The Impact of the Change in Taxation on Economic Activities in Gauteng Province: a Computable General Equilibrium approach

by

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Abstract

The Gauteng provincial government is currently exploring possible sources for raising revenue to finance the increasing demand in social services. In the current fiscal stance, the bulk of provincial government revenue is constituted of funds transferred from the national government in the form of equitable share to provinces. Thus, the main purpose of this study is to assess the overall impact of the increase in the motor vehicle license fees and tourism levy, as important sources of the Gauteng provincial government own sources of revenue, on economic activities in the Gauteng Province. The study uses the provincial Computable General Equilibrium (CGE) model to simulate an increase in motor vehicle license fees and tourism levy, and to determine how such increases in taxation will affect provincial socio-economic variables such as the gross domestic product (GDP), employment and household consumption expenditure. The findings of the study are that a 10% increase in motor vehicle license fees or tourism levy negatively affects the Gauteng GDP, employment and household consumption. Nonetheless, the effect on provincial government revenue is positive. Given the negative effect of such an increase in taxation on key socio-economic variables, the study suggests that an increase in taxation on motor vehicle license fees or tourism levy should not be considered as options for raising revenue for the Gauteng Province.

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List of Acronyms

ABET	Adult Basic Education and Training
AIDS	AIDS Acquired Immunodeficiency Syndrome
ANC	African National Congress
ASGISA	Accelerated Shared Growth Initiative
BBBEE	Broad Based Black Economic Empowerment
Blue IQ	Blue Investment Quotient
BMR	Bureau for Market Research
CES	Constant Elasticity of Substitution
CES	Constant Elasticity of Transformation
CGE	Computable General Equilibrium
ECD	Early Childhood Development
ENATIS	Electronic National Traffic Information System
EPWP	Expanded Public Works Programme
FET	Further Education and Training
FFC	Financial and Fiscal Commission
FIFA	Federation International de Football Association
GAMS	General Algebraic Modelling System
GCRA	Gauteng City Region Academy
GDF	Gauteng Department of Finance
GDP	Gross Domestic Product
GGDS	Gauteng Growth and Development Strategy
GDPR	Regional Gross Domestic Product
GEAR	Growth, Employment and Redistribution
GFIP	Gauteng Freeway Improvement Plan
GHS	General Household Survey
GNP	Gross National Product
GPG	Gauteng Provincial Government
GHDS	Gauteng Human Development Strategy
GSDS	Gauteng Social Development Strategy

GST	General Sales Tax
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
HRDS	Human Resource Development Strategy
IES	Income and Expenditure Survey
JIPSA	Joint Initiative Programme for South Africa
MDG	Millennium Development Goals
MTEF	Medium Term Expenditure Framework
PES	Provincial Equitable Share
PIT	Personal Income Tax
PTRPA	Provincial Taxation Regulation Process Act
RDP	Reconstruction and Development Programme
RoW	Rest of the World
RSA	Republic of South Africa
SAM	Social Accounting Matrix
SALDRU	Southern Africa Labour and Development Research Unit
SARPN	South African Regional Poverty Network
SASSA	South African Social Security Agency
TB	Tuberculosis
TBCSA	Tourism Business Council of South Africa
TIS	Trade and Industrial Strategy
TOMSA	Tourism Marketing Levy of South Africa
UNDP	United Nations Development Programme
UNICEF	United Nations Children Fund
UPGEM	University of Pretoria General Equilibrium Modelling
VAT	Value-added Tax

Chapter One

Introduction, Problem Statement and Methodology

1.1 Introduction

In recent years the post-apartheid government has been characterised by a shift in government expenditure towards social spending priorities to address social inequalities and developmental challenges that were mainly as a result of the previous regime. Moreover, the shift in government expenditure is in line with the government's objectives to address the high level of poverty and high degrees of inequalities in South Africa. As a result, a budget policy focuses on increased social spending which has led to increased pressure on government budgets and spending. To add to an already pressured government budget, South Africa experienced, in the second quarter of 2009, the first economic recession since 1992 (National Treasury, 2009:18). This has caused concerns over the decline in personal income due to job losses, decline in domestic and international investments and the general impact on poverty and inequality. These factors have impacted negatively on government revenues. In South Africa, the estimated tax revenue to be collected is projected to be R68.9 billion less than the budgeted revenue estimated in November 2009 (National Treasury, 2010:71). National Treasury (2010:72) also reports that, in line with the impact of the economic slowdown, revenue from value-added tax (VAT) and customs duties declined substantially, followed by corporate income tax.

Amid the declined tax revenues, the sound fiscal policies that were in place during the period leading up to the crisis have enabled government to maintain spending on its priorities and limit the negative impact of the economic crisis on society, especially the poor. Government expenditure has increased by 34% of Gross Domestic Product (GDP) in the 2009/10 financial year, while the budget deficit is 7.3% of GDP (National Treasury, 2010:53).

South Africa has three spheres of government, namely the national government, provincial government and local government spheres. This intergovernmental framework is interdependent and interrelated and free mobility of factors and population between the

provinces or local government spheres exists. As the economic powerhouse of South African economy, and having contributed an estimated 33.1% to the national GDP in 2008 (Statistics South Africa, 2009a:18). Gauteng is also challenged by high in-migration of people from other provinces. Statistics South Africa (2009b:13) reports that an estimated 450 000 people will migrate from other provinces to Gauteng in 2011, making the province the net gainer of migrants. The in-migration would result in higher than anticipated population growth rate which creates an increase in the demand for social services and infrastructure. This would pose a challenge on the provincial government as the increased demand places spending pressures on the Gauteng Provincial Government (GPG).

