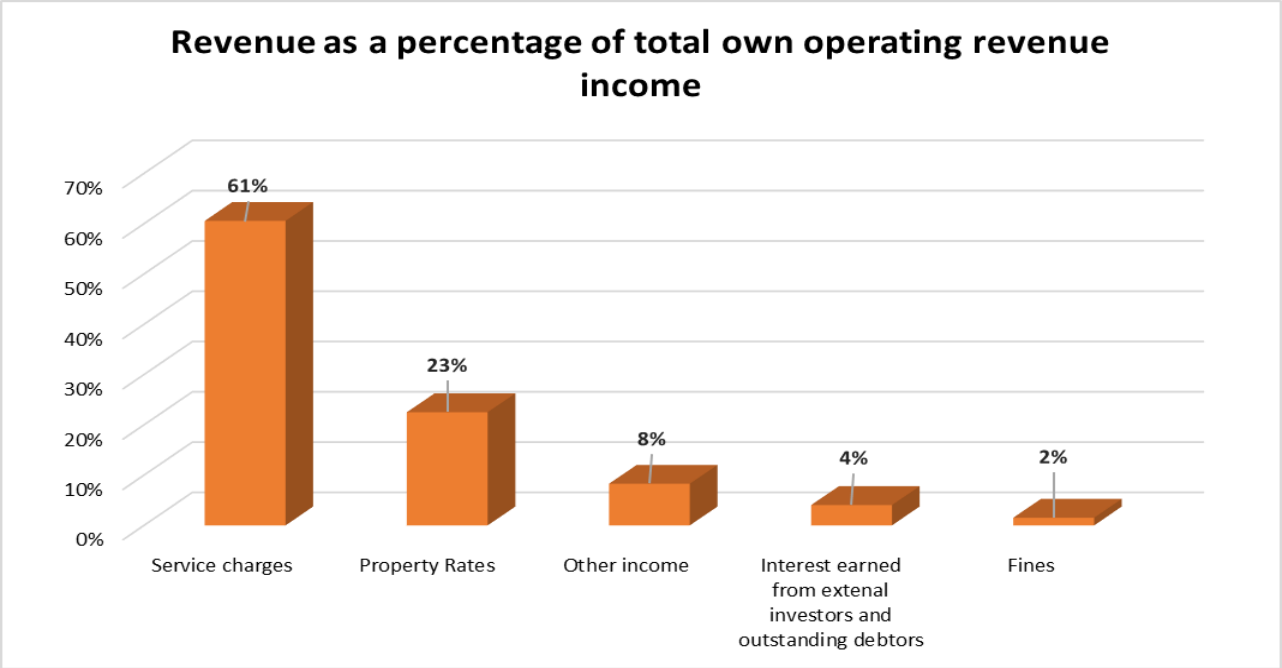
2.3 Sources of municipal revenue and macro-economic indicators' performance

a) Sources of municipal own-operating revenue

In the light of the discussion in the previous sections, Figure 1 depicts municipalities' major own sources of operating revenue, reflecting a major contribution of 63% by service charges, followed by property-rates revenue, with a contribution of 22% during the period of study. Although the components of 8% contributed by other income sources are not distinctly outlined in National Treasury financial statements; notably, this contribution ranks higher than the 4% contribution by the interest earned from investors and municipal debtors.

The percentage contribution is based on Income and Expenditure Statements information provided by the National Treasury for municipalities across nine South African provinces, National Treasury (2018). Municipal property-tax revenue mostly appears as the second-largest contributor towards the total revenue, ranking after the revenues from service charges.

Figure 1 - Revenue Source as a percentage of total-own revenue, South Africa



Source: Calculations based on Population Statistics publications –Statistics SA (2005 -2018)

In their study, Riel and William (2017) highlighted the fact that property tax is an important source of revenue for local government, more particularly in South Africa, Botswana, and Eswatini, despite Botswana depending mostly on central government grants, as a crucial source of revenue for municipalities. They further asserted that in Francophone countries, the importance of property-tax revenue is insignificant, although it is not decentralized; usually, it remains a national tax. They highlighted the fact that the poor performance of Francophone countries' property tax is attributable to the extreme centralization of tax administration, poor administration of the property-taxation system, including billing and collection procedures and unnecessary exemptions, among other things.

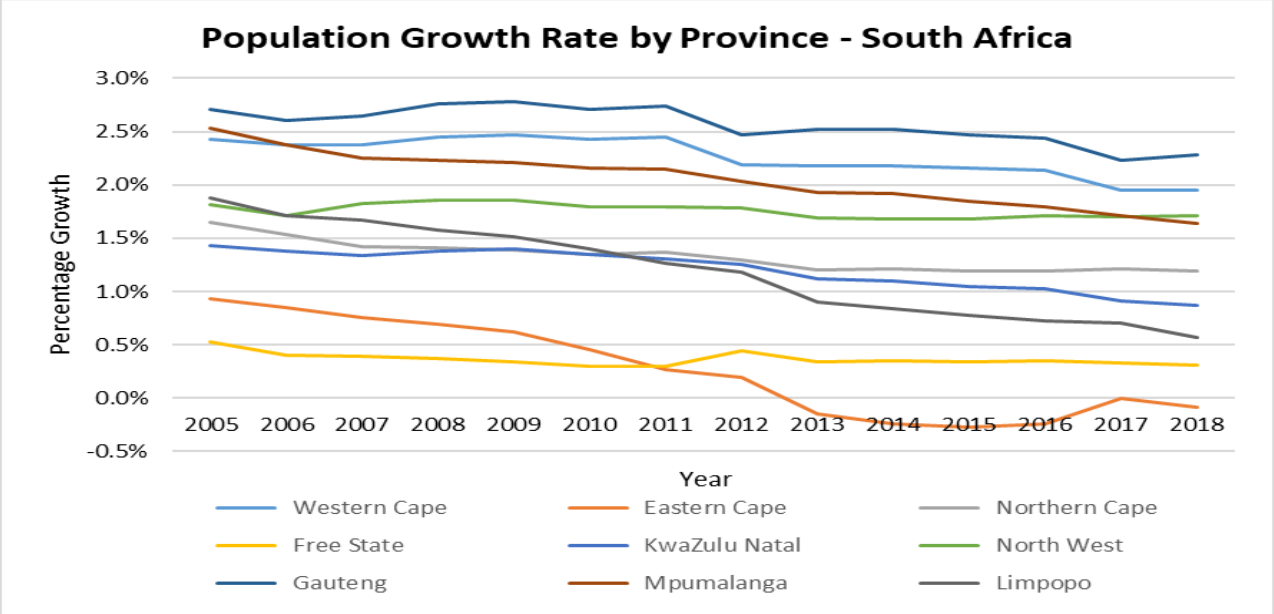
Riel and William (2017) highlighted the fact that in 2009, four metropolitan municipalities in South Africa achieved almost 50% of the total tax collected by the country's municipalities. Botswana contributed up to 65.1% of the share of total recurrent property tax in 2014.

b) Population rate by province

Figure 2 represents the percentage growth of the population of working age (15 – 64 years) per

province in South Africa. Across all nine provinces, a steady similar trend can be observed. However, there is a significant trend for the Eastern Cape population, exhibiting a constant negative decline from 2005 to 2015 and veering slightly upwards in 2016 to 0,0 % and a low negative 0.1% in both 2017 and 2018, respectively. On the other hand, the Free State depicts a steady, almost straightforward trend, with a slight incline of 0,4% in 2014, followed by a constant 0,3% incline from 2013 to 2018.

Figure 2 – Population percentage growth per Province



Source: Calculations based on Population Statistics publications –Statistics SA (2005 -2018)

According to the International Monetary Fund (IMF), 2019 publications, the South African population number was recorded at 57 726 million in 2018. Furthermore, it is noted in Table 1 that over 14 years, 2005 to 2018, South Africa steadily contributed approximately in the region of 6% of the total population in the Sub-Saharan Africa region per year. Riel and William (2017) highlighted that in South Africa, approximately 64.8% of the population recorded resided in urban areas during 2014. In alignment with the population growth rate, the effective administration of property-tax revenues must be well-managed to meet the demands of the population's needs. For example, Riel and William (2017) highlighted that the tax on rental income from immovable property funded the services aimed at meeting the population demands, particularly from urban development and health services, in Burundi.

Table 1- Population: South Africa as a percentage of Sub-Saharan Africa

Population (Millions of people)			
Year	**South Africa (SA)**	**Sub-Saharan Africa (SSA)Region**	**SA population as a percentage of SSA Region (%)**
2005	47.602	745.912	6.4%
2006	48.205	766.042	6.3%
2007	48.83	786.799	6.2%
2008	49.479	807.218	6.1%
2009	50.152	828.049	6.1%
2010	50.85	849.796	6.0%
2011	51.574	873.463	5.9%
2012	52.325	897.993	5.8%
2013	53.104	921.069	5.8%
2014	53.912	944.778	5.7%
2015	54.75	968.963	5.7%
2016	55.62	993.847	5.6%
2017	56.522	1019.76	5.5%
2018	57.726	1045.757	5.5%

Source: International Monetary Fund (IMF) - 2019

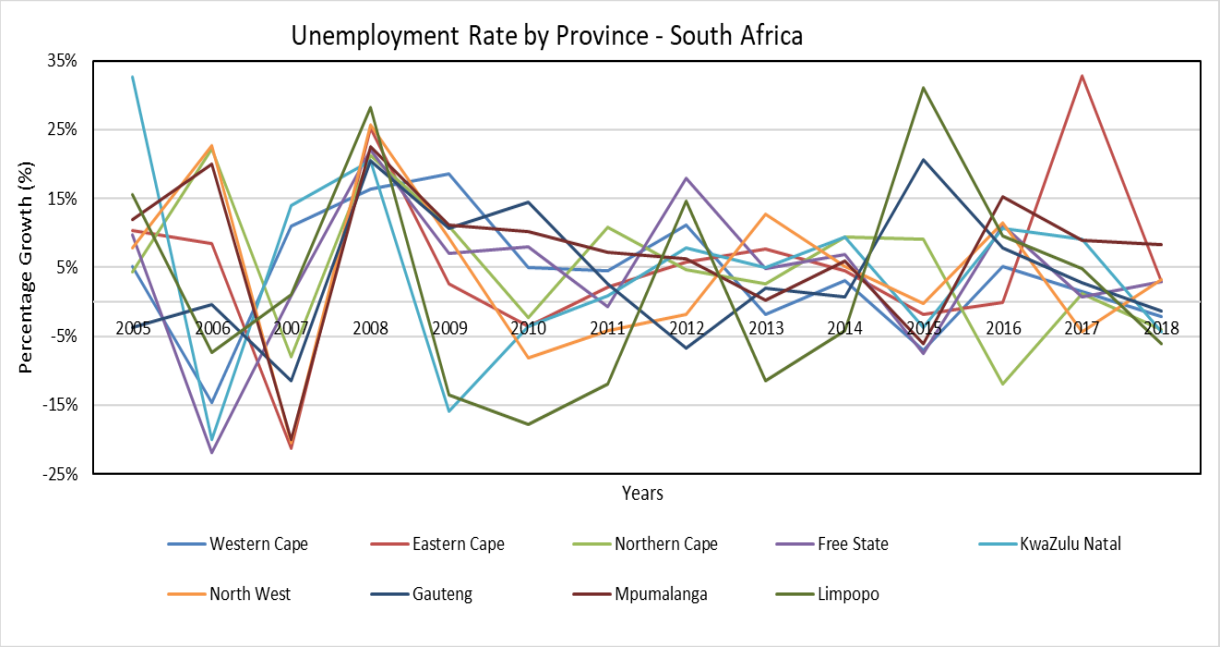
b) Unemployment Rate

Figure 3 illustrates the change in the unemployment rate per province in South Africa amongst the population of working age (15 – 64 years). In 2006, opposite trends are exhibited across the provinces, with half showing upward growth; and the other half reflecting a sharp decline. The unemployment rate shows an upward swing in all the provinces in 2008, which is also the year of the Global Crisis that severely impacted most countries. A sharp increase is noted in Limpopo and Free State province in 2012, with 15% and 18%, respectively; while a decline is illustrated in North West and Gauteng province by 2% and 7%, respectively during the same period.

In 2015, most of the of provinces indicated a decline, with the highest decrease being in the Free State and in the Western Cape, by 8% and 7% respectively. During the same period, a significant increase was indicated for Limpopo and Gauteng by 31% and 21%, respectively. Both KwaZulu Natal and Mpumalanga provinces showed a 9% increase in 2017, which is lower than the 11 and 15 percentage points, respectively recorded in 2016. Furthermore, in 2017, the highest increase of 33 percentage points was recorded in the Eastern Cape Province; while North West recorded -4 percentage points compared to the 11% recorded in 2016. Most

of the regions reflected a declining trend in 2018, as compared to that of 2017.

Figure 3 – Unemployment Rate by Province



Source: Calculations based on Work and Labour Force publications–Statistics SA (2005 -2018)

Over the past years, statistics have shown South Africa to be one of the regions with the highest rate of unemployment, indicating a year-on-year increase in most periods. Table 2 illustrates unemployment rate comparisons between South Africa and the Sub-Saharan region from the period 2005 to 2018. Both South Africa and SSA exhibit the highest unemployment rates in 2005, at 29.3% and 6.8%, respectively. South Africa is showing a trajectory increase in the unemployment rate, with steady percentage points from 2010 to 2013, followed by a constant increase up to 2018; while during the same period, a slight decline per year was observed in Sub-Saharan Africa. The trend depicted below shows that South Africa is lagging, when compared to the Sub-Saharan Africa region, in terms of unemployment.

Nonyana and Njuho (2018) highlighted the fact that the fundamental economic condition associated with unemployment is sluggish economic growth; although, in South Africa, extreme levels of unemployment can also be observed in the economy. They further noted that the observations across South Africa are attributable to structural factors, which amongst other things, includes the mismatch of skills and of technological advancements also.

Table 2- Unemployment Rate: South Africa versus Sub-Saharan Africa

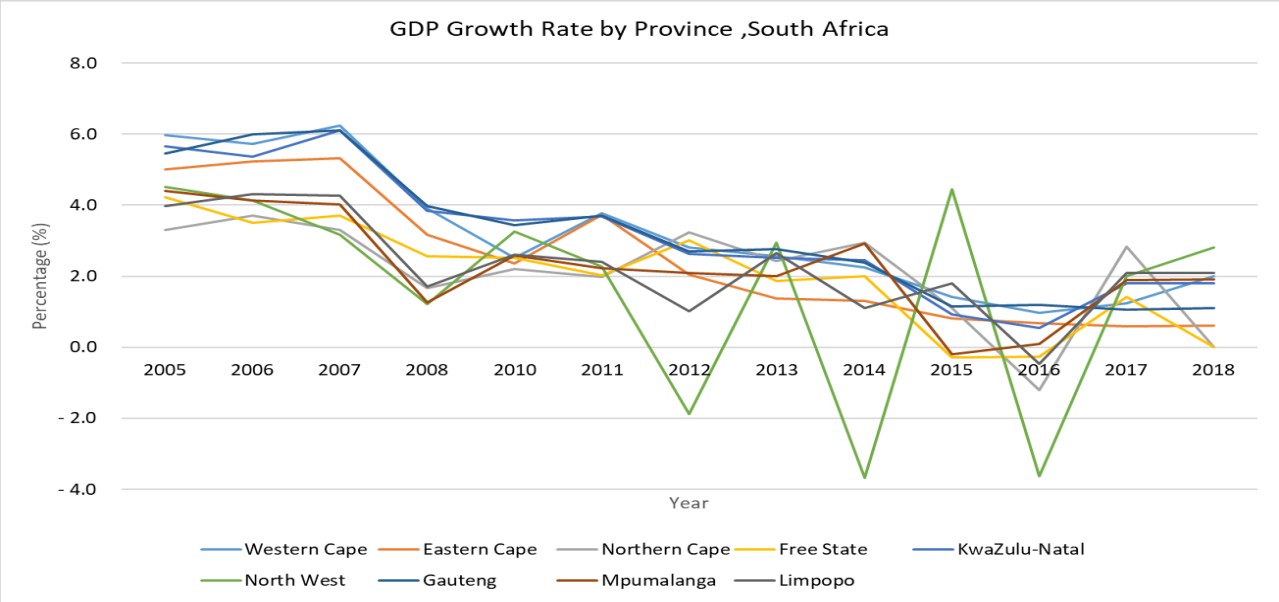
Unemployment Rate(%) - South Africa versus Sub-Saharan Africa														
Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
South Africa	29.3	28.5	26.7	22.4	23.5	24.7	24.7	24.7	24.6	24.9	25.2	26.6	27.3	27.0
Sub-Saharan Africa	6.8	6.5	6.0	5.6	6.0	6.1	6.0	5.8	5.7	5.7	5.9	6.1	5.9	5.9

Source: International Labour Organizations, 2019

c) Gross Domestic Product growth rate by Province

South Africa is a mixed economy, producing the majority of its GDP through the service sector, being mostly tourism. Nonetheless, the country is challenged with extreme levels of unemployment and poverty (Statista, 2019). The World Bank classifies South Africa as an upper-middle-income country based on its Gross Domestic Product (GDP), among other things. The annual real GDP growth rate reported in South Africa has been showing a mild decline during the period of study. Figure 4 illustrates the GDP growth rate per province, based on constant prices, as provided by Statistics SA (Stats SA) records, during the period between 2005 and 2018. A sharp decrease is shown in similar trends in all provinces from 2007 to 2008.The graph, for a period from 2009 to 2010, indicates a jagged pattern for North West province varying from 2011, reaching a negative 1.9 percentage points in 2012, and the lowest of 2.9% in 2013. This pattern can be noted throughout the study period, with significant uppermost percentage points of 4.4 in 2013, with a further decline of 3.6% in 2016. The rest of the provinces indicate virtually similar trends, notwithstanding the Northern Cape, the Free State, Mpumalanga, and Limpopo provinces demonstrating a slight decline during 2015 and 2016.

Figure 4 – Gross Domestic Product growth rate by Province



Source: Percentage changes - GDP, Statistics SA, 2019

Deepak (2008) stated that economic growth could be derived from an increase in the productivity of investment, but only in part. However, sustained economic growth also requires an increase in the investment-growth domestic product ratio. Fluctuations in the GDP growth rate are known to have numerous implications on other economic variables, such as inflation rate and employment; and thus it is important for this economic determinant to be monitored by policy-makers, government, and various other sector regulators.

The International Monetary Fund (IMF) recorded the South African GDP growth rate against that of SSA during the study period, 2005 to 2018, as indicated in Table 3. The table reflects a significant growth before the year 2008, for both SA and SSA. It can be noted that the GDP growth rate for South Africa from 2005 to 2018 shows significantly low levels, as compared with that of the SSA region, with a negative 1.5 percentage points, which could be attributed to the effects of the Global Crisis in 2008.

Moreover, according to Dillinger (1988), the capital view suggests that on the basis of land and improvements, the value of the property could be inter alia denominated, as capital or market value, alternatively to the annual rental value. Capital value makes a minimal difference in the distributional and allocative effects in a static economy. In a growing economy, this effect would differ. Furthermore, South African's GDP is constantly recorded at lower levels, when compared to that of the SSA region, throughout the study period.

Table 3 – Gross Domestic Product: South Africa versus Sub-Saharan Africa

Gross Domestic Product Growth Rate - South Africa versus Sub-Saharan Africa (%)														
Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
South Africa	5.3	5.6	5.4	3.2	-1.5	3.0	3.3	2.2	2.5	1.8	1.2	0.4	1.4	0.8
Sub-Saharan Africa	6.3	6.0	6.7	5.8	3.8	7.1	5.3	4.7	5.2	5.1	3.2	1.4	2.9	3.0

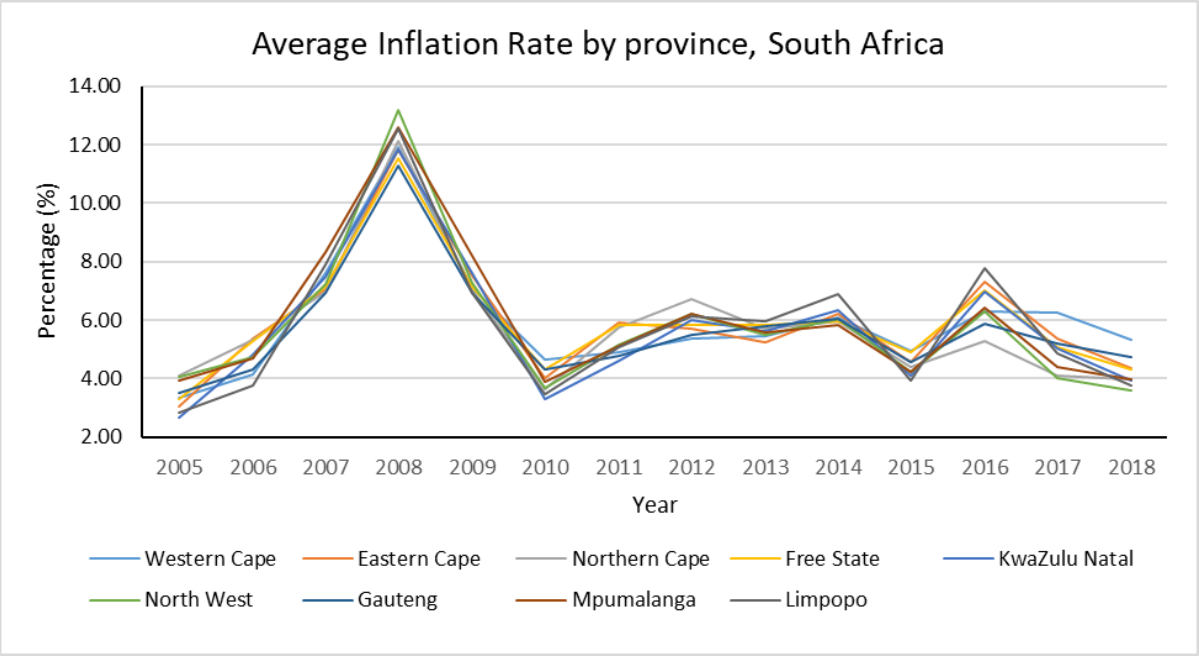
Source: Sub-Saharan Africa Regional Economic Outlook, 2019

d) Inflation rate by Province

South Africa's annual consumer price inflation has been quite stable over the past years, levelling off between 4.58% and 6.3%; and it is anticipated to stabilise at approximately 5% in the future, (Statista, 2019). Generally, low levels of inflation rate encourage the consumption of goods and services; and they further entice consumers to borrow more money; since a low inflation rate is usually associated with low interest rate levels. On the other hand, Doamekpor (2009) concluded that inflation is, inter alia, one of the most dependable indicators of both revenue and expenditure in national and local governments.

Figure 5 illustrates the average annual consumer price inflation rate across the nine provinces during the period 2005 to 2018. It is to be noted that the source of data, Stats SA, records such information monthly; thus, for the purposes of this dissertation, the average rates per annum are calculated. A jagged pattern can be noted across all the provinces, further illustrating positive variations over the study period. The inflation rate in all provinces reflects a sharp increase in 2008. A sharp decline is observed in Limpopo province in 2010, 2015, and 2018, with 3.46, 3.94, and 3.75 average percentage points, respectively. Conversely, the highest percentage points were recorded in the Northern Cape in 2012, with 6.72, Limpopo with 6.89 in 2014, and Limpopo peaking at 7.79% in 2016. In 2018, all the provinces retreated from percentage points recorded in 2017, with North West illustrated lowest, at 3.62 percentage points.

Figure5 – Average Inflation Rate by Province



Source: Calculation of Annual Inflation Rate by Province based on Statistics SA publications- (2005 – 2018)

According to Riel and William (2017), static tax rates and property values in an inflationary environment, with increasing needs and expenditures are consequential to severe budgetary implications for local governments. Thus, the former must be monitored in alignment with fluctuations in the inflation rate. Table 4; reflects comparisons of the inflation rate between South Africa and the Sub-Saharan Africa region over the 14 years, 2005 to 2018. During the first two years of the study, the South African inflation rate recorded was lower than that of the SSA region; while the highest rates were recorded for both of these in 2008.

As shown below, even though South Africa's inflation is lower than that of the African region, it adopts a similar pattern, except in 2017, when South Africa's 5.3 percentage points were lower than the 6.3% recorded in 2016; while the SSA region recorded the highest 11.8%, when compared to the 11.4% in 2016. In 2018, both South Africa and the SSA region recorded lower percentage points when compared to 2017, reflecting 4.6% and 11.8%, respectively.

Table 4 – Inflation Rate: South Africa versus Sub-Saharan Africa

Inflation rate, average consumer prices (Annual percentage)														
Year	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
South Africa	3.4	4.6	7.2	11	7.1	4.3	5	5.6	5.8	6.1	4.6	6.3	5.3	4.6
Sub-Saharan Africa	9.5	7.5	6	13	9.8	8.4	9.8	10.2	7.7	7.5	7.3	11.4	11.8	10.3

Source: International Monetary Fund (IMF), 2019

According to Dua (2004), inflation and employment are among the determinants that drive the demand for residential needs, such as housing. Thus, the fluctuations in the inflation rate are likely to have an impact on property-tax revenues, given that these revenues are mostly associated with property ownership and property values. For example, a rise in the inflation rate is likely to result in a decline in the demand for housing, consequently impacting property values.

2.4 Local government structures in South Africa

The developmental role for the local government outlined in the Constitution came into effect in 1996; and it is based on the South African unitary government system. The local governments have been constitutionally granted sovereignty over the administration of numerous revenue sources, which amongst others include user fees on electricity, water, sanitation services, and taxes on property within their jurisdiction areas. Moreover, local governments are entitled to a fair share of the revenue collected nationally. Local government in South Africa is usually referred to as municipalities; and it is one of the three government spheres whose objectives are, among other things, to ensure the provision of services to communities in a sustainable manner, and to promote socio-economic development (South African Constitution, Chapter 7: Local Government).

Furthermore, the local government has the authority to exercise any power concerning a matter reasonably necessary for, or incidental to, the effective performance of its functions, as stipulated in the Local Government: Municipal Structures Act of 1998, this is governed by the Constitution; and municipalities are entitled to the three categories listed in Table 5.

Table 5 – Categories and types of municipalities in South Africa

Category	A	B	C
Municipality Type	**Metropolitan**	**District**	**Local**
No. of Municipalities	**8**	**44**	**228**
Description	A municipality that has exclusive municipal executive and legislative powers in its jurisdiction area	A municipality that shares municipal executive and legislative authority in its jurisdiction area with category C municipality, within whose jurisdiction the area falls	A municipality that has municipal executive and legislative authority in its jurisdiction area that includes more than one municipality
Examples	City of Cape Town in Western Cape province	Zululand District municipality in KwaZulu Natal	Ulundi Local municipality which falls under Zululand District

Local government: The Municipal Property-Rates Act (MPRA) of 2004, amended in 2009, provides a framework within which municipalities must comply, when exercising the functions of property rates. According to the MPRA, metropolitan and local municipalities are authorised to levy property rates on immovable properties, based on the market value of the property determined by the municipal professional valuers. Before the enactment of Local Government: Municipal Property Rates Act 6 of 2004 in South Africa, property tax was imposed in terms of provincial laws with three different systems: the site-value system, a system based on the total value, and the composite system, or the split-rate system in taxing land and improvements. In accordance with the existing MPRA, there is only one standard tax base that applies nationwide, and that is the market value of the property (Daud et al., 2013).

2.5 Service delivery and infrastructure in local governments

Deriving revenue at sub-national level has become a fundamental aspect on which to focus; to stimulate growth and improvements on service delivery and infrastructure, notwithstanding an emerging complexity in basic community needs. The inability of the national government to provide adequate grants to local governments exerts pressure and necessity on the local governments to exercise their constitutional mandate in striving for the potential generation of revenue through various sources, including property taxes (property rates), service charges (tariffs), licences and other fees.

According to the Community Service Survey report released in 2016 by Stats SA, the main perceptions of municipalities' problems and challenges reported by households comprise mainly a lack of reliable water supply, inadequate roads, inadequate housing, cost of electricity, inadequate water and sanitation services, all of which can be partially addressed by utilising municipal own-operating revenues, such as property-tax revenues.

2.6 Stylized facts about local government tax revenue and service delivery

In terms of Section 229, the Constitution warrants that rates imposed on the property, will constitute an own-directed source of revenue for the financing of infrastructural management. The possibility of the afore-mentioned is highly effective in respect of Category A municipalities, due to population sizes, households' affordability, and the urbanized nature of the jurisdiction areas of these municipalities. The effectiveness of extending property taxes to Category B municipalities is curtailed by a lack of experienced personnel for the assessment of valuation rolls and property-revenue collection, among other things, (Amusa & Mabugu, 2016).

Granger (2013) asserted that land and property taxes in both developing and OECD countries are recognised as relatively effective local taxation sources. She further highlighted that these taxes tend to be underutilised in larger developing and transitional countries; as they are represented by 2.4% as compared to the 6.7% of total revenues in OECD countries. In his study, Slack (2011) concluded that, over the years, economists have been arguing that property taxation is a good tax because it is considered fair in terms of its advantage to local services; and it is not easy to evade; moreover it encourages autonomy and accountability to local government spheres. Both views concur that despite its underutilisation, property-tax revenues are imperative for the financial stability of local governments, and their ability to fulfil their constitutional mandate of providing service delivery to communities within their jurisdiction areas.

Based on the study conducted in South Africa, Bahl (2001) concurred that South Africa is one of the majority of developing and transitional countries that are performing fairly in terms of the range of productive-revenue bases that are available for users to finance urban local governments. His study substantiates that the South African municipalities in urban areas have

access to property values, payroll, and business income-tax bases, which present an opportunity for further exploration and improvements.

According to the National Treasury, 2018 report, local governments depend on two sources of revenue to exercise their mandate, which are intergovernmental funding and their operating revenue. Metropolitan municipalities rely mostly on self-financing through their revenue, in contrast to rural and district municipalities, most of which depend on government grants and subsidies. Across countries, the sources of revenue for local government vary; but they usually comprise intergovernmental transfers, user charges, and taxes. In addition, revenues may include property-transfer sales, permits, and licence fees. Local governments in South Africa have a variety of sources of revenue or income, utilised to meet public demands for services and basic infrastructure.

According to a publication found on *Localizing the DSG's, a Guide to Municipal Finance*, municipal own revenues in most countries are based on user fees and property taxes; and they exclude sources, such as fuel taxes, taxes on sales, and income. It is further stated that in most countries, intergovernmental transfers are not adequate in the provision of public goods and infrastructural development. Table 6 reflects the various main sources of revenue at the local government level in the South African context.

Table 6- Sources of municipal revenue categories in South Africa

Source of Revenue	Description
Taxes on property	It includes property rates revenue from residential, commercial/business, State properties, and others, which comprises agricultural and municipal properties. Municipalities generate own revenues from this source within their jurisdiction areas and subject to the powers vested to local governments the Constitution. According to Stats SA, this category is the 3rd largest contributor towards municipal revenues as of December 2018.
Grants and subsidies	Grants and subsidies are sourced from fiscal transfers from other spheres of governments, often from the National government. Municipalities are usually not required to repay these funds. However, they are granted the funds with certain conditions, that they are utilised for specified purposes. Municipal Infrastructure Grant is one of the examples of such a grant and could be utilised for preserving infrastructure, such as waste-water treatment plants, etc. Conversely, municipalities have discretion on how and where to utilise unconditional grants in alignment with their needs. For example, the equitable share can be spending in other aspects not related to enhancing minimum service delivery. According to Stats SA, this category is the 2nd largest contributor to municipal revenues, as of December 2018.
Service charges	According to Stats SA, this category is the largest source of own-operating revenue for municipalities. It is a combination of electricity and water sales, sewerage, sanitation, and waste-removal charges. According to Stats SA, this category is the largest contributor to municipal revenues, as of December 2018.
Other income	Stats SA describes this category as comprising the gains on property disposals, fines, licences and permits, plant and equipment, public donations and contributions, interest earned on external investments and outstanding debtors.

In the past years, South African municipalities have been challenged by the increasing demand for service delivery and infrastructural development. The challenge has been the inadequate financing for the provision of basic needs to rapidly growing populations. Property tax, as one of the major revenue sources, particularly in metropolitan municipalities, is anticipated to enhance the living standards of communities, when utilised effectively and efficiently. Some literature cites the lack of administrative capacity and challenges in evaluating immovable property as a major source of minimal revenue generated from taxes. According to Stats SA reports, most municipalities, predominantly in rural areas, depend largely on grants and subsidies from the National government, due to a poor income base and default in payments for services by citizens.