The expenditure incurred by the provinces is financed mainly by three sources of revenue. According to Gauteng Department of Finance, herein referred to as GDF, (2010a:7), the three sources of revenue consist of equitable share transfers in the form of conditional and unconditional grants from the national government, and provincial own revenue raised by each province. The transfers from the national government is in the form of equitable shares or unconditional grants which are determined by a predetermined formula and together contribute 95.5% of total revenue or receipts (GDF, 2010a:7). The third source of revenue, which accounts for a small share of 4,5%, is known as the provincial own revenue, collected by the province, on taxes such as motor vehicle and liquor licences and non-tax items such as sale of goods and services and interest earned. The equitable transfer plays an important role in the provincial fiscal envelope and contributes a larger share of revenue. Although transfers from national government to Gauteng have been increasing over the years, the government's expenditure per capita increased less than government expenditure in real terms (GDF, 2010b:4). Due to the increasing demand on social services, resulting from high "in-migration" and population size, as well as the impact of the recent economic crisis, the provincial revenue cannot be stretched sufficiently to meet these social services demands. This results in a burden on the fiscal resources and creates a need to enhance sources of revenue in the province. According to the Financial and Fiscal Commission (FFC) report (2009:4) provinces are assigned weak revenue sources from which they can raise revenue to supplement some of the assigned provincial functions. The provincial sources of revenue are considered weak because the provinces lack the effective use of such sources as the national government is

responsible for raising revenue on the profitable sources and provinces are assigned the small revenue sources.

Additional revenue is crucial for GPG to meet the increasing pressures on social priorities that will benefit the poor. This study aims to review the nature and sources of the revenues in Gauteng province. As the intergovernmental transfers to provinces are not cyclical, they have been increased over the years (FFC, 2009:4). Based on this, the study aims to also review the provincial own revenue, assess the potential sources of additional revenue and estimate how the economy of Gauteng might react to changes in policies relating to taxes in the provinces in an effort to enhance revenue. Thus, the aim of this study is to assess the impact of the change in taxation by GPG on the economic activities of the Gauteng province.

1.2 Problem Statement

The GPG aims to meet the increasing demand for social services based on its social priorities. However, due to limited financial resources, the GPG is faced with spending pressures, especially on the delivery of social services. In pursuit of sustainable financial mobilisation to meet the spending pressures, the GPG must explore potential sources of revenue that can be used to close the gap between social services demands and the limited resources. Due to the fact that the transfers from national government are determined by a provincial equitable share formula, GPG may have to enhance its own revenue to supplement spending.

The Constitution assigns different expenditure functions and revenue raising responsibilities across all the three spheres of government. Section 227 of the Constitution states that provinces are entitled to an equitable share of revenue raised nationally to enable them to provide basic services and perform the functions allocated to them (RSA, 1996:131). In addition, section 228 allows provinces to raise their own revenue to enhance total revenue (RSA, 1996:132). The provinces have different forms of tax, consisting of motor vehicle and liquor licences and horse racing and casino taxes, from which they raise provincial own revenue (GDF, 2010a). The sources of provincial own revenues are increased based on annual inflation rates and past years' collection performances. The national government has

implemented a national tourism levy of 1% on all tourism goods and services to be used for the promotion and marketing of tourism (SA Tourism, 2007:x). In its 2010 Budget, the GDF stated that it proposes a 10% increase in motor vehicle licences and further proposed an introduction of a provincial tourism levy. This levy will be like a surcharge over and above the national 1% levy.

However, the imposition of provincial taxes as stated under section 228(2)(b) of the Constitution has to take into account economic considerations (RSA, 1996:132). Also, the tax rate imposed should be in such a way that it conforms to the principles of a good tax policy, which include equity and efficiency (Black, Calitz & Steenkamp, 2005:123). The final tax rate is determined by the Minister of Finance in that province after consultation with the national Minister of Finance and the Financial and Fiscal Commission (FFC).

1.3 Aim of the Study

The aim of this study is to assess the impact of the proposed change in taxation by the GPG on the economic activities in the Gauteng province. This study will determine the impact of changes in prices of goods resulting from increasing tax rates, and provide the signs and magnitude of the gains and losses in economic activities based on the selected economic indicators such as provincial GDP, employment and household consumption. The impact study will be based on the theory of taxation when there are changes in prices due to taxation on goods and how the economic agents and how they would react. The impact of the change in tax rate will be examined on the following economic variables: overall economy as represented by the provincial GDP, government income, employment, price level and household consumption expenditure.

These objectives will be based on the provincial CGE model as a tool to simulate the impact of various policy changes, through the change in taxation, on the overall economic activities. The analyses of the simulation results of both objectives will be used to determine how economic activities would react to the proposed changes in tax rates in the province, with emphasis on household consumption, and assist the provincial government's policy decision making which

is informed by recommendations from the model results. It is important to note that for the sake of the study, transport services and hotel and restaurant accounts will be employed as shock variables as they include the motor vehicle and hotel and restaurant commodities.

1.4 Methodology

The study is an empirical and statistical analysis and makes use of a CGE model in which simulations are made. Simulation will be based on the 2008 Gauteng provincial CGE model and results will be derived and analysed to provide the recommendations of the study. The study aims to assess the provincial economy-wide impact of changes in provincial tax policy through changes in tax rate. The results will focus mainly on the effects on selected macro-economic indicators such as the provincial GDP, employment, household consumption expenditure and provincial government revenues. The study aims to assess simulations in three scenarios. Firstly, the simulation will assess the impact of the proposed 10% increase in motor vehicle licenses by the GPG. Secondly, the simulation will assess the impact of the proposed provincial tourism levy for which government has not proposed a rate. The third simulation will assess the impact of the proposed 10% increase on both the motor vehicle licenses and provincial tourism levy.

The CGE model consists of a large number of equations describing a specific economy, namely Gauteng. This is possible as the CGE model is calibrated on the basis of a provincial Social Accounting Matrix (SAM) as the model's database. With its distinct feature, a SAM disaggregates the population into twelve percentiles for all population groups, and links them to different occupation groups of employment, which is important for analysing the income distribution. A SAM does not contain information on intra-household group income distribution, however, but the CGE model can simulate the impact of a shock on a representative household in each group.

The CGE model is chosen because of its feature as an analytical and modelling tool. The provincial CGE model is an appropriate model for assessing the impact as it is an economy-wide model consisting of a large number of equations that describe the economy, and the

equations are derived from economic theory about the behaviour of economic agents. With the CGE model we are able to assess the impact of exogenous shock, such as a decrease in import prices or change in government expenditure, and changes in policies on the socio-economic system and, in particular, income distribution (Decaluwe, Savard and Thorbecke, 2005:213). The CGE model incorporates the substitution effects in both production and demand and also includes more than one consumer. In their papers, Thorbecke and Decaluwe built such models to simulate the impact of exogenous shocks such as changes in import prices or tax rates and also changes in policies on the socio-economic system of the economy, say in income distribution. For any CGE model to be developed, a SAM, which depicts the relationship between the economic activities and institutional sectors, is required as the database from which the CGE model equations are derived (UN, 1993:483).