Consequently, it is apparent that in the long run, government grants and subsidies may not be sustainable to meet all the demands and needs of a growing population, and own-municipal revenues would remain a crucial determinant of the viability of municipal finances. The impact of macro-economic determinants on municipalities' revenues, particularly on property-tax revenue, has not been adequately explored within the South African context; therefore, this study aims at examining the impact, achieving findings, as well as some possible useful recommendations.

2.7 Theoretical Framework

2.7.1 Property Tax

According to Felis (2014), property tax is amongst the first form of taxation explored from the economic perspective. Notwithstanding the vast amount of literature on this aspect, unanimity has not been yet achieved on property-tax issues. To some extent, the literature has strong arguments for and against the view that higher tax ratios lead to higher GDP growth. On the other hand, McNabb (2016) concluded that higher taxes enable the government's ability to invest in needs, such as education, R&D and infrastructure, which serve to improve the economy's productive capacity. In his study, Felis (2014) highlighted the fact that as prospective revenue for local government, taxes should, among other things, possess uniform distribution of the tax basis and tax visibility, in order to ensure transparency and social responsibility. His views are similar to those of Dimopoulos (2015), who explored Aristotle's work, and concluded that the important aspect of property taxation is that it finances significant public services, which are the government's responsibility, for meeting societies' needs. From

a different view, Menikoff (1978) asserted that in some instances, certain restrictions imposed on immovable properties, such as zoning rights, reduce the taxable value of the property, which subsequently results in a reduction in maximum property tax revenue for local tax authorities.

Menikoff's assertion possibly holds in the South African context, whereby property rates are based on the market value of the property; and in that regard, property values vary in accordance with usage, location and characteristics, inter alia.

It is evident that theoretically, property-tax revenue is of vital importance in the fiscal decentralisation perspective; and it is expected to contribute towards maintaining sustainable local government structures; while enabling them to achieve the stipulated mandates, such as providing services and infrastructure to society. There are several studies on the various property taxes, their administration, and utilisation for the benefit of the taxpayers and local governments. This section explores three property-tax theories, namely: the traditional theory, the benefit-view theory, and the capital theory of taxation.

a) The Traditional Theory

According to Zodrow (2001), a traditional theory disseminated by Simon (1943) and Netzer (1966), is partially based on the equilibrium approach to analysing the tax, with an emphasis on the effects of increasing the tax in the local residential property market. From this perspective, Zodrow construes that the national return to capital is fixed. On the contrary, Wassmer (1993) asserted that a traditional theory infers that owners of the capital portion of taxed properties should bear no burden of tax; since it is passed fully towards capital renters; and the conclusion in this regard is that the property tax is regressive; since the poor spend more. On these bases, it may be concluded that property owners, who may be exposed to various available options should elude the tax burden, due to their ability to shift it to consumers, who, on average, have lower incomes than property owners. An IMF Working Paper authored by Norregaard (2013) highlights, that according to the traditional view, property tax combines a tax on highly movable capital and immovable property, such as land, with tax being wholly shifted to the renters, consumers, and labour; while the landowners endure the tax on land.

Similarly, there is the assertion by Evans and Gade (2013), who highlighted that the traditional view approaches the property tax as an excise tax levied on land and capital improvements.

with the conclusion that the inelastic supply of land within local governments' jurisdiction areas cannot escape its share of the tax. The literature on this theory emphasises that property tax is regressive, due to its likelihood of being shifted to others, or consumers with lower incomes. The above may be relevant to a predicament facing municipalities on ineffective efforts of rate collection from the taxpayers, as this could be due to the lack of affordability, which could be associated with variations in macro-economic factors.

b) The Benefit Theory of Taxation

In contrast to the traditional view, which perceives property tax as being an excise tax, the benefit theory of taxation, argues that property tax is a benefit tax equivalent to the benefits received from the public services financed by the property tax (Norregaard, 2013). The benefit theory of taxation was initially developed by Wicksell (1896) and Lindahl (1919); and it was reviewed by Hamilton (1983) and Fischer (2000), amongst others. Zodrow (2001) asserted that the review of this theory is an extension of Tiebout's (1956) model, which maintains that the individual's mobility and inter-jurisdictional competition under certain circumstances in delivering public services in the local government are adequate to guaranteeing the effectiveness of resource allocation.

Tiebout's views only maintain that tax benefit exists in the form of poll taxes; and it rejects property taxation in local government. Zodrow (2001) further concluded that Hamilton contributed to this view by developing scenarios, in which property taxation can be converted into poll tax. Hamilton's assumptions are that the individual decides to choose certain local governments that offer public services, which are in alignment with their demands or preferences.

The benefit-theory view assumes that the individuals pay taxes to local governments, and subsequently reap benefits in the form of the provision of public services. On the other hand, Cooper (1994) argues that the benefit-view theory is criticized for being involuntary, on the basis that its principle is an imposition upon the taxpayer, who is being consequently compelled to pay, instead of voluntarily acquiring the service. The setback with Cooper's view is that it disregards the possibility of a free-rider challenge, should the taxpayers be granted an option to pay for public services; since they have acquired them. Free-rider problem occurs when society members who benefit from goods or services, overuse these goods or services without paying their share for them.

c) Capital Tax (New view)

The capital-tax view, also known as the new view of property tax theory was established by Mieszkowski (1972), who, building on the work of Brown (1924) and Thomson (1965), used the Herberger (1962) fixed capital stock, perfectly competitive general equilibrium model of national tax incidence to examine local property tax (Mieszkowski & Mieszkowski, 1986). Zodrow and Mieszkowski asserted that the new view holds that the crucial consequence of the utilisation of local property tax is to minimize the net return to capital, while tax discrepancies lead to minimally important effects on consumer prices and returns to imperfectly mobile elements of production. According to their view, property tax leads to various distortions, specifically in the allocation of capital; but it also has a crucial redistributive element; since capitalists endure the major burden.

Zodrow (2000), reviewed capital tax view and concluded that property tax is a distortionary tax on local utilisation, with consequences of misallocation of the national capital stock within the local jurisdiction.

According to Adler (1981), the core principle of the new view tax theory is that all capital owners carry a burden of some portion of property tax. His study emphasizes, particularly for the property tax, that the capital theory enables economists to differentiate between this tax imposed locally at varied rates and that, which is imposed nation-wide. He analyses three core parts of which the new view theory is comprised, namely: an even national levy on land and capital, the burden from various rates in dissimilar localities, and the influence on the supply of land and capital of those various rates.

Based on his study, Adler inferred that in accordance with the general equilibrium of tax analysis, property tax is not regressive, due to the property possessing reduced value, as a result of property taxation. This is because owners of property tax and capital are unable to pass the tax burden onto the buyers of their property. In his view, since property owners cannot pass the cost of property tax onto property buyers, this implies that tax is not regressive (Adler, 1981). On the contrary Norregaard (2013) suggests that the capital-view theory assumes that capital, i.e., land, is a fixed supply; but it is perfectly mobile geographically, and across sectors. He further maintained that tax on capital is viewed as a consolidation of the basic tax rate applied to all capital and a local variance that differs across local authorities. He concurs with Adler

that the capital-view theory holds that property tax is progressive, but according to his views, this is due to the ownership of capital by higher-income individuals.

Sirmans et al. (2008) asserted that the capitalization theory suggests that the value of properties is subject to the level of public services and taxes within any particular community. Their findings inferred that the new-view theory only considers a capital portion of the tax; and one of its implications is that all property owners bear an economic burden in the form of a lower return of an ordinary property tax. They found that a jurisdiction area providing identical public services compared to other jurisdiction areas, but with advanced tax rates would experience lower property ownership by some individuals.

This section has outlined the various literatures on property tax; and it has further explored various theories property, namely: the traditional theory, the benefit view and the capital-tax view. It has demonstrated the evolution of property tax theories over time. Moreover, the literature in this section suggests that the benefit-view theory is, to a greater extent more relevant in the context of this study. It is evidently a norm in South Africa, that property tax revenues derived by local governments contribute towards the provision of public goods and services, as well as infrastructural development, whereby the citizens are the beneficiaries.

2.7.2 Taxation and Selected Macro-economic Indicators

This section explores the theory of macro-economic indicators applicable to this study. In context, it further explains their relevance to the area of study and the corresponding variable, property tax.

a) Gross Domestic Product (GDP)

GDP is a broad economic concept. Van den Bergh (2009) asserted that GDP is the monetary value of all final goods and services in the market that have been produced in a country within a year. He further highlighted that the real GDP per capita, which accounted for inflation, is employed as the fundamental indicator in examining the position of a particular country, against that of other countries over time. Similarly, Dynan and Sheiner (2018) (citing The Bureau of Economic Analysis) suggested that GDP may be defined as the sum of individual consumption expenditure, gross private domestic investment, net exports of service and goods, gross investment, and government consumption expenditure. For the purposes of this study, the Classical Economic Growth Theory is discussed in

detail. The classical economic growth theory is largely an achievement of scholars, such as Adam Smith, David Ricardo and Thomas Malthus, together with the work produced by others before them.

According to Harris (2007), the interest of classical economists in economic growth emerged due to a concern for progress in terms of social development and identifying the factors that promoted or impeded societies' development, and subsequently the foundation for policy and action to impact those factors. Whilst various types of taxes may be considered as significant contributors to a country's economy, at local government level, property taxes are acknowledged for their contribution to the development of infrastructure and the provision of a community's basic needs. Impeccably developed cities are frequently characterised by public services and infrastructure that are satisfactory to its citizens. Smith's contribution is, inter alia, comprised of a perspective on national wealth from which a need to maintain private property and subsequently the interests of the property-owning class emanated. His convictions on the canons of taxation are pertinent in the context of this study, as concluded by Drake (2006) in the modernized work of Henry George.

Drake highlighted the fact that the pre-eminent mechanism of raising public revenues would be the one that conforms to the canons of taxation's principles (Drake, 2006).

In his Wealth of Nations (1776), Adam Smith developed four canons of taxation with which the policies developed by the government have to be aligned. These four maxims are explained below;

- Canon of certainty – The tax payable by each individual must be definite, and not unjustifiable. Thus, government policies must clearly define the taxable amount, the relevant payment periods, and the manner of payment thereof. This further suggests that local governments should be in a position to curb tax evasion by citizens who are capable of paying, whilst ensuring that corruption and politicizing this source of revenue by officials, is fettered.

- Canon of equity – the citizens in every country ought to play a role in promoting government to the degree of their capabilities, that is, in the degree of payable

revenue, from which they would benefit under government administration. In this aspect, those citizens, who enjoy higher levels of security from the government are expected to pay higher taxes than those who enjoy less. Modern economists and scholars recommend the progressive tax, which implies that the more income earned, the higher the taxable amount ought to be, and vice versa. Drake (2006) asserted that tax should not grant anyone an advantage; nor should it subject anyone to a disadvantage – it should be imposed equally.

- The third is a canon of convenience. This suggests that tax should be imposed in a manner or time, which is most likely to be suitable to the taxpayer to pay it. This implies that governments need to adhere to, specify and communicate timeframes regarding the tax payment deadlines of various tax categories.

- Lastly, the canon of the economy – every tax ought to be contrived in such a way that the tax collection is minimum, but also, the collected tax should maximise revenue to the governments. This further suggests that tax should be least impeding on the growth of the general finances, from which the communities are maintained.

The above-mentioned theory is relevant in this study; as it supports a discussion on the role of taxes, specifically in maximizing the potential of property-tax revenues in local governments. It is inevitable that local revenues contribute to the well-being of the local economy. This is evident in the work of Lynch (2004), who concluded that generating taxes and utilising auxiliary revenues to pay for more public services, improves economic growth. He further suggests that if countries abandon taxes and reduce public services, a decline in output and employment would be inevitable.

b) The Unemployment Rate

According to Fedderke (2012), output and employment structures are more related to either post-industrial or industrialised economies. He concluded that the patterns of employment distribution in South Africa manifest a substantial increase in employment in the service sector of the economy, notwithstanding the unusually high unemployment rate. His study concludes that South African labour supply is challenged by the market segmentation and skills mismatch problems, among other things. His assertions expand on the fact that labour demand has not

been challenged by the conditions of diminishing real-unit labour costs, notwithstanding the possibility of a strong reaction to the lower costs of labour. He concluded that South Africa's economic growth has not been sufficiently high or sustained significantly for job creation to adequately enhance the labour market conditions. Fedderke's views demonstrate the relevancy on the current challenges endured by South Africa, in terms of labour market conditions that are evident through the high rate of unemployment.

It is most likely that when a high percentage of the population is unemployed, the lower percentage of the population is eligible to pay taxes and to evade them, thus limiting the potential revenues due to local governments. According to the Development Bank of Southern Africa's (DBSA) report released in 2016, the metropolitan municipalities are the main job creators, manifested by 74.9% net job creation accounted for three quarters of the secondary cities contributed approximately 10%; while smaller towns or rural areas contributed only 15% of jobs in 2016. This clearly indicates well that major cities are characterised by dense industrialisation and populations.

According to Terri and Sheffrin (1995), the restrictions on the sovereignty of local governments to incur debt had mostly relied on the property tax before the Great Depression; and when unemployment and the decline in income intensified in the early years of the Great Depression, then property values also decreased. This assertion alludes to a major concern confronting the South African labour market, including the local government, which is characterised by a wide range of labour strikes, related to wage increases. This may indicate that labour wages are inadequate, when compared to the increasing costs of living in South Africa.

Knight (2014) asserted that Pigou, in his Theory of Unemployment, examined unemployment as a consequence of the two definite levels of maladjustment in economic activity, these being macro- and micro-economic maladjustments. Her views postulate that the economic maladjustments consist of consequences that inhibit the attainment of full employment. Knight further asserted that Pigou's consideration of unemployment was entangled with a systematic exploration of the consequences on the national dividend and the industrial instability. This suggests that Pigou's views are particularly attentive to the root cause of unemployment. The author's analysis seems to obviate the repercussions of unemployment on the effective generation of tax revenues. On the contrary, Reeb and Tomson (1985), asserted that property tax administration must counter unemployment, inflation, increasing population growth, any

increase in the segment of minority property owners, and local political monopolies, amongst others. And, from these market forces, property tax assessments can be established as to how property-tax assessments could be insulated.

On the other hand, Harrod (1934) asserted that Pigou's fundamental tool in addressing the issue of unemployment emanates from the theory of marginal productivity. He criticized Pigou's theory, when he highlighted the fact that Pigou did not consider that monetary authorities are required to be mindful of the consequences of wage negotiations on unemployment, when they regulate their policies. This is the significant conviction to which Keynes alluded, in his theory of unemployment. Based on various media platforms in the South African context, it is evident that disputes exist between employees' representatives and South African Local Government Association (SALGA), pertaining to wage increases. These disputes normally pertain to annual wage increases, and company benefits, in the light of the cost of living and inflationary pressures; and they occasionally result in employees' strikes and a loss of productivity in local governments.

In contrast, Costabile and Rowthorn (1985) discussed Malthus's Theory of Unemployment, particularly focusing on wages, growth, and unemployment. They highlighted Malthus's long-term growth model, which consolidates Malthus's prospects of on-demand and diminishing returns with his philosophy of population. In their analysis, they identified that Malthus has highlighted that unemployment and high real wages can co-occur perpetually, subject to employees' willingness to share their wages with those who are not employed within the family. They concluded that Malthus's theory does not hold, as widely assumed, particularly because there is no mechanism to reduce unemployment, as a result of wage increases; since any improvements in wage growth would be used to sustain permanently unemployed individuals through their families. Therefore, his theory does not eliminate the unemployment rate – not even in the long run.

In conclusion, it is evident that unemployment is associated with the population size and various economic indicators, particularly the employees' remuneration in the form of income or wages. Based on the views highlighted in this section, it can be inferred that the rapid unemployment rate and the increasing cost of living may be a consequence of the inability of unemployed property owners or citizens to pay property taxes to their local authorities.

c) Inflation Rate (Consumer Price Index)

Numerous studies suggest that inflation may not be defined in a very precise way; however, it possesses features, such as a rise in prices and monetary income, which influence the various components of inflation. In his analysis of inflation theories, Totonchi (2011) asserted that it is usually challenging to disintegrate the inflation observed into its components, such as demand-pull, cost-push, monetary, and structural components. He emphasized that inflation itself may result in future inflation; and it is constantly regarded as an institutional and macro-economic phenomenon. It is evident that inflation further manifests itself in the households' affordability, supply, and demand for consumer goods.