1.5 Outline of the Study

The study will consist of seven chapters. The second chapter will provide the background and the socio-economic characteristics and challenges in the Gauteng province, including the poverty characteristics. Included in the socio-economic characteristics is an overview of how the provincial government has performed with regard to the provision of basic services. This chapter will also provide the past and present policies implemented to address the challenges that the GPG is faced with.

Chapter three provides an overview of the fiscal framework in South Africa and Gauteng province and the expenditure trends by the provincial government. Government expenditure analysis will distinguish between expenditure on social and non-social sectors of government. This chapter will also provide an overview of the factors that pressurise the government's budget, which the GPG aims to address though increased provincial revenue.

The fourth chapter provides the theory and concepts of taxation with the aim of discussing possible effects of taxation on the economic agents.

The fifth chapter introduces the theory and application of the CGE model as a tool for policy analysis. Because the provincial CGE model is based on the SAM, this chapter will also discuss the theory and structure of the SAM as a building block for the CGE model, together with the advantages and disadvantages of both models.

In chapter six the results of the three simulations, namely increasing motor vehicle license fees, instituting a provincial tourism levy and a simulation for increasing taxes for both the motor vehicle license fees and tourism levy are presented. The chapter will discuss the impact of such changes on the economic activities of the Gauteng province.

Chapter seven summarises the main findings of the study and outlines recommendations to the provincial government based on the model results. This will assist government as a basis for decision making when proposing changes to the provincial tax or other policies, and will help to determine gaps in the study that may be addressed by further research.

Chapter Two

Socio-Economic Characteristics of the Gauteng Province

2.1 Introduction

Since South Africa's transition to democracy in 1994, poverty reduction and unemployment have been the central developmental goals of the new government. In 1994 South Africa was restructured into nine provinces, incorporating the previous homelands. Issues such as poverty, unemployment and inequality still vary greatly across the nine provinces. The provincial governments formulate their policies based on the national goals of the country and therefore prominence is given to the national developmental goals of unemployment and poverty reduction.

In order to address the developmental goals it is important to thoroughly understand the socio-economic profile, dynamics and its measurements. Section two of this chapter provides a description of the socio-economic characteristics of Gauteng province and analyses the trends in tracking progress made towards the achievement of developmental goals. Section 3 discusses the past and present policies that the GPG has implemented in order to achieve its objectives and the last section concludes the chapter with a summary.

2.2 Socio-Economic Characteristics of the Gauteng Province

The socio-economic characteristic of Gauteng province provides an assessment of the impact of the policies of the GPG on the lives of the people in the province. Using socio-economic indicators, the review examines the impact of development initiatives and evaluates the progress that the country and the province have made towards achieving the Millennium Development Goals (MDGs). Some of the provincial policy objectives include halving poverty and unemployment, which is in line with the national objectives. With the aim of achieving these objectives in 2009, the GPG administration has adopted seven policy priorities (GPG, 2009a:5). These include:

i. creating decent work and building a growing economy;

ii. providing quality education and skills development;
iii. ensuring better health care for all;
iv. stimulating rural development and ensuring food security;
v. intensifying the fight against crime and corruption;
vi. building cohesive and sustainable communities; and
vii. strengthening the developmental state and good governance.

A review of the socio-economic indicators assists in tracking the progress made towards the achievement of these priorities.

2.2.1 Economic Background and Economic Characteristic of Gauteng Province

Gauteng province is regarded as the economic powerhouse of South Africa as it contributes, on average, an estimated 33% of the national GDP (Statistics South Africa, 2009b:17). Despite the size of the provincial economy, Gauteng tends to mirror economic experiences felt at national level. The provincial economic growth has, on average, been higher than the national one. However, economic growth rates have not been able to translate into sufficient job creation and reduction in poverty and inequalities. As a result, Gauteng experiences developmental challenges such as high unemployment and poverty rates. Related to these challenges are backlogs in the provision of basic services which impact negatively on the government's efforts to address the developmental challenges.

The recent global economic crisis has also impacted negatively on the economic performance of Gauteng and that of the country. The worst affected economic indicator was employment as more jobs were shed off in light of the recession because companies had to take drastic measures of reducing costs by reducing labour (Statistics South Africa, 2010:x). According to the Gauteng Department of Finance or GDF (2009a:xiii) the economic recession has also impacted negatively on the economy as the economic production slowed down, trade deficit widened, household consumption declined while debt levels soared. All these affected the government's revenue raising abilities as less employment translates into less income tax, and less production means less corporate taxes. As a result, government is faced with the

challenge of meeting the demand for the provision of basic services with fewer resources. The review of the economy is necessary in order to determine the areas of potential growth and the constraints to growth and therefore inform the optimal allocation of financial resources. Economic indicators, such as GDP and employment levels or unemployment rate, are used to illustrate a picture of the province's economic condition regarding progress made and where further improvement is needed.

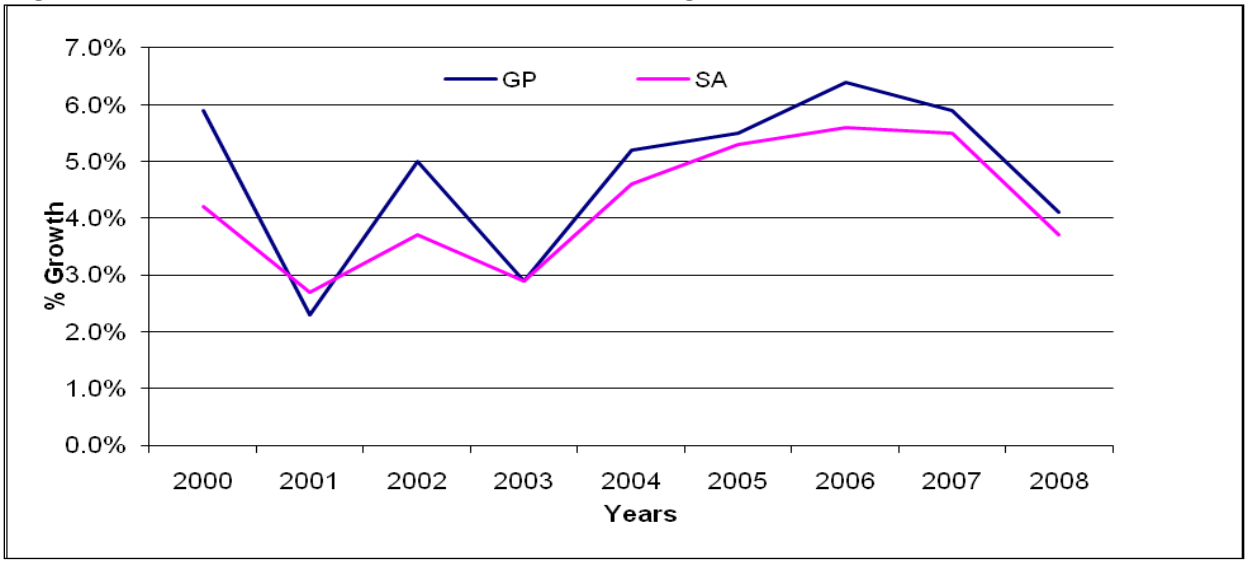
2.2.2 Gross Domestic Product (GDP)

Since 1995 Gauteng has made the largest single contribution to the national economy at 33.1% (Statistics South Africa, 2009b:18). This contribution was more than double that of the next largest, namely 16.4% from KwaZulu-Natal, which is the second most populous province after Gauteng. Gauteng province has maintained an average contribution of 33.7% to the national economy for the period from 2002 to 2008 (Statistics South Africa, 2009b:18).

According to Statistics South Africa (2009b:17), Gauteng's economic growth continues to outpace that of the national economy. In 2008, the economic growth rates for Gauteng and that of the country were 4.1% and 3.7%, respectively. However, the positive economic growth performance has not been able to translate into poverty and inequality reduction and job creation to address high unemployment rates. The growth trajectory experienced by the province over the last several years has been termed "*jobless growth*" since economic growth did not translate into a significant number of job creations or opportunities. Figure 2.1 depicts the trend in economic growth performance between 2000 and 2008.

Figure 2.1 shows that there is a strong correlation between the economic growth in Gauteng and that of South Africa. Given the share of contribution by the Gauteng economy to the national economy, Gauteng resembles national economic performance trends. For example, economic growth in both South Africa and Gauteng declined in 2001 due to the confidence lost in the emerging markets. The negative impact of the recent global economic crisis is evident in the decline in economic growth in 2008 for both Gauteng and South Africa, due to less economic production. However, some sectors were more adversely affected than others.

Figure 2.1: Economic Growth Rate in Gauteng and South Africa, 2000-2008



Source: Statistics South Africa, 2009b

2.2.2.1 Economic Sectoral Contribution

The Gauteng economy is predominated by the tertiary sectors having contributed over 60% to the total provincial economy. They are followed by secondary sectors with a contribution of 25.5%, while the primary sectors' contribution is about 3.5% (Statistics South Africa, 2009a:64). However, the importance of the primary sectors for the rest of the economy should never be underestimated just by looking at its small contribution to the provincial economy.

Table 2.1 illustrates the contribution of each sector to Gauteng's Regional Gross Domestic Product (GDPR) from 2001 to 2008. The tertiary sectors were dominant throughout the review period by being the largest contributor to GDPR, and have marginally increased their share from 62.1% in 2001 to 62.7% in 2008 (Statistics South Africa, 2009a:18). Gauteng is home to most of the financial institutions and therefore has recorded high contributions in the finance & business services sector. According to Statistics South Africa (2009a:18), the finance & business services sector's contribution to GDPR increased from 16.7% in 2001 to 23.3% in 2008. Construction is another sub-sector within the secondary sectors that has persisted in increasing its contribution to Gauteng's GDPR. This is partly due to the building of stadia by the provincial government in preparation for the upcoming FIFA 2010 World Cup. Construction

now contributes about 4% to the province, compared to 2.4% in 2001 (Statistics South Africa, 2009a:18).

Table 2.1: Gauteng Sectoral Contribution, 2001 – 2008

Sectors	2001	2002	2003	2004	2005	2006	2007	2008
Primary Sector	**3.50%**	**4.50%**	**3.50%**	**3.20%**	**3.00%**	**3.50%**	**3.70%**	**3.20%**
Agriculture, forestry & fishing	0.50%	0.80%	0.60%	0.50%	0.40%	0.50%	0.60%	0.50%
Mining & quarrying	2.90%	3.70%	2.80%	2.70%	2.50%	3.00%	3.20%	2.70%
Secondary Sectors	**25.50%**	**25.50%**	**25.80%**	**25.30%**	**24.50%**	**23.80%**	**23.40%**	**24.10%**
Manufacturing	20.80%	20.90%	20.90%	20.50%	19.50%	18.50%	17.90%	18.10%
Electricity & water	2.30%	2.30%	2.30%	2.10%	2.10%	2.00%	2.00%	2.00%
Construction	2.40%	2.30%	2.50%	2.70%	2.90%	3.30%	3.50%	4.00%
Tertiary Sectors	**62.10%**	**61.00%**	**61.60%**	**61.30%**	**61.50%**	**61.60%**	**61.80%**	**62.70%**
Wholesale & retail trade	13.50%	12.80%	12.90%	13.00%	12.90%	12.50%	12.10%	12.40%
Transport & communication	8.00%	7.80%	8.00%	8.10%	8.20%	8.10%	7.50%	7.90%
Finance & business services	19.80%	20.70%	20.50%	20.70%	21.10%	22.00%	23.70%	23.30%
Community, social & other personal services	4.00%	3.90%	4.10%	4.00%	3.90%	4.00%	3.90%	3.80%
General government services	16.70%	15.70%	16.10%	15.50%	15.40%	15.10%	14.60%	15.30%
All industries at basic prices	**91.00%**	**91.00%**	**90.80%**	**89.80%**	**89.00%**	**88.90%**	**88.90%**	**90.00%**
Taxes less subsidies on products	9.00%	9.00%	9.20%	10.20%	11.00%	11.10%	11.10%	10.00%

Source: Statistics South Africa, 2009a

* Due to rounding up, the figures do not add up to totals

The primary sectors' contribution is dwindling and contributed the smallest share of the province's GDPR. According to Statistics South Africa (2009a:64), the primary sectors contributed 3.2% in 2008, a marginal decline from 3.5% in 2001 and 3.7% in 2007 respectively. However, this sector remains important in the provincial production as it employs most of the unskilled labour. While the percentages do not show it, the production output of the primary sector has largely been increasing since 2003, apart from a decline between 2007 and 2008 due to the global economic crisis (Econometrix, 2010:1). The main reason for this sector's shrinking percentage contribution is that its growth is being outpaced by even higher growth in the secondary and tertiary sectors. Furthermore, the agricultural sector has strong links with the secondary sector. For example, the agro-processing is a primary-sector activity,

but agricultural goods processing activities are recorded within the manufacturing sector, and hence not captured as contribution of agriculture.