Tax is a vital component of fiscal policy for governments and their economy; thus, emerging markets utilise taxes to accomplish economic development. Tax regimes impact the economy through their influence on employment, inflation, investment, consumption, and savings. Accordingly, the fiscal policy of a country should have the ability to sustain the stability of the economy and to govern the economic policies. Thus, to improve development, the macro-economic effects on property tax revenues should be reduced through various innovative mechanisms at sub-national level, as well as any improvements in policies. Nowotny (1980) asserted that progressive taxation – mostly through progressive income tax – means that higher tax levels are the result of an increase in monetary income; thus, as a consequence, there is a higher tax share in the economy.

Colander (1992) concluded that the real theory of inflation examines how individuals select prices, how their amount of money can impact their preferences, and how their preferences impact the economy's aggregate equilibrium. He further concluded that the major point of the real theory of inflation is that particularly when the direction through which monetary policy controls price magnitude, the unit-of-account function of money results in the importance of nominal price-setting decisions made by individuals. Totonchi (2011), in his study, as he refers to the inflation theory, highlighted that, the supply of money is the major but inclusive causality of price levels in the long-term, and the level of output in the short term. He further asserted that Milton Friedman found that as a result of the swift expansion in money, monetary phenomenon arises in money quantity, as compared to aggregate output; and inflation is consequently significant, in the modern quantity theory. For example, in his study, Chipswa (2016), asserted that high economic activity eventually leads to a rise in inflation, which

impacts the property values; and therefore, inflation is anticipated to have an effect on the property-tax revenues due to and payable to local governments.

The theory seems to suggest that inflation is a macro-economic phenomenon, which considers individuals' preferences based on their disposable income. Thus, it is expected that inflation would have an impact on property-tax revenues; since property tax is subject to the value and type of property. Acquiring the property of a certain value or type by individuals is based on the householder's income.

d) The Population Rate

This section discusses the various theories pertaining to population or demographics. There is a variety of studies that unpack these theories, some of which will be outlined in this section.

Lee and Loschky (1987) analysed the Malthus Theory of Population by highlighting the fact that Malthus perceived economic demographics as a dynamic process. They further found that Malthus argued that population growth and real wages similarly depend on society's basic income. Based on the Malthus theory of population, they argued that population growth is guided by the relative strengths or checks to the growth of population, which both relate to Malthusian Income, those being the positive checks and preventive checks. They further describe Malthusian Income, as being the subsistence income relative to the real income. Subsistence income is that income required for maintaining the anticipated lifestyle.

In his study, Simkins (2001), explores Malthus's positive and preventive checks. He asserted that inadvertent positive checks mostly involve mortality; whereas preventive checks mostly result in a fertility decline. Simkins asserted that most of the Malthusian and Neo-Malthusian conditions are evident in South Africa. Simkins (2001) further discussed Neo-Malthusian views forthcoming from the Malthusian philosophy, and subsequently applied to the modern theories of economic development. These views postulate that the real income growth per capita is compromised, as a consequence of the rapid population growth. He concluded that real income per capita per worker declines, as the population increases; and with output per capita, it is easier to improve society's quality of life when the population growth rates are low. His assertions suggest that an increase in population rate results in pressure on the natural

resources, and on public spending on the physical infrastructure, which consequently becomes inadequate, when compared to a society with high population growth. This has an effect on the pressure of social services, as well as a decline in household savings, due to the pressure of meeting the basic needs. This further leads to the lack of economies-of-scale from population growth. Governmental revenues may be anticipated from various sources; thus, government officials in different governmental spheres should acquaint themselves with the fundamental determinants of governmental revenue amounts.

For instance, efficient financial administration requires governments to ascertain both expenditure requirements and revenue sources; and subsequently, the size of the population being served by a particular governmental sphere from the tax revenue is one of the crucial variables in determining effective financial planning and the efficient provision of basic public services.

On the other hand, Guthrie (1984) analysed the views of Malthus and Keynes on population. He asserted that Keynes's views suggest that a reduction in population growth results in a decrease in capital demand; and this further diminishes the business expectations, thereby emphasising the importance of stimulating investment and consumption, in order to retain full employment output levels. A variety of scholars have criticised the Malthusian theory of population. His main arguments were that the major outcome of population growth is poverty; hence, the growth in food supply cannot keep up with the growth in population; and further, there is an urge to reproduce. The critics of his philosophy argued that Malthus did not consider that population growth can be balanced through technological advances for increased production; and he overlooked the effectiveness of contraceptives, which impede the rate of population growth.

Finally, theories pertaining to population suggest that the population growth has an impact on economic activity, government spending on public services, poverty levels and income levels. DBSA (in 2016) reported that South African cities and towns reveal the legacy of racial segregation, poverty, and exclusion from socio-economic opportunities; and he further stated that metropolitan municipalities have higher numbers of population. Therefore, it is imperative to note that the population dynamics vary across different cities and towns, due to urbanisation or internal migrations resulting from a variety of the push-and-pull factors of migration. These movements reconfigure population dynamics per region; and they tend to pre-determine the

communities' developmental requirements, public income sources and expenditure needs, to meet public demands.

Therefore, it appears that the type and the sources of local government revenue can be determined by assessing the population dynamics and labour class within the jurisdiction of the municipality. For example, municipalities located in highly urbanised and industrialised areas with medium-high income earners would have a greater probability of generating higher property tax revenues. For instance, DBSA (2016) reported that about 63% (up from 53% in 1994) of South Africa's population live in urban areas, where households' incomes are higher; and these urban areas include 4 regions (Gauteng, eThekwini, Nelson Mandela Bay and Cape Town), which accounted for 42% of this population, in 2011.

Moreover, the state of South Africa Cities Report (2016) highlighted that population mobility between the cities showed a non-linear urbanisation trend in South Africa, which in turn imposes challenges on planning and the projection of revenue, as well as the expenditure on service delivery and infrastructure.

2.8 Empirical Literature

This section discusses the empirical studies on property-tax revenue for local governments in relation to the macro-economic determinants. Most of the research conducted in this study area focuses on the role of property-tax revenues in the development of the infrastructure, the provision of public services, and improvements in social wellbeing. The scholars further delved into and highlighted the challenges in administering property taxes at the local government levels, critical analysis on the property-tax system in local governments, in addition to the advantages, and the disadvantages of property tax. The bulk of these studies concluded that property-tax revenue by local governments within the emerging economies is not adequately explored, when compared with developed countries.

In developed countries, property tax contributes higher percentages to the country's GDP, when compared with its percentage contribution to the GDP in emerging countries. Furthermore, there is a strong emphasis on the mechanisms employed in spending-rate revenues and its allocation for improving public service delivery and the infrastructure.

In their analysis, Babawale and Nubi (2011) noted the need for stability; and they reliably improved funding sources to counteract the increasing population; and similarly, with the provision of infrastructure in local authorities. Likewise, Mabe and Kuusaana (2016), in their findings, highlighted the importance of healthy revenues in local governments, in order to attain growth in the infrastructure and an improved wellbeing of society. Daud et al. (2013) asserted that disparities between expenditure and revenues in local authorities should be reduced, in order to attain the efficient provision of public services.

On the other hand, Bahl's (2007) views differ; since he highlights the need for efficient valuation systems in local governments, in order to exploit the optimal advantage of property tax revenues within the jurisdiction areas. Bahl's views concur with the vast literature related to the administration of property tax in local governments. Conversely, Monkam (2011) used a conceptual model of property-tax revenue comprising five policy and administrative variables. It was established by Kelly (2000), that there is a need to examine the effectiveness of the property-tax system.

Kelly (2000) asserted that property taxation contributes enormously towards the financing of local authorities worldwide. Notwithstanding sporadic comparative information, it contributes a significant percentage of GDP. Norregaard's (2013) study alluded to this by inferring that the dependence on property taxation is mostly in relation to economic development, with an average revenue ratio to GDP in both OECD and developing countries. Issah and Antwi (2017), concur that the macro-economic variable influences government policies in both national and local governments. Presbitero et al. (2014) also highlighted that property taxation makes a positive contribution to revenue growth in local authorities; although their study is based on the research conducted in OECD countries.

Babawale and Nubi (2011) examined the need for improvements in the local-property tax system; in local government, finance is driven by two main imperatives. Firstly, there is the need for a stable, reliable and expanding source of finance for the escalating population; and secondly, there are the corresponding infrastructural needs, mostly for the urban local councils. Daud et al. (2013), asserted that if local governments are to be the main providers of public goods and services, higher levels of jurisdiction must share part of their revenues with local governments through transfers and grants, in order to bridge the gap between spending and revenues derived locally. Intergovernmental transfers in most developing countries, including

South Africa, have become unreliable – due to unstable economic conditions and increasing populations – resulting in an enormous demand for public infrastructure and service delivery, Mabe and Kuusaana (2016) stated that in local governments, a healthy revenue is critical to ensure progressive economic growth infrastructural development, as well as the social wellbeing of the city and its citizens. Thus, municipalities must improve their asset registers to ensure that optimal property rate revenue is collected within their jurisdiction areas.

Bahl (2007) examined the advantages and disadvantages of property tax in developing countries; one of them being the revenue potential and stability, as an advantage to local government. Revenue potential and stability require a good valuation system, willingness to levy property tax at higher levels, a strong rate of compliance, and an effective program to enforce compliance. In contrast, the disadvantage, amongst others, is the difficulty of enforcing such a program. Tang et al. (2009) concluded that in China, high property tax loading on transaction activities has led to an undesirable side-effect inducing buyers and sellers to submit false reports of the sale price to the registry, in order to evade tax.

Moreover, Babawale and Nubi (2011) argued that the key obstacle to implementing property tax – mostly in developing countries – has been the lack of political will, which translates into weak administration.

Bahl (2009) asserted that property tax is often described as having significant potential or significant untapped potential; and policymakers need to recognize the obstacles to realising this potential; and to develop effective frameworks in addressing these constraints. On the other hand, Daud et al. (2013), identified administrative capacity as a major constraint in delivering efficient and effective property-tax systems. They further found that, based on a lack of capacity and capability within local government, the private sector could be mobilized to provide necessary services. Based on their study in Malaysia, they further asserted that the most common problem faced by Malaysian local government is modernising the valuation list due to the increasing rate of urbanization. This, consequently, leads to an increased number of properties requiring valuation assessments, sporadic re-evaluations, due to the lack of capacity, and outdated fixed-tax rates, all of which contribute to inadequate tax revenue for the management of urban facilities.

In respect of the factors which impede local government from deriving maximum revenues, Monkam (2011) demonstrated that one of the constraints that hinder local governments in seeking efficient strategies of funding own revenue is an excessive financial reliance on resources from the national government. The author conducted his study by using a general conceptual model of property-tax revenues of five policy and administrative variables to determine the effectiveness of any property-tax system, which was determined by Kelly (2000). This system comprises tax ratio, three administrative-related variables, particularly the size-of-coverage ratio, the valuation ratio, as well as the collection ratio.

Kelly (2000) concluded that property taxation contributes immensely to the financing of local government worldwide; and despite infrequent comparative data, property tax accounts for 40% to 80% of local government finance, 2.0% to 4.0% of total government taxes and 0.5% to 3.0% of the GDP. According to Norregaard (2013), reliant on property taxation is largely recognised on economic development, with the average revenue ratio to GDP in OECD countries which is three times higher than that in developing countries.

On the other hand, Bird and Slack (2014) concluded that it is fundamental that developing countries should associate property-tax reform with broader reforms in public sector management, intended to enhance both public services and governance. They highlighted the fact that it is not complicated to reform property taxes, which are a vital tax in most countries, if the citizens can reasonably recognise improvements in local governance and local service delivery.

Furthermore, Presbitero et al. (2014) found that, despite the attention given by the literature to the virtues of property taxes for various macro-economic issues, the impact of utilising property taxation on overall fiscal balance has not been rigorously explored. Property tax is derived from average revenues of less than 1.0% of GDP in developing countries. In the majority of African countries, it contributes far less than 0.5% (Merima et al. 2017).

Presbitero et al. (2014), in their study, which focused on improving a country's fiscal balance by empirically assessing whether a larger reliance on property taxes is associated with a sound fiscal position, they demonstrated that there is a positive correlation between the incidence of local property taxation on local government tax revenue, as well as the primary balance-to-GDP ratio. Their measure of property taxes included: recurrent taxes on immovable property, taxes on net wealth, taxes on inheritances and gifts, financial and capital transactions, and other property taxes.

Their findings suggest that the positive effects of property taxes are probably attributable to their efficacy and incentive merits at the local level, and to the comparative advantage of this taxation type in stimulating the accountability, obligation, and discipline of local government authorities, with regard to various forms of local revenue, such as income taxes or sales taxes.

Presbitero et al. (2014) argued that the fiscal implications of property-tax revenue were derived by local authorities in OECD countries; but they were unable to address the situation in the context of emerging countries.

Doamekpor (2009) asserted that amongst other indicators, inflation is one of the most reliable indicators of both revenue and expenditure in national and local governments. Similarly, Issah and Antwi (2017) demonstrated the extent to which macro-economic variables are influenced by government policies, using two main models, namely principal-component analysis and multiple regression. Their study outcome showed that organisations' performance is a function of the return on assets rate (ROA), which they described as a function of the fundamental business-performance level and government economic policy (measured by macro-economic indicators).

Additionally, they demonstrated that macro-economic variables and prior ROA could have an impact on the organisation's future performance. The limitation of their study prediction is that it is not based on any economic theory in selecting financial ratios, such as ROA.

Zodrow and Mieszkowski (1986) examined the level of public service provision in a fixed national stock, single productions model of a national system of autonomous local governments; and they concluded that in a model comprising local public-service provision to individuals, a marginal decline in property taxation resulted in a reduction in the levels of public service provision. Conversely, provisions of public service to firms yield similar results, subject to capital reaction to variance in property tax possessing an insignificant decline, as the level of public services increases.

In conclusion, the impact of macro-economic determinants on local government revenues, particularly property-tax revenue, has been overlooked by most studies, thereby resulting in inadequate insights considering the economic perspectives, which could be found useful by municipal managers, political leaders, and policymakers in mitigating long-term risks. It has been demonstrated in this literature that a lack of capacity, lack of capability, taxpayers' attitude, outdated property registers, and barriers imposed by certain policies result in less

property-tax revenue being collected. Although the literature considers macro-economic factors, such as GDP, this is approached from the perspective of property taxes as a contributor to the economic growth, rather than to the GDP impact on property-tax revenues.

Thus, the existing literature does not delve thoroughly into examining the relationship between property-tax revenue and macro-economic factors, which could contribute to the extent to which property-tax revenue is collected on the basis of consumers' affordability, the extent to which the property development sector grows, and its contribution to stimulating revenue. In addition, surplus or underutilised improved immovable properties and land owned by local governments, which may be transferred at a market-related value for the willing buyer, would thereby stimulate economic benefits to municipalities in the form of property rates due to local government.

Nevertheless, the literature emphasises property-tax revenue as an integral part of the fiscal framework in local authorities with great potential to contribute to the GDP of countries and to improve the provision of public-service delivery, infrastructure, and the wellbeing of communities, when thoroughly explored and utilised effectively.

Table 7 outlines a summary of the empirical studies reviewed in this study.

Table 7 – Summary of the Empirical Studies Reviewed

Author(s)	Type of Study	Sample	Findings
Babawale and Nubi (2011)	Property tax reform: an evaluation of Lagos State land use charge	Nigeria, Lagos	The best practices both in terms of policy and administration were not met. Therefore, the tax system has not ceased to generate ambiguity, and has enjoyed limited acceptability, and achieved limited success, (Babawale and Nubi, 2011)
Mabe and Kusanna, (2016)	Property taxation and its revenue utilisation for urban infrastructure and services in Ghana Evidence from Sekondi-Takoradi metropolis Area (STMA)	Ghana	Property rate amounted to 28% of Sekondi-Takoradi Metropolitan Assembly. This revenue was mostly used on, education, social services, streetlights, waste management and health facilities. During the period from 2006 and 2013, the revenue from property rates was solely able to fund more than 84% of total expenses. It was anticipated that if the difficulties with property tax were resolved in Ghana, the revenues from tax would fund the whole annual budget of the STMA on urban services and infrastructure more than the expenditure spent, with an additional margin of 13%, (Mabe and Kusaana, 2016).
Daud, Kamarudin, Franzsen, and William, (2013).	Property Tax in Malaysia and South Africa: A Question of Assessment Capacity and Quality Assurance.	Malaysia and South Africa	The problems of administrative capacity are found, particularly, in the valuation/assessment function. Larger cities have the capacity and capability to deal with the valuation of the tax base; on the other hand, the majority of smaller municipalities in both rural and municipalities do not possess such capacity and capabilities. In Malaysia, the private sector is

			gradually recognizing property-tax assessment as a potential area of work; nevertheless, most municipalities are imposing the property tax on the basis of very outdated valuation rolls (Daud, et. al 2013).
Monkam (2011).	Property tax administration in francophone Africa: structures, challenges, and progress.	Francophone Africa	Reforms of property tax in most francophone African countries are currently in the early phases of development. Although a poor property-tax administration in terms of valuation, coverage, collection and enforcement ration accounts and the fat that property-tax is not yet utilized adequately and a crucial own source revenue in these countries, the lack of political will is the main contributor in francophone African
Kelly (2000).	Designing a Property Tax Reform Strategy for Sub-Saharan Africa: An Analytical Framework Applied to Kenya.	Kenya	Strong political support is required in Kenya for successful property tax reforms; Kenya's property tax systems require focusing on administration improvements. Kenya, like other developing countries, demonstrated weak local administrative capacity measures to increase the collection of property rates. Kenya at the period of study is limited to billing tax in a few local governments
Bahl and Bird (2008)	Tax Policy in Developing Countries: Looking Back and Forwards.	Developing Countries	There is no relationship between tax levels and either income levels or growth rates. National or local governments may fail or succeed. In all probability, most crucial for economic growth and development, in the broader sense of including a growing proportion of the population in the growing prosperity, countries spend efficiently if they tax efficiently, turning more specifically to taxes, from a structural perspective. The best

			way to ensure success in developing markets is that they need to have a tax "portfolio" that incorporates broad-based taxes on both consumption and income; while keeping effective rates on vulnerable economic factors at the lowest possible level (Bahl and Bird, 2008).
Norregaard (2013).	Taxing Immovable Property Revenue Potential and Implementation Challenges. IMF Working Paper.	OECD	There is evidence of administrative and political economic challenges that require firm action and cautious planning. Reforms require solid political will to introduce, enforce, and maintain a property tax. Political will should overcome the diversity of policy and administrative challenges.
Issah and Antwi (2017).	Role of macroeconomic variables on firms 'performance: Evidence from the UK.	United Kingdom	The study indicates that macro-economic conditions should be included when predicting Organisations' performance. Macroeconomic factors enhance the predictive accuracy of the model. To a certain extent, macro-economic variables are influenced by government policies.
Doamekpor (2009).	Indicators of revenues and expenditures of state and local governments: a measurement model approach.		Findings indicate that the six variables studied (unemployment rate, time, inflation rate, population growth rate, real government long-term debts per capita and long-term government bond rate) are dependable indicators of mutually revenues and expenditures of national and local governments**,** (Doamekpor 2009).
Presbitero, Sacchi, and Azzaro (2014).	Property Tax and Fiscal Discipline in OECD. Working Paper	OECD	Total property taxes share in revenue does not impact country's financial position; a remedy to property taxation at sub-national level is related to greater balance-to-GDP ratio. Positive factors of property taxes are probable due to local governments' incentive and efficacy happening at

			the local level, and to the comparative benefit of this type of tax in encouraging the responsibility, obligation, and regulation of local authorities concerning different forms of local revenues.
Slack and Bird (2014).	OECD Working Papers on the Fiscal Political Economy of Property-Tax Reform	OECD	Property taxes would be simpler to administer if citizens could realistically experience improvements in the public services for which they pay by these taxes.
Merima, Fjeldstad, and Katera (2017).	Property Taxation in Developing Countries.	Developing Countries	This source of revenue is not fully effective in developing countries; as local governments do not adequately explore it. An exploration of this revenue source might improve financial challenges in local government.
Zodrow (2001).	The Property Tax as a Capital Tax : A Room with Three Views		The capital tax view proves that property tax distorts capital allocation, including housing and public services at local government level. The Befit view argues that it is not a distortionary head tax

2.9 Knowledge Gap

As discussed in this research, a myriad of literature exists on the importance of property-tax revenues in local governments and property-tax systems; however, there is little literature focusing on the relationship between property tax and macro-economic factors, particularly in the emerging economies in Africa. The literature overemphasises property-tax revenue as an integral part of the fiscal framework in local authorities, with the great potential of contributing towards the GDP of countries and for improving the provision of public service delivery, infrastructure, and the wellbeing of communities, when thoroughly explored and utilised effectively. However, there is gap in the literature regarding the impact of various macro-economic factors on property-tax revenues in the emerging context. Therefore, it cannot be assumed that based on the significance and success of property-tax revenues in developed countries, the developing countries would portray the same scenario.

2.10 Summary

This chapter has summarised numerous literatures concerning property-tax revenue and macro-economic indicators in the South African context. It has delved into the description of the structure of local government in South Africa, stylised facts about local government tax revenue, and service delivery. The theoretical literature on property-tax revenue and macro-economic indicators, followed by empirical literature, reveals the importance of property-tax in a decentralised fiscal context. Based on the knowledge gaps identified, it is imperative to execute this study and examine the relationship between selected responsive and explanatory variables. The next chapter discusses the research methodology followed in achieving the findings of the study.

CHAPTER 3

THE METHODOLOGY

3.1 Introduction

This chapter outlines the research approach undertaken to achieve the objectives of this study, and this is followed by a description of the data used, the units of analysis, together with a brief analytical framework. The empirical model is then discussed with a thorough description of the variables selected for the model, accompanied by the evidence from literature substantiating the expectations for model output. Lastly, the numerous limitations of this study are highlighted, for the consideration of future researchers in the area of study.

3.2 The Research Approach

This study adopts an explanatory-quantitative research approach to examine the effects of specified circumstances (independent variable) on an outcome that is dependent on the variables of interest (dependent variable) in ways that can be expressed numerically. In these settings, causal inferences are drawn – either from direct observation, as in true experiments, or from the associations established through statistical analysis. They are most effective when the content is constrained or controlled, so that the study events are free of any undefined influence. Under those circumstances, reproducibility is high; and the results are likely to predict, reliably, the outcome of the same events in the future (Lakshman et al., 2000).

The researcher adopted a descriptive research in an attempt to ascertain whether independent variables, namely; GDP rate, inflation rate, population rate, and unemployment rate, have any impact on the property-tax revenue obtained in local governments. Furthermore, this research approach was opted, because of its efficiency in transforming large amounts of raw data into a more practical format, vie the logical deductive approach, which can be explained by employing hypotheses and considering them carefully.

3.3 Data Source and the Unit of analysis

The study employs the secondary panel data of nine provinces across South Africa, from 2005 to 2018. The data cover annual aggregate property revenues sourced from the municipal financial health database published by the National Treasury, which covers data from all the 283 municipalities across the nine provinces in South Africa over the study period. The property tax revenue is categorised on the basis of the type of property, i.e. residential, commercial, State-owned, "other", together with the collection charges from which the revenue is derived. "Other" subcategory includes agricultural properties, and the collection charges, which comprise the charges and penalties imposed on property owners for late, or non-payments, on any type of property.

The provinces include the Western Cape, Eastern Cape, Northern Cape, Free State, KwaZulu Natal, North West, Gauteng, Mpumalanga, and Limpopo. The data on the provincial economic indicators, namely GDP per capita, inflation rate, unemployment rate and population rate were sourced from Stats SA, for the period 2005 to 2018.

3.4 Analytical Framework

The researcher had the option of employing a longitudinal or a cross-sectional research approach. Caruana et al., (2015) asserted that cross-sectional studies may analyse multiple variables at any given time; but they do not provide any information regarding on the time impact on the variables. On the contrary, they maintain that longitudinal studies employ continuous measures over long periods of time, to follow individuals or groups.

In this research study, longitudinal study was employed. Begun (2018) stated that one of the advantages of using longitudinal studies is that they are sensitive to unique, diverse patterns of behaviour observed over time for individuals. The behaviour at a single point in time is maintained within the context of the behaviour at previous and later points in time.

To analyse the relationship between property-tax revenue and macro-economic variables, a fixed effects and random effects, longitudinal, or panel regression has been estimated. Similarly, a longitudinal study was used in a study by Bahl and Martinez (2008) when

examining the determinants of revenue performances in local governments. Also, Norregaard (2013) employed a Fixed-Effects model in examining the impact of various variables, including the level of development measured by GDP per capita, on the level of revenues from immovable property taxes across various countries over time.

3.4.1 Model Specifications

The study employed the use of panel-data regression to examine the relationship between the independent variable and the dependent variables. The panel-regression specification to examine the relationship between the provincial economic indicators and property-tax revenues is defined as:

$$ptr_{i,t} = \beta_0 + \beta_1 gdp_{i,t} + \beta_3 infl_{i,t} + \beta_3 pop_{i,t} + \beta_3 unemp_{i,t} + \varepsilon_{i,t}$$

Where *i denotes* province and *t* represents the time period of observations in years; ptr denotes total property-tax revenue (dependent variable);

gdp is the gross domestic product per capita;

infl = the inflation rate;

pop = the population rate of growth;

unemp = the unemployment rate; and

ε = the error term, as it varies over i and t.

Panel or longitudinal data, follow a given sample of individuals over time; and thus they provide multiple observations on each individual in the sample (Hsiao, 2014). Panel data, among other things, allow the inclusion of fixed effects of some unobserved covariates (Canay, 2019). Panel-data regression is suitable for this study; as it permits control of immeasurable or unobserved sources of heterogeneity for those individuals that change across variables; but do not vary over time; and have omitted any variable bias. The panel data may include the variations in business practices, or culturally distinctive characteristics that may vary over time, but not within organisations (Torres-Reyna, 2007).

3.4.2 Definition and measurement of the variables

a) Dependent Variable

Property-tax revenue – This variable is measured in terms of the South African rand. It is an audited-revenue figure generated over a specific period by municipalities. This revenue is generated when a municipality, in terms of the constitutional powers; and it imposes property rates payable by its citizens for the provision of public goods or services, which they cannot be prevented from consuming. The property-tax revenue imposed is *inter alia* limited to real property, such as land and improved immovable properties (Bartle et al., 2003). The total property-tax revenue is the summation of the residential property-tax revenue, commercial property-tax revenue, State-property tax revenue, as well as other property-tax revenues and the collection charges of property-tax revenues.

b) Independent Variables

i) Gross Domestic Product (GDP)

This variable will be utilised as a measure of economic growth. GDP is a crucial indicator of the scale and growth of the economy of a country or region (Liu, 2018). The Neoclassical growth models determine the long-term rate of growth of a particular country, based on the labour supply and technical progress; but it ignores any reference to tax revenue, as it relates to economic growth (Taha, et al., 2011). Consequently, this study is aimed at examining whether, or not, any such relationship exists, i.e. whether it impacts property-tax revenues. It is expected that this variable would have a direct relationship on the dependent variable.

ii) Inflation rate

The data source reports this variable on a monthly basis. Therefore, for the purpose of this research, the CPI data measured in percentages is the provincial averaged consumer price inflation per year. To measure inflation, an examination is executed on how much the CPI has surged in percentage in a particular period, relative to inflation in the preceding period. Generally, inflation is a monetary and a real phenomenon, due to its ability to impact on individuals' choices and the real economy (Colander, 1992).

iii) Population rate

The population rate is expressed in percentage points. The percentage calculation is based on the number of human inhabitants residing in various provinces across South Africa; as reported by Stats SA. According to Riel and William (2017), there is a need for local governments to conduct an effective administration of property revenues, in order to finance the demands and needs of the population residing under the jurisdiction of the local authorities.

iv) The unemployment rates

According to the Stats SA publication, a Quarterly Labour Force Survey report released in 2019, stated that the unemployment rate is defined as the proportion of the labour force that is unemployed in terms of the official definition; and it is of the working-age population, between 15 and 64 years. It is expressed as the percentage points recorded for each province by Stats SA. In various countries, properties in rural areas are exempt from property rates, such as the applicability of relief measures from the payment of property rates to those residents, who have lost their jobs, or are unemployed, (Riel & William, 2017). Consequently, it is more likely that the changes in unemployment rate would affect the property-tax revenue.

3.4.2 Estimation Approach

This study employs panel- or longitudinal-data models, fixed effects (FE), as well as random-effects (RE) estimations. The panel data model is advantageous when the unobserved variable is time-variant. Utilising a panel-data model has numerous advantages that render it a proper estimation tool in examining the relationships between the variables over a period of time across various entities. Inbasekar (2000), as stated below, some of the advantages of using panel regression are:

- It can effectively detect and measure the effects that cannot be observed in pure cross-section or simple time-series data;
- In the presence of heterogeneity in the variables, panel-data estimation techniques can explicitly take such heterogeneity into account, by including the individual-specific variables.

- Through the consolidation of a time series of cross-section observations, panel data provide more informative data, sufficient variability, and low collinearity among the variables, more efficiency, and with more degrees of freedom.

a) Fixed-Effects Estimation

According to Torres-Reyna (2007), fixed-effect estimation explores the correlation between dependent and independent variables within entities. In that regard, an individual's features may, or may not, affect the independent variables. According to Fingleton (2009), the fixed-effect estimation approach assumes that:

- the slopes of the regression lines are the same across the entities; and
- FE captures wholly the time-constant omitted variables.

Fixed-effect models can be estimated by using the equation below (Torres-Reyna, 2007):

$$Y_{i,t} = \beta 1 X_{i,t} + \beta_i + \varepsilon_i,$$

Where;

$\beta 0$ represents the unknown intercept for each entity

$X_{i,t}$ represents the independent variable

$Y_{i,t}$ is the dependent variable, (t – time and i = cross-sectional unit or entity)

$\beta 1$ is the coefficient of the independent variable

ε = the error term, which varies over i and t

b) Random Effects-Estimation

A random-effects model implies that heterogeneity is not correlated with any regressor; and it approximates the error variance particular to groups (or times) (Park, 2011). The fundamental distinguishing merit between the random and the fixed is not whether the effects are stochastic or not, but rather whether the omitted individual effect represents the components that are correlated with the regressors in the model (Torres-Reyna, 2007). According to Park (2011), the main dissimilarity between random- and fixed-effect models is based on the role of dummy variables; in which the factor approximate of a dummy variable is a component of an error

component in the random-effect model; and it is a component of the intercept in the fixed-effect model. One of the advantages of using random-effects estimation, as the approach, is that it allows the inclusion of time-invariant variables, contrary to the fixed-effects approach, whereby the intercept includes these variables. The Random-effects model is estimated by using the equation below, (Torres-Reyna, 2007):

$$Y_{i,t} = \beta 1 X_{i,t} + \beta_i + \varepsilon_i + \mu_{i,t}$$

Where ε_i, is an individual specific error component, or a cross-section, and $\mu_{i,t}$ is the combination of cross-section error and the time-series components.

c) Hypothesis Test

The hypothesis tests are used to rule the best model between the fixed effects and the random-effects models; and it assumes a Hausman test, in which the null hypothesis examines the random effects versus the fixed effects (Torres-Reyna, 2007). The Hausman test is a common similarity in both models. A random effect is examined by using Breusch and Pagan's (1980) Lagrange Multiplier test, and the fixed-effect is examined by the F-test. The above-mentioned relates the Ordinary Least-Squares (OLS) and the fixed-effect model, in order to ascertain the extent to which the fixed-effect model can enhance the goodness-of-fit. However, the latter contract random-effect model is used with the OLS. The alternative-fixed effects infer the existence of a correlation between the independent variables and the error term.

The true alternative hypothesis implies that an unsuccessful attempt to employ a fixed-effects estimator is significant. Hausman test's assumption is that the fixed-effects model estimators do not have a significant distinction, if the null hypothesis is rejected; and it may be inferred that the random-effects model estimator is inappropriate; and the fixed-effects model can be elected to examine any correlations between the dependent and the independent variables, where the statistical inferences would be conditional on the error term in the model, (Inbasekar, 2000).