2.2.3 Unemployment

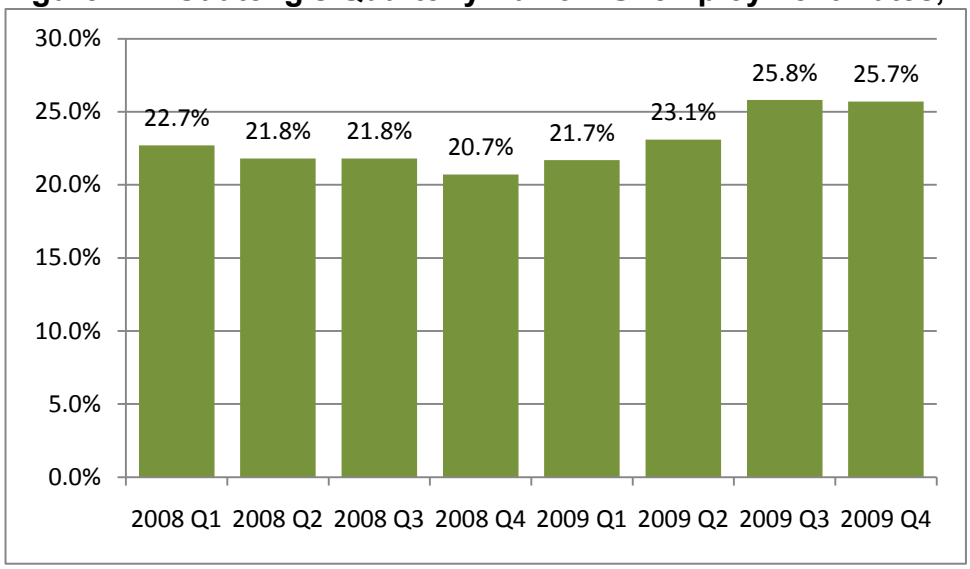
Unemployment is both a social and an economic a phenomenon and remains one of the main challenges faced by the GPG. The recent global economic meltdown has exacerbated the unemployment challenges in both Gauteng as the economic hub and in South Africa (Statistics South Africa, 2010:x). Other provinces were also affected from two fronts – the economic decline of Gauteng's economy as their feeder of jobs and recession as a direct impact of the economic crisis. Statistics South Africa (2010:x) reports that the unemployment rate in Gauteng increased from 20.7% in the fourth quarter of 2008 to 25.7% in the same period of 2009. For Gauteng and the country the relatively high unemployment rate remains a challenge to which the government has given priority. The cause of the high rate of unemployment is associated with different factors, one of which is labour mismatching: highly skilled labour is in demand but the labour force is predominantly semi-skilled and unskilled.

The global financial crisis and the resultant recession resulted in the country shedding 870,000 jobs between the fourth quarters of 2008 and 2009 (Statistics South Africa, 2010:vi). Out of the 870,000 jobs lost in the country, more than three quarters, or about 360,000 were lost in Gauteng. It would be challenging for the provincial government to, during the period of recession, achieve its objective and labour market targets of halving employment by 2014[1], as set out in the Growth and Development Strategy (GDS).

Gauteng is faced with a consistently high unemployment rate. According to Statistics South Africa (2010:1), the working-age population of Gauteng was 7.184 million people at the end of 2009, of which 5.1 million were considered to be part of the labour force. On average, 21.8% of the economically active population was unemployed during 2008.

[1] Further discussions on GDS under section 2.4

Figure 2.2: Gauteng's Quarterly Narrow Unemployment Rates, 2008 & 2009



Source: Statistics South Africa, 2010

Figure 2.2 shows that, while unemployment fell during 2008, it was on the rise in the first three quarters of 2009, only decreasing slightly in the last quarter of the year (Statistics South Africa, 2010:x). The average unemployment rate of 24.1% for 2009 is high and represents a serious challenge. This is a challenge shared by South Africa as a whole, as the average national unemployment rate for the same period was 24% – just 0.1% lower than that of Gauteng. The global financial crisis has had a significant impact on Gauteng's largely financially based economy. Reduced economic activity has caused some businesses to close down and many others to cut back on employment, driving unemployment upwards (GDF, 2009a:xiii).

The GPG, in its effort to lower unemployment and poverty rates, implemented different economic boosting initiatives. One of the initiatives to improve the skills of people has been implemented through the Gauteng City Region Academy (GCRA), and seeks to address the skills shortage which is contributing to the province's structural unemployment, by offering financial assistance to matriculants who wish to further their studies in scarce skills fields, including engineering and accountancy.

2.3 Social Indicators

Social indicators, such as population levels, the percentage of households accessing basic services such as water and electricity, as well as poverty rates, need to be analysed for a successful socio-economic policy. According to Statistics South Africa (2009b:11), Gauteng is the most populous province with an estimated 10.53 million residents in 2009, which is approximately 21.4% of the country's population. Gauteng is centrally placed and borders four other South African provinces. Social challenges mainly include high rates of poverty and unemployment, while high in-migration from other provinces also remains a challenge. Over the years, the GPG has implemented various policies to address these challenges. The current policy is the GDS, which was ratified in 2005 with the objective of growing the economy to 8% while reducing unemployment to 14% by 2014 (GPG, 2005:2). According to Statistics South Africa (2010:x), the unemployment rate was estimated at 25.7% in December 2009. The percentage of people living in poverty in 2008 was estimated at 25% (Global Insight, 2010). This section aims to provide an overview of Gauteng's social indicators, namely, the population, HIV/AIDS prevalence, migration and poverty.