3.5 Limitations

The research limits the scope to the municipalities across nine South African provinces, where only the property tax revenue is being examined. This excludes other sources of revenue, such as that derived from service charges, intergovernmental transfers, and others, which, if they were included, this study would portray a different setting and other expectations from this research. Many scholars maintain that the comparison of property-tax revenue across various countries remains a challenge, due to the difficulty in obtaining readily available data; however, the required data for this study are readily available and accessible in South Africa for the period in which the study is being conducted. However, the revenue of various property categories was not reported by National Treasury, for the all provinces, during the mid-2000s (i.e. beginning of the study period); but this may have an insignificant impact on the model outcome.

The research is limited to examining only four variables that might impact the property-tax revenues in local government (GDP rate, inflation rate, population rate, and unemployment rate) per province; and this would exclude numerous other variables, which could be significant, such as interest rates, exchange rates and household income. Lastly, the study is only limited to South Africa; and it might not be relevant to other countries, due to the differences in the property-tax administration system, the authority granted to local governments in administering property tax, and any distinction in the macro-economic dynamics and the various regimes.

CHAPTER 4
DISCUSSION OF THE FINDINGS

4.1 Introduction

This chapter presents the findings of the data analysed from the nine provinces in South Africa during the period 2005 to 2018; and it informs the basis from which the conclusions and the recommendations are drawn. It comprises the discussion of the descriptive statistics and the inferential statistics, i.e., the regression results and the correlation analysis, using the Fixed Effects (FE) and Random Effects (RE) panel-data regression. Moreover, the estimation results are interpreted to establish a relationship between the property-tax revenue and the selected independent variables: the unemployment rate, the population rate, the GDP rate, and the inflation rate. The property-tax revenue is a summation of the property-tax revenues derived from the various types of properties or categories; which are residential, commercial, State-owned, other and collection charges. The "other" subcategory includes the agricultural properties, amongst others.

4.2 The Descriptive Statistics

The descriptive statistics of all the variables from the population panel of nine provinces over the 14-year period are presented in Table 8. Generally, the population-panel data were strongly balanced, with approximately 126 observations per variable, with the exception of the property categories, namely; residential, commercial and State-property revenues, which had 90 observations. Collection charges and other categories had 95 and 117 observations, respectively. To provide comparisons in terms of the source of property-rates revenues, the type of properties from which total property-rates revenues (dependent variable) are generated, is included. These are categorised into: residential, commercial, State, other, and collection charges.

Similarly, the descriptive statistics of macro-economic determinants, independent variables, GDP, inflation, unemployment, and population rates are reflected in Table 8.

Table 8 – Summary of the Descriptive Statistics

Name of Variable	Mean	Median	Std. Dev	Minimum	Maximum	Observations
Residential (R)	1 658 223	577,255	2,865,209	154140	11 700 000	90
Commercial (R)	1 024 186	230,715	1,961,603	46,680	8,826,913	90
State(R)	128, 057	95,688	121,470	816	533,973	90
Other (R)	1,030,593	359, 016	1,550,822	13054	7,898,092	117
Collection Charges (R)	44,143	2 781	87,147.38	99	300,257	95
Total Property Rates Revenue (R)	3,885,202	1,578,667	4,838,315	194,775	23 500 000	126
GDP (%)	2.206349	2.4	2.058922	-3.7	6.2	126
CPI (%)	5.861111	5.5	2.150162	2.7	13.2	126
Unemployment Rate (%)	4.573016	4.75	11.41554	-21.9	32.9	126
Population Rate (%)	1.442064	1.45	0.7907822	-0.3	2.8	126

Source: Results from research data

The mean for property-rates revenue from residential properties currently stands at R1 658 223, representing the centre of data; and this is greater than the median of R577 255, thereby implying that the data appear to be skewed to the right. According to the Worldbank Organization (2003), in South Africa, property-tax rebates are widely applied in residential properties; and they are more specifically granted to low-income taxpayers, the elderly, and persons living with disabilities. The standard deviation of R2 865 209 indicates the greater spread of data from the mean. The mean of commercial rates revenue from commercial properties is reflected at R1 024 186, indicating the centre of data, which is higher than the median of R230 715, thereby implying that the data appear to be skewed to the right.

According to the South African Property-Owners Association (2015), the contribution by the commercial property sector towards total rate revenue is significant, when compared to the residential sector, which also has a lower level of arrears, compared to that of the residential properties. The standard deviation is found to be R1 961 603, indicating a significant spread of data from the mean.

The mean for State-owned rates revenue is reflected at R128, 057**,** indicating the centre of data, which is higher than the median of R95 688, thereby implying that the data appear to be slightly skewed to the right. According to the Worldbank Organization (2003), contrasting with other countries that exempt State-owned properties from property tax, South Africa imposes a property tax on State-owned properties; although it grants a 20% rebate.

The standard deviation is found to be R121 470, suggesting a significant spread of the data from the mean. The mean of property-tax revenue derived from the "other" category is indicated at R1, 030,593, implying that at the median of R359, 016, the data were found to be extremely skewed to the right. The standard deviation is recorded at R1 550 822, thereby suggesting a significant spread of the data from the mean. Collection-charges for revenues show that the mean was recorded at R44 143, which is higher than the median of R2 781, suggesting thereby that the data are extremely skewed to the right.

As noted in the literature review, most local governments in developing countries, including South Africa, do not have effective and efficient administrative systems in place for the collection of property taxes. This includes the availability of adequate resources for the collection of rates. The sample mean of the total property-rates revenue is reflected at R3 885 202, indicating the centre of data, which is higher than the median of R1 578 667, thereby implying that the data appear to be skewed to the right. The standard deviation is recorded at R194 775, indicating a significant spread of data from the mean.

The sample mean for the GDP is indicated at 2.2, implying that at the median of 2.4 the data are found to be skewed slightly to the left. The standard deviation is recorded at 2.1, suggesting a normal spread of data from the mean. The sample mean for the inflation is indicated at 5.9, implying that at the median of 5.5, the data are found to be slightly skewed to the right. The standard deviation is recorded at 2.2, suggesting a normal spread of data from the mean.

The unemployment rate sample mean is recorded at 4.57, implying thereby that at the median of 4.75, the data were found to be slightly skewed to the left. The standard deviation is recorded at 11. 41, suggesting a larger spread of data from the mean. The population-rate sample mean is recorded at 1.44, implying that at the median of 1.45, the data are found to be slightly skewed

to the left. The standard deviation is recorded at 11. 41, suggesting a greater spread of the data from the mean.

4.3 Correlation Analysis

The correlation matrix reflected in Table 9 represents the Pearson-correlation coefficients, which measure the strength of the relationship and the direction between the response variables and the predictor variables. The results indicate that it may be inferred that the estimated correlation coefficients for the independent variables are lower than the 0.70 threshold level. According to Kennedy (2008), such observation normally turns out to manifest the existence of multicollinearity, when incorporated in a regression model, collectively.

Although most of the correlation coefficients between the response and the predictor variables indicate that there could be a positive relationship between the inflation and the rates revenue generated from the commercial, State, collection charges of the properties, including overall rates revenue, thereby indicating that a negative relationship exists. The observation of the negative correlation between dependent variables and inflation concurs with the assertion of Doamekpor (2009), that amongst other indicators, inflation is one macro-economic indicator of revenue in local governments.

Similarly, a weak negative correlation can be observed between unemployment and the total rates revenue, meaning that when the unemployment rates changes, the property-rates revenue decreases. This finding aligns with the assertions by Terri and Sheffrin (1995), which highlight the fact that when the unemployment rate intensifies, property values (on which the rates revenue calculation is based) decrease.

Table 9 – Correlation Matrix

	1	2	3	4	5	6	7	8	9	10
1. Residential	1									
2. Commercial	0.895*** (0.000)	1								
3. State	0.327*** (0.002)	0.272** (0.010)	1							
4. Other	0.841*** (0.000)	0.868*** (0.000)	0.189* (0.065)	1						
5. Collection Charges	0.650*** (0.000)	0.724*** (0.000)	0.110 (0.363)	0.716*** (0.000)	1					
6. Total Property Rates Revenue	0.961*** (0.000)	0.964*** (0.000)	0.365*** (0.000)	0.671*** (0.000)	0.741*** (0.000)	1				
7. GDP	0.070 (0.514)	0.154 (0.148)	0.154 (0.147)	0.407*** (0.000)	0.131 (0.207)	0.012 (0.893)	1			
8. CPI	0.022 (0.838)	-0.032 (0.764)	-0.240** (0.023)	0.155* (0.095)	-0.025 (0.807)	-0.107 (0.232)	-0.181** (0.043)	1		
9. Unemployment Rate	0.035 (0.740)	0.090 (0.401)	-0.043 (0.688)	0.053 (0.569)	0.043 (0.676)	-0.044 (0.628)	-0.056 (0.530)	0.323*** (0.000)	1	
10. Population Rate	0.390*** (0.000)	0.345*** (0.001)	-0.332*** (0.001)	0.405*** (0.000)	0.451*** (0.000)	0.275** (0.002)	0.189** (0.034)	0.037 (0.679)	0.018 (0.840)	1

Note: Values in parentheses are the p-values. ***, ** and * denote significance at 1%, 5% and 10% respectively
Source: Results from research data**.**

4.4 Regression results

a) The Hausman Specifications Test

The Hausman test rules indicate the best-fit model between the fixed effects and the random-effects models. The fixed effects (within) regression were approximated, followed by storing the results thereof; similarly, this procedure was applied for random effects (general least-squares) regression. The regression results for both models were compared. Hausman's test null hypothesis was that the difference in the coefficients of both models was not systematic, suggesting thereby that the random-effect model is appropriate. The summary of the Hausman test results is outlined in Table 10.

Table 10 – Summary of the Hausman Test Results

Hausman Test	Hypothesis	Results	Conclusion
Total property tax revenue	H_0: Difference in coefficients is not systematic (RE) H_1: Difference in coefficients is systematic (FE)	Sargan $\chi 2$ = 35.046 Prob >$\chi 2$== 0.0000	Reject H_0; the FE model is the most appropriate
Residential property tax revenue	H_0: Difference in coefficients is not systematic (RE) H_1: Difference in coefficients is systematic (FE)	$\chi 2$ = 15.96 Prob >$\chi 2$ = 0.0031	Reject H_0; the FE model is the most appropriate
Commercial property tax revenue	H_0: Difference in coefficients is not systematic (RE) H_1: Difference in coefficients is systematic (FE)	$\chi 2$ =50.46 Prob >$\chi 2$ = 0.0000	Reject H_0; the FE model is the most appropriate
State property tax revenue	H_0: Difference in coefficients is not systematic (RE) H_1: Difference in coefficients is systematic (FE)	$\chi 2$ = 12.77 Prob >$\chi 2$ = 0.0125	Reject H_0; the FE model is the most appropriate
Other property tax revenue	H_0: Difference in coefficients is not systematic (RE) H_1: Difference in coefficients is systematic (FE)	Sargan$\chi 2$ = 60.555 Prob >$\chi 2$== 0.0000	Reject H_0; the FE model is the most appropriate
Collection charges	H_0: Difference in coefficients is not systematic (RE) H_1: Difference in coefficients is systematic (FE)	$\chi 2$ = 1.78 Prob >$\chi 2$ = 0.7766	Cannot Reject H_0, the RE model is the most appropriate

Source: *Results from research data*

From Table 10, it can be inferred that the models with total property -tax revenue and property-tax revenues are generated from residential, commercial, other property charges, and State-properties provide Random-Fixed effects; and this best explains the better fit for the Fixed-Effects model; while the revenue generated from the collection charges. Hausman test failed in examining the correlation between total, other property-tax revenues and macro-economic variables.

b) Determinants of Total Property-Tax Revenue

Table 11 represents the results of the Random-Effect models and the Fixed-Effects models for the total property-tax revenue. As noted in the previous section, the Hausman diagnostics failed in detecting the best estimation regression. Based on the FE model, the F-test reflected the p-value of less than 5%, meaning that the model is appropriate, and that all the coefficients in the model differ from zero. Based on the RE model, the Wald Chi-Square indicates a p-value below 5%, thereby inferring that the coefficients do not represent simultaneously as being equal to zero; therefore, they are independent.

The R-squared value is 0.6168, denoting that 61.68% of the variation in total-property tax revenue can be explained by the macro-economic variables in the model. The Sargan-Hansen test for identifying the restrictions on fixed effects versus random effects was applied; the p-value of this test is below 5%, indicating that the null hypotheses for the instruments are exogenous; and they are consequently rejected; however, it is robust to non-standard error-covariance. The Wooldridge test was conducted to test the existence of serial correlation; it can be inferred based on the p-value below 5% that there is no correlation in the regression model.

Table 11 – Total Property-tax Revenue FE and RE Results

	Fixed Effects				Random Effects			
	Coef.	***Std. Err.***	***t***	***P>t***	***Coef.***	***Std. Err.***	***z***	***P>z***
Constant	16.674	0.359	46.43	0.000***	16.413	0.617	26.59	0.000***
GDP	-0.061	0.008	-7.16	0.000***	-0.070	0.012	-5.69	0.000***
Inflation	-0.037	0.011	-3.44	0.009*	-0.044	0.011	-3.9	0.000***
Unemployment	-0.001	0.002	-0.63	0.549	-0.001	0.002	-0.57	0.566
Population	-1.268	0.229	-5.53	0.001*	-1.048	0.189	-5.54	0.000***
F/Wald $\chi 2$	28.68***				174.65***			
R squared	0.6168				0.0629			
Wooldridge: F-test	45.47***							
Hettest ($\chi 2$)	4.45**							
No. of provinces	9				9			
No. of observations	126				126			

*Note: For estimation purposes, all variables are transformed into the natural logarithm; Wooldridge= test of serial correlation; Hettest=Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test of heteroskedasticity. ***, ** and * denotes significance level at 1%, 5%, and 10% respectively. Source: Authors estimate from research data*

The Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test was applied to test whether the variance of the residuals was homoscedastic. If the variance was not constant, then the residuals were established to be heteroskedastic. The null hypothesis tested whether there was a constant variance of the residuals. A p-value above 5% significance would imply that the null hypothesis cannot be rejected; since the data are considered to be homoscedastic. The results reflect a p-value of 0.0348 (3.48%), which is below the test-significance level of 5%, thereby inferring that the heteroskedasticity was evident. To rectify the heteroskedasticity, a robust standard-errors regression was conducted.

A negative coefficient is observed for the GDP across both the FE and RE models, which indicates a percentage increase in GDP results and a decline of -0.061 (6.1%) in the total property-tax revenues in South Africa. The above suggests that the increase in economic activities (GDP) does not improve property revenue mobilization across South African municipalities. This finding is contrary to that of Norregaard (2013), who concluded that one of the key determinants of the level of recurrent property taxes is the level of economic development, as measured by GDP per capita. He further asserted that as countries develop

and become wealthier, property tax-to-GDP rises; and he highlighted that this is due to immovable property tax being a less distortive tax instrument in reducing long-term GDP per capita.

As with GDP, a negative and significant effect is observed for inflation, which indicates that a unit change (1%) in inflation results in a decline of -0.037 (3.7%) in property-tax revenues. This finding aligns with the evidence of Chipswa (2016), stating that high economic activity eventually leads to a rise in inflation, which inevitably impacts the property values. Furthermore, Sunday (2015) asserted that, generally, real estate has a strong correlation with inflation; and this hugely involves residential and income-producing properties. Therefore, when the inflation rate increases, the demand for residential and commercial properties is compromised. Consequently, this is inclined to decrease the property-tax revenues generated by the local governments; since property tax varies, according to the level of property ownership and the values thereof.

An increase in inflation levels, without an increase in household income, which tends to limit the consumer's ability to acquire immovable properties, would also justify this finding. A negative effect of the unemployment rate on property-tax revenue was found to be insignificant.

A unit change (1%) in population results in a decline of total property-tax revenues at 10% and 1% in FE and RE, respectively. Norregaard (2013) observed that, through the perspective of the New-View theory, some property taxes in various countries are regressive, due to heterogeneous populations in certain deciles. These deciles, *inter alia*, comprise self-employed individuals with low incomes and pensioners with low incomes, but high-value properties. Thus, some local governments defer legal obligations to pay property tax for these groups, until there is variation in the ownership of property. Furthermore, this finding is consistent with the assertion of Schmelzle (1948), which highlights the fact that there are several types of tax base, from which the revenue fluctuations emanate, with variations in the population size, particularly in local governments.

Generally, a rapid increase in the population growth rate in the absence of growth in property-rates revenues imposes pressure on local governments to provide the public services to larger communities with limited public funds.

c) Determinants of Residential Property-Tax Revenue

Table 12 represents the FE and RE for the sub-category of residential property-tax revenue. Based on the FE model output, the study finds that the macro-economic variables have a marginal impact on residential property-rates revenues; the variables tested explained only 0.2243 (22.43%) of the variation in residential property-tax revenues. This implies that almost 78% of the variability in residential property-tax revenues is not explained by the factors tested; suggesting thereby that there are other factors, such as property-administration capacity constraints within municipalities, which are discussed in the literature, and which could be the motivating factor in this outcome.

From Table 12, it can be observed that the GDP variable has a negative and insignificant coefficient of -0.042 (4.2%) at a 10% significance level, indicating that a unit change in the economy promotes a decline in residential property-tax revenues. This indicates that residential property rates could be impacted by other factors, such as policies or administration aspects. According to Stepanyan et al. (2010) real GDP is the significant driver of house prices; therefore, it can be conjectured that residential-property revenues, which are based on property values are affected by the GDP.

The findings of Stepanyan et al. (2010) are consistent with those of Chi-Wei et al. (2018), who examined the relationship between house prices and GDP; and they concluded that the impact of GDP on house prices varies, based on the land supply, the extent of industrialisation and urbanisation in different regions, which are factors that attract housing investment.

It is observed that a unit change (1%) in inflation causes a decline of -0.06 (6.0%) in residential property-tax revenues, indicating that a decrease in inflation has the probability of causing an increase in residential-rate revenues. This could be associated with the impact of the inflation rate on securing financial loans for acquiring taxable-immovable properties. Higher inflation rates reduce purchasers' and investors' affordability; since they relate to ownership of the residential properties and investment in property portfolios.

Sunday (2015) asserted that residential property-development decisions and investments tend to decline as inflation is rising and high.

Table 12 – Residential Property-Tax Revenue

	FIXED EFFECTS				RANDOM EFFECTS			
	Coef.	***Std. Err.***	***t***	***P>t***	***Coef.***	***Std. Err.***	***z***	***P>z***
Constant	15.452	0.302	51.18	0.000***	15.098	0.500	30.22	0.000***
GDP	-0.042	0.021	-2.05	0.074*	-0.044	0.020	-2.18	0.029**
Inflation	-0.006	0.036	-0.18	0.865	-0.018	0.033	-0.083	0.703
Unemployment	-0.007	0.005	-1.28	0.237	-0.006	0.005	-1.05	0.293
Population	-0.990	0.260	-3.82	0.005***	-0.681	0.204	-3.34	0.001***
F(4,77)/Wald $\chi 2$	10.09***				25.00***			
R-squared	0.2243				0.1572			
Wooldridge: F-Test	185.614***							
Hettest ($\chi 2$)	3.69							
No. of provinces	9				9			
No. of observations	90				90			

Note: *For estimation purposes, all variables are transformed into the natural logarithm; Wooldridge= test of serial correlation; Hettest=Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test of heteroskedasticity. ***, ** and * denotes significance at 1%, 5% and 10% respectively. Source: Authors estimate from research data*

The negative coefficient of the unemployment rate indicates that a unit change (1%) in unemployment causes a decline of -0.007 (7%) in residential property-tax revenues; although the relationship is not significant in either of the models. As with the determinants of total property-tax revenues, this finding is consistent with the assertion of Norregaard (2013) that certain groups of citizens are exempted from paying property taxes, based on the market value of their properties.

Bahl and Martinez-Vazquez (2008) concur that the ratio of taxable market value to total market value reflects that there is an impact caused by such exemptions and preferential treatments on the property-tax base, depending on the use and classification of properties. Also, based on the South African context, the regulations, Acts, and policies allow for rate rebates under certain circumstances, subject to the circumstances and certain groups of communities. For example, certain municipal policies allow for property rates rebates or reductions for *inter alia*, senior citizens and disabled registered property owners, based on their income thresholds. Therefore, any decline tends to be significant – more specifically on residential properties.

At a 1% significance level, a negative and significant coefficient of -0.990 (99%) is observed for the population, thereby suggesting that a unit change (1%) in population results in a decline in residential property-tax revenues. This finding concurs with that of Bahl and Martinez-Vazquez (2008), which suggests that in the developing countries, a log of the population was significant and negative, thus explaining slow property-tax growth. Schmelzle (1948) asserted that there are several types of tax bases, from which the revenue fluctuations emanate with variations in the population size, particularly in local governments.

Therefore, the rapid increase in population growth rate results in increased local government responsibility to provide public services to the satisfaction of its residents, via property rates revenue, amongst others.

d) Determinants of Commercial Property-Tax Revenue

Table 13 shows the FE and RE model result for the sub-category of commercial property-tax revenue. Based on the FE model output, the study finds that the variables tested explained only 0.3608 (36.08%) of the variation in commercial property-tax revenues indicated. This implies that approximately 64% of the variability in commercial property tax revenues is not explained by the factors tested, thus suggesting that other factors could be the motivating factors of this finding. For instance, Bartle et al. (2003), in their study on taxing immovable property, highlighted the fact that governments require assessors to assess property valuations; consequently, it becomes expensive for governments to administer property taxes.

They further asserted that for some governments, accurate and up-to-date property assessment remains low, due to political pressures. Other factors could be correlated to households' income, interest-rate levels, spatial land-use planning across the cities, as well as the level of urbanisation and industrialisation within areas administered by the local governments.

As with the findings of residential property-tax revenues, it is observed that a unit change in growth rate causes a decline of -0.012 (12.0%) in commercial property-tax revenues, indicating that a decrease in growth rate has the probability of causing an increase in the revenue derived from commercial rates. According to the SAPOA Commercial-Property Rates and Taxes (2015), the contribution by the commercial property sector towards total rate revenues is significant, when compared with the residential sector; and it also has a lower level of arrears

compared to those of the residential properties. This may be considered valid, based on the higher percentage contribution of commercial-tax revenues towards total property-tax revenue, as compared with the contribution made by residential property-tax revenues.

A negative coefficient, based on a fixed-effects model can be observed for inflation, thereby indicating that an increase in inflation possibly results in a decrease of -0.057 (5.7%) in commercial property-rates revenues. This finding is in agreement with that of Dillinger (1988), who asserted that during the period of rapid change in inflation and recession, and when property values may increase more than incomes, taxpayers perceive property rates estimates as unrelated and arbitrary, as well as arbitrary to the ability to pay. Dillinger further asserted that developing countries that experience recession and high inflation also experience a decrease in property-tax revenues.

Sunday (2015), also found that the commercial properties are sensitive to a rise in price levels, thus, affecting commercially rented properties to a certain extent; since property owners tend to impose a tax burden on their tenants, without any consideration of the variations in consumer income and affordability.

A unit change (1%) in unemployment causes a decline of -0.003 (3%) in commercial property tax revenues. Most of the metropolitan municipalities in South Africa promulgate certain rules, in accordance with the Municipal-Property Rates Act. For instance, EThekwini Municipal Rates By-Law (2008) allows for deferment of the payment of property rates by unemployed persons; and further, the MPRA permits, under specified circumstances, a certain rebate or reduction in the payment of property rates for commercial or business properties, in alignment with a tax base approved for municipalities' annual budgets. This suggests that generally, the municipalities would not be able to derive optimal property-tax revenues under the circumstances mentioned above.

At a 1% significance level, a negative and significant coefficient of -1.401 (140.1%) is observed for population variables, suggesting that a unit change (1%) in population results in a decline of 140.1% in commercial property-tax revenues. This finding concurs with the assertion of Dillinger (1988) that developing countries with rapid urban growth find it difficult to at least maintain a constant threshold of property-tax revenue in real capital terms.

Table 13 – Commercial Property-Tax Revenue

	FIXED EFFECTS				RANDOM EFFECTS			
	Coef.	***Std. Err.***	***t***	***P>t***	***Coef.***	***Std. Err.***	***z***	***P>z***
Constant	15.516	0.357	43.49	0.000***	15.136	0.697	21.72	0.000***
GDP	-0.012	0.026	-0.45	0.662	-0.013	0.026	-0.5	0.615
Inflation	-0.057	0.034	-1.69	0.130	-0.070	0.038	-1.84	0.066*
Unemployment	0.003	0.004	0.70	0.505	0.004	0.003	1.12	0.264
Population	-1.401	0.225	-6.24	0.000***	-1.070	0.170	-6.29	0.000***
F(4,77)/Wald $\chi 2$	12.5***				66.71***			
R-squared	0.3608				0.116			
Wooldridge: F Test	5.033							
Hettest ($\chi 2$)	0.35							
No. of provinces	9				9			
No. of observations	90				90			

*Note: For estimation purposes, all variables are transformed into the natural logarithm; Wooldridge= test of serial correlation; Hettest=Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test of heteroskedasticity.; ***, ** and * denotes significance at 1%, 5% and 10% respectively. Source: Authors estimate from research data*

e) Determinants of State-owned Property-Tax Revenue

Table 14 represents the FE and RE for the sub-category of total property-tax revenue, being tax revenues generated from State-owned properties. As outlined in Table 10, the FE model is appropriate. Thus, the study finds that the predicted variables tested explained only 0.2884 (28.84%) of the variation in State-owned property tax revenue. Moreover, the p-value of the F-test suggests that all variables are jointly significant in contributing towards explaining the change in property-tax revenue generated from the State-owned properties.

Table 14 – State-owned Property-Tax Revenue

	FIXED EFFECTS				RANDOM EFFECTS			
	Coef.	*Std. Err.*	*t*	*P>t*	*Coef.*	*Std. Err.*	*Z*	*P>z*
Constant	15.322	0.774	19.81	0.000***	13.590	0.472	28.77	0.000***
GDP	0.022	0.057	0.38	0.714	0.016	0.057	0.27	0.785
Inflation	-0.133	0.075	-1.78	0.114	-0.189	0.083	-2.29	0.022**
Unemployment	-0.011	0.009	-1.27	0.238	-0.004	0.009	-0.40	0.691
Population	-2.070	0.412	-5.03	0.001***	-0.570	0.120	-4.76	0.000***
F(4,77)/Wald χ2	29.44***				26.09***			
R-squared	0.2884				0.166			
Wooldridge: F Test	127.923***							
Hettestχ2	10.22**							
No. of provinces	9				9			
No. of Observations	90				90			

Note: *For estimation purposes, all variables are transformed into the natural logarithm; Wooldridge= test of serial correlation; Hettest=Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test of heteroskedasticity. ***, ** and * denotes significance at 1%, 5% and 10% respectively. Source: Authors estimate from research data*

From Table 14, it is observed that the GDP variable has a positive coefficient of 0.022 (2.2%), indicating that a unit change in growth rate increased the State property-tax revenues. This may be attributable to compliance by State-owned entities in paying property taxes due to the local authorities. Furthermore, government subsidies to the State-owned entities enhance their ability to finance the operating expenses. This implies that, unlike private property owners and individuals, State-owned entities may not easily evade tax dues, thus contributing to feasible local revenues.

It is observed that change in inflation cause a decline of -0.133 (13.0%) in State-property tax revenues, indicating that an increase in inflation results in a decrease in rates revenue derived from State-owned properties. According to a report on the Public Works Leases, published by the Department of Public Works in 2015, which is a custodian of State-owned properties, the provincial property portfolio is highly subsidized by the government; since it relates to the operating costs. The report further outlines that provincial public works departments issue the rental accommodation at low rental rates to most of the occupants employed by the

government, and who are earning an income. Their findings concur with the inability of State-owned properties to derive optimal revenues from property portfolios, thereby suggesting that when price levels increase, there would be a continuous property rates rebate granted, due to the inability to derive market-related rental revenues and the payment of property taxes to local authorities.

A unit change (1%) in unemployment causes a decline of -0.011 (11%) in State-property tax revenues. A report published by the Department of Public Works in 2015 outlines that most of the residential stock is occupied and rented by government employees at low rentals per month. Based on the current high unemployment rate in South Africa, this implies that the vacancy rate on State-rental stock, also increases due to uneconomical circumstances, resulting in high government subsidies for the payment of property taxes. This also implies increasing rates rebates being granted in respect of such State-owned properties.

At a 1% significance level, a negative and significant coefficient of -2.070 is observed for population variables, suggesting that a unit change (1%) in population results in a decline in tax revenues generated from the State properties. Increasing levels of population-growth rates at low property revenues derived by municipalities suggest that local government carries more burden and pressure from residents within their jurisdiction areas, for the provision of basic public services by employing their own revenues.

f) Determinants of other Property-Tax Revenues

Table 15 represents the results of RE and FE models for other property-tax revenue, a sub-category of the total property-tax revenue. South African National Treasury publications do specify that this type of revenue consists of revenues generated from agricultural and municipal-owned properties, amongst others. As previously noted in Table 10, Hausman diagnostics failed in detecting the best estimation regression. Based on the FE model, the F-test reflected the p-value at less than 5%, meaning that the model is appropriate; and all the coefficients in the model differ from zero.

Based on the RE model, the Wald Chi-Square indicates a p-value below 5%, thus inferring that the coefficients do not represent simultaneously equal to zero; and therefore, they are independent.

The R-squared is 0.2845, suggesting that 28.45% of the variation in other property-tax revenue can be explained by the macro-economic variables in the model. The Sargan-Hansen test for over-identifying restrictions on fixed versus random effects was conducted; and the p-value of this test was below 5%, indicating by the null hypotheses that the instruments are exogenous; and they must be rejected; however, it is a robust to non-standard error-covariance. The Wooldridge test was applied to test for the existence of autocorrelation; it can be inferred, based on the p-value below 5%, that there is no correlation in the regression model.

The Breusch-Pagan Lagrange Multiplier / Cook-Weisberg test was conducted to test whether the variance of the residuals was homoscedastic. If the variance was not constant, then the residuals were established to be heteroskedastic. The null hypothesis tested whether there was any constant variance between the residuals. A p-value above 5% significance would imply that the null hypothesis cannot be rejected; as the data are considered to be homoscedastic. The results reflect a p-value of 0.4215 (42.15%), which is higher than the test-significance level of 5%, thereby inferring that the researcher found the data to be homoscedastic. Despite the abovementioned, the macro-economic variables possess positive signs, indicating thereby that as the majority of macro-economic variables change, other property-tax revenue increases. This is an exception for the unemployment rate, which possesses a coefficient with a negative sign.

It can be inferred that, based on the FE model, a unit change (1%) in GDP results in an increase of 0.0133 (13.3%) in other property-tax revenue, at a 1% significance level. According to Stats SA reports, the agriculture sector is one of the significant contributors to South African economic performance. For instance, in 2017, an increase of 37, 5% during the fourth quarter was recorded for the agriculture sector; while this had been recorded at 17,7% for the 2017 fiscal year. This implies that the positive performance of the agricultural sector results in positive growth in GDP; and when the GDP rate increases, the ability of agricultural property owners to pay their property rates also improves. This results in an increase in property-rate revenues for the local authorities.

It can be suggested that at a 5% significance level, a unit change in inflation results in an increase in other property-tax revenues by 0.103(10.3%). This suggests that, amongst other things, a rise in consumer prices is attributable to an increase in food prices, in association with improved agricultural productivity This further enhances the financial sustainability of the property owners in the agricultural sector, thereby enabling them to afford the property rates

due to the local authorities. For example, according to the National Treasury Economic Review Report published in 2019, the inflation rate is expected to increase somewhat in the future, due to the increasing food inflation, linked to the input prices in the agricultural sector. A unit increase (1%) in unemployment causes a decline of -0.0004 (0.04%), or not much in other property-tax revenues, at a 1% significance level. This suggests that an increase in unemployment activities does not improve property-revenue mobilization across South African municipalities.

A unit change in the population rate causes other property-tax revenue sub-categories to increase by a significant 0.309 (30.9%). According to a report by Statist (2019), 5.16% of the employed population in South Africa is active in the agricultural sector. The agricultural sector is one of the sectors characterised by vulnerable groups. Therefore, these results suggest that local government may still derive a share of rate revenues from the property owners that are employed in this sector.

A similar pattern can be observed through RE model results. However, the findings of this sub-category are different in terms of coefficient when compared with the outcomes from the other sub-categories of property-tax revenue. There could be a variety of other factors that promote the change in other property-tax revenues, based on other components that form part of this sub-category, which would include immovable agriculture and municipal-owned properties.