2.3.1 Population Profile

Gauteng province, as the smallest in the country in terms of land size, accounts for only 1.4% of South Africa's surface area (Global Insight, 2010), making Gauteng the province with the highest population density. The majority of people live in Gauteng's cities; at 92% in 2008, the province has by far the highest rate of urbanisation in the country (Global Insight, 2010).Since 2008, Gauteng had the largest share of the population at 21.4% followed marginally by Kwazulu-Natal at 21.2% (Statistics South Africa, 2009b:14), mainly as a result of in-migration from other provinces. The increase in population in Gauteng places a burden on the public infrastructure and provision of services in the province (GDF, 2009b:28).

2.3.2 Overview of Basic Services Delivery

Access to basic services is very important for the people of a province as it uplifts those citizens who are living in poverty. A formal house that is supplied with electricity and running water greatly increases a person's standard of living, and goes some way in alleviating the stigma which accompanies poverty. By providing these basic services to citizens, the GPG is making a difference in the day-to-day lives of ordinary people, most especially in alleviating poverty.

Access to quality water and sanitation is essential for people's quality of life (Woolard and Leibbrandt, 1999:69). According to Global Insight (2010), the percentage of households with access to piped water at Reconstruction and Development Programme (RDP) level in Gauteng has declined marginally from 93.4% in 2001 to 92.8% in 2008. Although the decline suggests poorer service delivery to the society, the decline can also be attributed to the increase in the absolute number of households as it increased from 2.73 million in 2001 to 3.21 million in 2008 (Global Insight, 2010).

The percentage of households with access to electricity declined from 84.1% in 2001 to 82.2% in 2008 in Gauteng, suggesting that the government has not been successful in the provision of electricity (Global Insight, 2010). However, this is not necessarily the case as the increase in the absolute number of households in the province has increased.

According to Statistics South Africa (2009c:40), there was a 3.4 percentage point increase in the proportion of Gauteng households living in formal dwellings, indicating the slow rate at which formal dwellings were provided from 2001 to 2008. Although there was an increase in the percentage of households living in formal dwellings, there was an increase of 2.5 points in the percentage of households living in informal dwellings in the same period. This translates into a 20.2% backlog for the provision of formal dwellings by the provincial government. The small percentage of household in traditional dwellings in Gauteng is probably caused by the province's high rate of urbanisation.

The GPG is committed to improving the spread and quality of education and its associated services, such as the provision of learning materials and school nutrition. According to GDF (2009a:18), the education sector has recorded remarkable improvements as a number of new schools were completed and there have been improvements in the leaner-teacher ratios. However, improvements in terms of provision of infrastructure within the education sector and the learner-teacher ration have not necessarily translated into an improvement in the pass rate (grade 12) of the learners in Gauteng. Apart from the provision of buildings and infrastructure there are many other challenges that need to be addressed to actually improve the overall quality of education given the fact that education is the largest expenditure of the budget (GDF, 2010a:12). Such challenges include the need to improve child nutrition standards and transport services.

According to GDF (2008:37), an estimated 82% of the population used public health facilities in 2006 in Gauteng. According to Global Insight (2010), an estimated 11.2% of the population in Gauteng was HIV positive in 2008, which declined marginally from 11.4% in 2001. The decline in the number of people with HIV/AIDS will, in the long run, curb the number of poor people as people become fit to be employed and earn income. A further negative consequence of HIV/AIDS is that, when the adults affected die, they leave orphans who are unable to fend for them and further create a burden on society as these children must be cared for. The high HIV/AIDS prevalence rate also has a negative impact on life expectancy, fertility and birth rates, all contributing negatively to the human development of the province (GDF, 2009a:40).

2.3.3 Poverty Dimension

According to Global Insight (2010), the poverty rate or the percentage of people living below the poverty income has declined from 2,668 million in 2001 to 2,497 million people in 2008. In terms of poverty rates, the percentage of people living below poverty income declined from 29.0% and 25.9% between the two years. The poverty income is the minimum monthly income needed to sustain a household, and varies according to household size.

According to Global Insight (2010), an estimated R37.9 billion was required in 2008 to move people out of poverty, of which Gauteng province constituted 11 percent. As with the head count, the poverty gap does not indicate how far below or above the poverty line the poor households are. Being the main contributor to the national economic output and population, Gauteng's poverty rate is below the national average, but is still high. It is with these socio-economic and poverty indicators that government track development in the province and also implement strategies that aim to address the socio-economic challenges faced by the GPG.

2.4 Government Strategies

2.4.1 National Government's Strategies

As a newly elected democratic government, the ANC government faced a potential economic crisis and required socio-economic transformation at the time it won the elections in 1994. The ANC implemented the Reconstruction and Development Programme (RDP) in 1994 as the macro-economic strategy of the country. The RDP was aimed at strengthening economic growth while creating employment and redistributing economic opportunities by the year 2000. Thus, the RDP strategy served as an economic and social policy framework with the commitment to eliminate poverty and gross inequalities by growing the economy in an open and democratic society with the objective of growing the economy between 4 and 6% (ANC, 1994:2). However, the RDP policy framework placed emphasis on expenditure to address equity and poverty, but little emphasis on fiscal constraints (Van der Berg, 2006:203).

The RDP also failed to achieve the set target of economic growth rates. This is because the RDP did not spell out a detailed programme for attaining its main aims as they were too broadly formulated. For example, according to Visser (2004:7), government could not spend the R15 billion allocated for reconstruction and development and spent only R5 billion. This resulted in the RDP failing to grow the economy beyond a 3% target of economic growth. It was not practical enough to eliminate poverty and inequalities as it was not able to create enough jobs, which were consequently to be rectified by the GEAR policy. In addition to failure to spend allocated budgets, the government encountered its first major currency crisis in

February 1996 when the value of the rand plummeted by more than 25% (Visser, 2004:8). In order to calm domestic capital and foreign currency markets, the government introduced the Growth, Employment and Redistribution (GEAR) policy as the macro-economic strategy.