Table 15 – Other Property-tax Revenues

OTHER PROPERTY-TAX REVENUES								
	FIXED EFFECTS				RANDOM EFFECTS			
	Coef.	***Std. Err.***	***t***	***P>t***	***Coef.***	***Std. Err.***	***z***	***P>z***
Constant	11.788	0.301	39.14	0.000***	11.652	0.480	24.29	0.000***
GDP	0.133	0.031	4.33	0.003**	0.134	0.017	8.08	0.000***
Inflation	0.103	0.022	4.68	0.002**	0.101	0.021	4.91	0.000***
Unemployment	-0.0004	0.004	-0.11	0.915	-0.0003	0.004	-0.09	0.930
Population	0.309	0.216	1.43	0.191	0.412	0.170	2.42	0.015
F(4,77)/Wald χ2	18.53				149.06			
Prob > F/ χ2	0.0004				0.000			
R-squared	0.2845				0.281			
Wooldridge: F Test	1.168							
Hettest χ2	0.65							
No. of provinces	9				9			
No. observations	117				117			

Note: *For estimation purposes, all variables are transformed into the natural logarithm; Wooldridge= test of serial correlation; Hettest=Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test of heteroskedasticity. ***, ** and * denotes significance at 1%, 5% and 10% respectively. Source: Authors estimate from research data*

g) Determinants of Collection Charges for Property-Tax Revenue

Reflected in Table 16 is the FE and RE model results for the sub-category of total property-tax revenues, including the revenue generated from collection charges. The results shown in Table 10 suggest that the RE model is the most suitable. Thus, based on the RE model output, the study finds that the variables tested explained only 0.1654 (16.54%) of the variation in collection charges. This implies that approximately 63% of the variability in collection charges is not explained by the factors examined. Furthermore, this suggests that there are other factors which could be the motivating factors of this finding, which according to Amusa and Mabugu (2016) could be the lack of experienced personnel for the assessment of valuation rolls and property-revenue collection.

Furthermore, this could be attributable to factors linked to Adam Smith's canon of certainty, which suggests that tax payable should be certain and not arbitrary for taxpayers. Policies and by-laws must clearly state the taxable amounts, for the period and the manner of payments. Should the priorities be uncertain, this would most probably result in challenges to the property-tax revenue collections.

The study results have found that a unit change in GDP causes a decline of -0.070 (7.0%) in collection charges for property-tax revenues, indicating that a decrease in growth rate has the probability of causing an increase in the collection charges for rate revenues. This is consistent with the views of Sepulveda and Martinez-Vazquez's (2012) that the developing countries derive minimal property-tax revenues relative to GDP when compared with the OECD countries. They asserted that while property tax revenues in the emerging markets were recorded at 0.6 % in the early 2000s, in the OECD, the same was recorded at 2.12% of the GDP. Norregaard (2013) stated that the property-collection ratios in emerging markets tend to weaken, due to the lack of enforcement mechanisms in property-tax payments. A negative coefficient, based on the random-effects model can be observed for inflation, thereby indicating that an increase in inflation possibly results in a decrease of -0.031 (3.1%) in collection charges for property-rate revenues. This finding is in agreement with that of Dillinger (1988), who asserted that developing countries that experience recession and high inflation have also experienced a decrease in property-tax revenues.

A unit change (1%) in unemployment causes an insignificant decline of -0.013 (1.3%) in collection charges for property-tax revenues. This suggests that there could be other factors affecting the collection charges of property-tax revenues, such as weak consumer affordability, exemptions, and rebates, that limit the maximum potential revenues associated with values in the property registers of local governments.

Table 16 shows a positive and significant coefficient of 0.654 (65.4%) for the population variable, suggesting that a unit change (of 1%) in the population, results in an increase of 65.4% in the collection charges of property-tax revenues. Based on the random-effects model, this finding suggests that municipalities' charges on late or non-payments from various types of properties improve as the population rates change. This may be attributable to metropolitan municipalities who have capacity and expertise in the revenue's administrative aspect.

Table 16 – Collection Charges of Property-Tax Revenue

	FIXED EFFECTS				RANDOM EFFECTS			
	Coef.	***Std. Err.***	***t***	***P>t***	***Coef.***	***Std. Err.***	***z***	***P>z***
Constant	8.843	1.460	6.05	0.000***	8.124	1.411	5.76	0.000***
GDP	-0.066	0.061	-1.07	0.316	-0.070	0.063	-1.11	0.267
Inflation	-0.017	0.034	-0.51	0.621	-0.031	0.032	-0.97	0.331
Unemployment	0.012	0.008	1.45	0.186	0.013	0.008	1.57	0.117
Population	0.348	0.981	0.35	0.732	0.654	0.821	0.80	0.426
F(4,77)/Wald $\chi 2$	1.12				4.10			
R-squared	0.051				0.1654			
Wooldridge: F Test	17.004***							
Hettest ($\chi 2$)	0.72							
No of provinces	9				9			
No of observations	95				95			

Note: *For estimation purposes, all variables are transformed into the natural logarithm; Wooldridge= test of serial correlation; Hettest=Breusch-Pagan Lagrange Multiplier/Cook-Weisberg test of heteroskedasticity. ***, ** and * denotes significance at 1%, 5% and 10% respectively. Source: Authors estimate from research data*

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusion and some policy recommendations, based on the analysis of the findings from this research study. This study aimed to examine the effect of macro-economic factors (i.e., GDP rate, inflation rate, population rate, and unemployment rate) on property-tax revenue at the South African local government level. Property-tax revenue has been categorized on the basis of the type of property from which the revenue is derived by local governments (i.e., residential, commercial, State-owned, collection charges, and others).

In achieving the objectives of the study, Fixed Effects and Random Effects panel-data regression has been employed. The research study has responded to the question posed (i.e., how do macro-economic determinants impact the ability of local governments to derive the maximum amount of property-tax revenue in South Africa).

5.2 Conclusion

The study places the focus on the second-largest source of municipalities' own-revenues in South Africa and the impact of macro-economic determinants on this source of revenue. The relationship between property-tax revenues and macro-economic determinants is established within a panel of nine South African provinces by using panel-estimation techniques, fixed- and random-effects modelling. The research analysis found that various property-tax revenues derived from various categories (i.e., residential, commercial, State, others, and collection charges) are impacted similarly; but the impact varies to a certain degree, depending on the type of property.

In general, the majority of selected macro-economic determinants in South Africa have been found to be performing below the level of other Sub-Saharan countries. For instance, in terms of unemployment, South Africa has a higher rate than that of all the other SSA countries combined. The South African GDP rate is also lower than that of SSA countries during the

study period. Conversely, the South African inflation rate is below that of the SSA rates during the period of study.

A correlation between GDP and total property-tax revenues was found to be negative. Revenues generated from commercial, residential, and collection charges were also found to be negative, thereby illustrating the fact that the growth rate has a negative impact on property-tax revenues. MPRA provisions may have an influence on the above-mentioned categories, subject to the economic conditions, as measured by the GDP. The Act makes provision, whereby municipalities' policies must consider the impact of rates on the poor and non-profit organisations. Generally, such provisions limit municipalities from deriving maximum rates revenue, in accordance with the valuation of properties. Although Bahl and Bird (2008) highlight that property-collection tax in developing countries can be improved. However, due to the rapidly changing socio-economic environment, it is challenging to administer this tax equitably; thus, any swift improvement in this revenue source is complex.

The GDP rate reflected a positive correlation on revenues generated from State entities, thereby implying their low susceptibility for evading rates payments, but also the advantage of qualifying for rates rebates, as provided for in terms of MPRA for State and agricultural properties. These benefits improve the affordability of the State and agricultural entities in paying property taxes, thus contributing to enhanced municipal revenues.

Inflation appears to have a negative relationship with all property-tax revenue sub-categories, excluding the "other" sub-category, which reflected a significant positive coefficient. In line with Sunday (2015), a negative relationship suggests that as consumer price levels rise, the development of an investment in property is discouraged. Consumers struggle to keep up with rising price levels, when personal incomes remain sluggish; as a result, the standard of living becomes costly, as expenses increase. Therefore, it is reasonable to conclude that a rise in the inflation rate leads to high levels of default in property-rates payments, mostly by individuals, thus reducing municipal-rates revenue.

In line with Bird and Slack (2004), the variation in property taxes, based on the type of land use can be employed to attain the objectives of urban-land uses. The most relevant scenario in the South African context is the higher property rates on vacant land, which are imposed to promote land development. However, this assertion may not be speedily achieved with increasing price levels. Therefore, the maximum property-tax revenues cannot be realised. A

positive relationship between inflation and the "other" category, which involves agriculture and municipal-owned properties, suggests that production price increases in the agricultural sector are in alignment with the increase in inflation, thereby enabling property owners in this sector affordability in rates payment. Furthermore, the MPRA provisions favours the agricultural property owners in the form of discounted rates.

Property-tax revenues also showed a negative relationship with the unemployment rate, implying that a change in the unemployment rate causes a decrease in property-tax revenues generated by local governments in South Africa. This outcome suggests that an increasing unemployment rate reduces consumer affordability, more specifically the ability to acquire immovable properties, from which revenue can be derived by municipalities.

A lack of employment in various sectors has a negative impact on property-rates revenues, as it increases the applications for discounted rates or rates relief from unemployed property owners and smaller firms.

A relationship between the population rate and property-tax revenues appears to be significant and negative, implying that population growth coupled with high unemployment rates imposes a burden on local governments to meet the demand for, as well as the provision of, public services to the population within their areas of jurisdiction. This means that property-rates revenues are stagnant; while the demand for public services increases rapidly. To ensure that the maximum rate revenues are maintained, it is necessary that local government efficiently and effectively enhance the administration of property taxes.

The property tax revenue derived from the 'other' sub-category reflected a strong positive relationship suggesting that as population rates change per unit, property tax increases by 31%. The agricultural sector is mostly accessible by vulnerable groups, and MPRA encourages developmental behaviour through the treatment of agricultural properties. For instance, local governments' rates by-laws grant incentives for the treatment of the labour force in the farms, through property-rates rebates for the provision of permanent employment and basic services to farm labourers. This implies that at a discounted rate, agricultural property owners are more unlikely to evade taxes, thereby obliging the payment of rates due to local governments.

The findings provide the impact of macro-economic determinants on property-tax revenue. Although local governments have limited powers to manage and monitor the macro-economic determinants, Category A and Category B municipality councils have the prerogative to set property-tax bases, and to administer and manage them, without the involvement of central government. According to South Africa MPRA, the tax bases can be set, based on the land and improved properties. The property-rate charges exclude communal land in tribal areas.

The study indicates that macro-economic determinants do have an impact on property-tax revenues in South African municipalities, thereby responding to the question posed in this research study. Based on the type of property, the impact has been proved to be negative in most instances; however, the inclusion of other macro-economic variables, such as consumer incomes, would possibly portray different or similar results. Furthermore, the municipalities may have challenges in collecting the maximum potential property-tax revenues; as they relate to population rates and asset registers; therefore, this aspect could be further explored. Municipalities may address these challenges through their policies and by providing adequate resources and skills in this area.

Notwithstanding the emphasis of existing literature on property-tax revenues being perceived as an important source of revenue in local governments across the world, it materialises that, in most of the emerging markets – including South Africa – this source of local government revenue is not yet being fully maximised. The majority of scholars delve into the property-tax reforms and administrative functions in local government; and this suggests that property-tax revenue in local government is one of the most unexplored sources of revenue, which could play a vital role in the sustainability of the fiscal decentralisation; and this contributes to the improvement of public services within local governments.

5.3 Policy Recommendations

The local authorities have little or no influence on the macro-economic determinants studied in this research study. However, municipalities have full autonomy on the implementation, legislation, administration, execution, and management of property tax revenues, as mandated by the Constitution. They are also granted the powers to charge the defaulters for tax collections and, to go as far as bringing them to trial. Property tax is more applicable when imposed on the

capital value of urban land and buildings within jurisdiction areas of each municipality, when compared to land and buildings under tribal authorities.

Notwithstanding the exclusion of communal properties, local government can improve the effectiveness of property-tax revenues within their areas of authority through the powers vested in them by the Constitution. Below are some of the suggestions that may be explored for improvements in this source of revenue:

- The local government should enhance its tax-reform systems to mobilise property-tax revenues. This may be executed by ensuring that property registers within their areas of authority are constantly updated, and that accurate valuation practices are implemented, as emphasised by the literature. Furthermore, Municipal valuations should be adjusted in alignment with the inflation indices, and in consideration of the consumers' income levels.

- The municipal by-laws and policies should encourage the upgrading of dilapidated buildings by enforcing owners' adherence to the acceptable building standards. In this way, owners would be compelled to maintain their buildings, thereby improving the property values, on which property rates due to municipalities are determined.

- Policies should promote the conversion of certain property uses into alternative highest and best use, from which potential optimal property-rates revenues can be derived.

- Municipal policies, through urban planning and designed by-laws, should support the development of vacant land and the conversion thereof into rateable properties, but also taking into consideration the socio-economic aspects, community needs, and equality, based on the demographics within individual local areas, which need to be equally considered.

- The alienation of underutilised State-owned properties to private parties, at a market-related value, must be encouraged by policies; however, community members need to be fairly engaged in such processes. Enforcing this would remove the burden of maintenance expenditure and rates payable by the State, thus converting discounted rates payable by the State into normal prescribed rates that private parties would pay to municipalities.

- The budgeting and planning processes relating to property-tax charges should be aligned to the forecasted macro-economic determinants and the relevant social dynamics, based on the merits of each local authority.

- The municipalities need to be transparent in the expenditure of revenues derived from property taxes. In this way, property taxpayers will be encouraged to oblige with local authorities, as they would be aware of the public services improvements attained as the result of paying rates.

- The taxpayers must be rigorously engaged, educated on the importance of, and why property taxes are imposed on them. Their views need to be meticulously considered in the policy-making decisions or policy amendments.

- The taxpayers should be engaged during the setting of tax bases. The process of how tax bases are set, should be transparent; and it should portray clear methodologies. Residents should be navigated through the payment systems of this tax; and the payment mechanisms should not be complicated.

- There is a need to design a policy framework that provides clear guidelines of the property-tax revenue usage by local government in infrastructural development and public-service implementation plans. The guidelines should be easy to access by all community members; and they should be understood in different languages, based on the demographics of each local government.

- The implementation of stringent policies against high unemployment and the control thereof, is necessary to enable access to the property market and the affordability of purchasing property by individuals in different income brackets.

- Long-term plans to cater for growth and changes in population dynamics are recommended through spatial planning and land-use management, which should be inclusive of infrastructural development plans, as a mechanism to encourage the property values across municipalities' areas of jurisdiction.

In terms of the impact of macro-economic determinants on property-tax revenues, the local government has little to do regarding the control of these factors; however, the South African government and monetary committees may control these factors through improvements to policies in their decision-making. Governmental spheres, such as provincial and local governments, need to understand the macro-economic determinants within their regions, to take meticulous mechanisms to counter the external factors that may impact on regional and local revenue streams; and this could also stimulate those that contribute towards revenue growth.

For instance, taking sound measures to address the issue of unemployment associated with rapid growth in population size within their regions, by making solid decisions, which would improve and maintain healthy regional GDP rates. In this way, a change in the regional macro-economic factors would have a different impact on property-rate revenues.

Despite the fact that local governments do not have complete autonomy to control macro-economic determinants, the policymakers in this governmental sphere need to demonstrate their capability of managing macro-economic determinants (i.e. GDP, inflation unemployment and population) regimes; and they should implement integrated development plans. which resonate with sustainable fiscal policies and with limited political interference, whilst promoting socio-economic coherence within its communities.

5.4 Limitations

This study is based on the information reported at a provincial level across nine South African provinces; consequently, this excludes other African countries. It would have been more valuable to examine the impact of the interest rate. However, the interest rate is set at the national level. Furthermore, the findings could be slightly skewed, due to missing data on the National Treasury portal site, specifically for property-tax revenues per province during the mid-2000s.

5.5 Recommendations for Future Research

While the previous section has highlighted various recommendations relating to the improvement of property-tax revenues in local governments, the impact of different macro-economic determinants, such as personal income and interest rates, should be examined. The literature review has highlighted the importance of the capacity and function of the municipalities in administering property-tax revenues and the valuation of rateable properties at market value. The above-mentioned aspect would need to be vigorously explored in the South African context.

Furthermore, more research is required in examining the local government strategies in utilizing property-tax revenues, as it relates to the constitutional mandate and the obligations vested in promoting better lives of their communities.

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