The GEAR policy was aimed at rebuilding and restructuring the economy by sustaining the goals set out in the RDP through the maintenance of macro balances, and elaborated a set of mutually reinforcing policy instruments (RSA, 1996:4). Thus, the social policies in GEAR were in line with the RDP objectives, hence GEAR was consistent with the RDP's objective of alleviating poverty and providing jobs to the unemployed (RSA, 1996:18).

The GEAR therefore laid a foundation for future economic progress and achieved a 3% economic growth target. However, government realised that the 3% growth was not enough to address the extensive legacy of poverty and unemployment. Also, the number of jobs created was not sufficient to reduce unemployment and hence contribute significantly to poverty alleviation. In order to improve the standard of living for all society, government needed a strategy that would grow the economy at 6% and GEAR could not achieve that (RSA, 2005:2). Although the GEAR did not set redistributive targets, government defended the GEAR plan as an elaboration of principles and perspectives contained in the RDP (Visser, 2004:11). As a result, the achievement of GEAR would ultimately result in the achievement of RDP objectives as the RDP objectives are dependent on the country's ability to develop.

The GEAR strategy failed to achieve the 6% growth rate that was set as a target. The government implemented the Accelerated and Shared Growth Initiative of South Africa (ASGISA) in 2006 (RSA, 2005:2). The aim of ASGISA is to grow the economy at 6% by 2010 in order for South Africa to be able to halve poverty and unemployment by the year 2014 in line with the United Nation's Millennium Development Goals (RSA, 2005:3).

Although the country's economy has recorded positive growth under the ASGISA strategy and some jobs have been created (unemployment declined from 27.9% in 2004 to 20.7% at the end of 2008 and then increased to 25.7% at the end of 2009 (Statistics South Africa, 2010:x), the country is still faced with the challenge of scarce and critical skills and better coordination

of policies to ensure provision of skills, amongst others. What makes ASGISA different from other government policies is that it is built on a broad-based foundation of social solidarity, ensuring that growth does not stagnate, it is labour absorptive and it addresses the challenges identified (RSA, 2005:7).

To speed up economic growth and labour absorption rates, the government introduced the Joint Initiative Programme of South Africa (JIPSA) to complement the ASGISA in 2006. This strategy aims to develop human capital by providing the necessary skills, especially for the youth, to become employable and contribute to the economy. Thus, the JIPSA is an initiative that sets skills priorities in support of the ASGISA's economic growth objectives (RSA, 2005:7). These strategies have been implemented at a national level and have provided the basis for the provincial strategies as they have the same developmental goals. These are discussed in the next section.

2.4.2 Gauteng Provincial Government's Strategies

The GPG reinforces the objectives of policies and strategies implemented at national level. These objectives are mainly that of halving unemployment and poverty by 2014 (GPG, 2005:2). In 1997, the GPG analysed the province's competitive and comparative advantages by determining its potential and constraints to growth and development. In order to achieve better economic growth in order to overcome the socio-economic challenges, the GPG proposed the Trade and Industry Strategy (TIS) (GPG, 1997:6). The aim of the TIS was to place Gauteng on a new growth path encompassing three strategies. These strategies include firstly the realignment of the manufacturing sector, secondly the development of the smart sector emphasising information technologies, research and development, and, lastly, the development of the finance and business services sector which emphasises financial services and technology. The GPG required specific vehicles as tools to achieve its objectives and one of those was the Blue Investment Quotient (Blue IQ) agency. The Blue IQ agency was implemented in 2003 with the aim of providing public with infrastructure in order to leverage private investment, create jobs and alleviate poverty (GPG, 2003:6).

Although it is difficult to quantify the effects of the 1997 TIS, this strategy has set a growth path in the Gauteng province. The 1997 TIS was enhanced in 2003 to incorporate the challenges that arose from it. These challenges included the provincial contribution to building sustainable communities and contribution to the 2014 strategy (GPG, 2003:9).

The 2003 TIS emphasised economic challenges such as socio-economic priorities and empowering Blacks and previously disadvantaged people. The TIS also included an element of the Broad Based Black Economic Empowerment (BBBEE) Act (Act 53 of 2003). The BBBEE Act provides a framework for the promotion of Black economic empowerment, increases broad-based participation of Black people in the economy and promotes a higher growth rate, increased employment and more equitable distribution of income (RSA, 2004:5). The TIS focused on areas encouraging investment, the development of medium sized businesses, provision of access to finance, especially in the informal sector, and ensuring BBBEE (GPG, 2003:9). The aim of the focus areas was to accentuate the spread of economic opportunities.

As the provincial economy's path gained momentum, the economic opportunities were not evenly spread (UNDP, 2003:74). The 2003 TIS was short-lived as it was replaced by the Gauteng Growth and Development Strategy (GGDS) in 2005 in order to keep up with the continuous transformations and challenges that arise from economic growth, and also to contribute towards the achievement of the national goals of halving poverty levels and unemployment (GPG, 2005:4). The aim of the GGDS is to facilitate all sectors of society to work towards the goal of improving the quality of life of its citizens through different interventions (GPG, 2005:3). Since the implementation of GGDS, Gauteng has made significant achievements regarding socio-economic transformation, political stability, public infrastructure and growing the economy through the foundation of strategies implemented prior to the implementation of the GGDS (GDF, 2008:35). However, the province continues to experience high levels of unemployment and poverty despite the implementation of the GGDS to address these challenges (GDF, 2009c:xvii).

The GGDS strategy outlines five key interventions that the province has to make towards achieving the goal of halving unemployment and ensuring that the provincial economic growth

reaches the level of 8% by 2014 as opposed to the 6% growth anticipated at the national level (GPG, 2005:32). These interventions are (GPG, 2005:32):

i. enabling faster economic growth and employment creation;
ii. fighting poverty and building safe, secure and sustainable communities;
iii. developing healthy, skilled and productive people;
iv. deepening democracy and nation building, and realising the constitutional rights of our people; and
v. building an effective and caring government.

The GGDS strategy integrates the provincial 2003 TIS and reflects the GPG's commitment to ensuring socio-economic growth and development in the province. Government has implemented different strategies that would enable policy makers to ensure that they achieve the GPG's commitment to socio-economic development. The following section provides an overview of the GPG poverty reduction strategies.

2.4.2.1 Gauteng Poverty Reduction Strategies

The most common approach used to address poverty is through rapid economic growth and employment creation (World Bank, 1990:3). The World Bank (1990:3) also states that the best method is to grow the national economy and employment through increased investment and the development of human capital. Human capital development is necessary for the alleviation of poverty as it enables poor households to gain access into the labour market to be productive in order to receive labour remuneration (World Bank, 1990:3). Development of human capital is achieved through education and skills development.

The pre-1994 government failed to provide an environment conducive to the needs of human development for the poor as there were different education systems and access to quality education systems were restricted to certain people in the society, for example some races were not allowed to attend certain institutions. Human development would benefit the government too, because, by providing human capital to develop the poor, the government would be able to increase its tax base as more people would be able to access employment

and pay income taxes. Tanzi (1991:48) states that, in order to achieve a big tax base to help poverty alleviation, the government should provide an environment conducive to finding employment, thereby enabling the earning of taxable income. An example of providing an environment conducive to labour is to improve the informal economy as it tends to absorb those that cannot find employment in the formal sector (Tanzi, 1991:48).

Although the World Bank (1990:3) and UNDP (2003:1) recommended that a way out of poverty is through decent employment, the creation of employment opportunities cannot be regarded as the sole solution to the problem of poverty. As with South Africa as a whole, Gauteng is faced with the challenge of skills a shortage which makes it difficult for labour to be absorbed into the system and therefore limits the government in achieving its developmental goals. The developmental challenges that currently exist are socio-economic in nature, including the education and training system and the healthcare system (GPG, 2005:7). These hinder the potential contribution of the working age population to the workforce at large.

Baker (1992:12) states that special employment programmes are too controversial as they can be linked to any other poverty programme to fit with the government's role in uplifting the society. The government uses different programmes for job creation, especially programmes that are related to sustainable economic growth and are labour intensive as they absorb more of the unemployed labour. Faced by the challenge of a dual labour system, in which there is the first or formal and second or informal economy, Gauteng's informal sector plays an important role in alleviating poverty. The informal sector employment share increased from 15% in 2000 to 18% in 2005 (GDF, 2007a:62). The World Bank (1993:11) also states the importance of the informal sector in job creation. Hence the informal sector is important as a safety net for the survival of unemployed people.

The GPG has implemented two main policies to address poverty and unemployment in the province in addition to the GGDS. These are the Social Development and Human Development Strategies and are discussed as follows:

a. Gauteng Social Development Strategy

The GDS identified a number of poverty reduction strategies that will enable the GPG to realise the overall goal of halving poverty and unemployment and thereby ensuring human development as identified in the GGDS. One of those strategies is the Gauteng Social Development Strategy (GSDS). Through the GSDS, the GGDS makes provision for social safety nets and other poverty reduction programmes (GPG, 2006a:18). The GSDS focuses on protecting and supporting the poorest and most vulnerable people, including children, women and people with disabilities and those affected and infected by HIV/AIDS (GPG, 2006a:18). While the GGDS ensures that government departments and the local sphere of government collaborate with one another to allow households access to basic services, the GSDS aims to provide for all the people of Gauteng, aims to do away with the imbalances of the past system and also ensures that all people get access to basic services. The programmes of poverty reduction include a range of activities that allow the poor to move from dependency to being self-reliant.

To date the GPG has implemented a holistic strategy of poverty alleviation which requires commitment from different stakeholders, such as government, society and businesses or the private sector, to achieve its goals. The most effective way of reducing poverty has been identified as growing the economy and development underpinned by a safety net of social services. The GPG's poverty alleviation strategy consists of two sectors, namely the social sector consisting of the social safety nets and the economic sector which is responsible for the provision of incentives to ensure sustainable economic growth (GPG, 2006a:2).

The GSDS consists of two main elements to ensure that the GPG reaches its goal of social development, that is, social protection and social investment (GPG, 2006a:9). Social protection provides a safety net for individuals, households and communities by providing a minimum level of income if people become unemployed, providing access to health services for people who are sick and disabled and, lastly, providing accommodation assistance to those with housing needs. The aim of the safety nets is to relieve poverty in the poorest areas of the province with special focus on rural areas and especially those who are bypassed by the

programmes aimed at human development. The GPG's social safety net of the poverty alleviation strategy consists of the following services (GPG, 2006a:9):

i. Social grants payments on old age pensions, child support and disability grants;
ii. Free healthcare for children under the age of six, pregnant women and the elderly;
iii. Provision of basic services such as water, sanitation and electricity;
iv. Integrated food security programmes;
v. School nutrition programme by the Departments of Education and Health;
vi. School uniform programme targeting children whose parents cannot afford to buy uniforms, which is the responsibility of the Department of Social Services; and
vii. Homestead food garden programme by the Departments of Agriculture and Health.

The responsibility for the provision of social grants has since 2006 been centralised to a national agency, called the South African Social Security Agency (SASSA).

The economic sector is responsible for the provision of the necessary incentives to ensure sustainable economic growth and enable people to sustain their livelihoods. This sector provides the basis of sustainable job creation and wealth creation through projects from the Blue IQ. In the short to medium term, the strategy focuses on those individuals who are able to work on labour intensive projects such as construction. These include the expanded public works and small and emerging contractor development programmes. The Blue IQ and other small business developments provide economy enhancing infrastructure to enable sustainable job creation and economic growth in the long term. The two elements of the GSDS aim to lift society out of poverty in the long run. The GSDS also encompasses the elements addressing the poverty of knowledge implemented by the Gauteng Human Developments Strategy as discussed in the next section.

b. Gauteng Human Resource Development Strategy

Whilst the Gauteng province is the largest provincial economy in the country, it is faced with a number of socio-economic challenges, including a high proportion of unskilled and semi-skilled

labour (GPG, 2009a:xviii). Since 2007, the GPG has implemented the Human Resource Development Strategy (HRDS). Education is a central pillar of economic empowerment and provides a firm foundation to enable people to participate in the economy (GPG, 2006b:5). The GPG, through the HRDS, aims to address the weaknesses in the provincial education system that inhibits the development of social and human capital to facilitate shared growth (GPG, 2006b:5). The HRDS provides a framework for the development of the skills the Gauteng city region needs to drive economic growth and to facilitate social transformation. This strategy aims to curb lack of skills and also address the existing weaknesses in the education system. It is based on factors such as accelerating improvements in the education foundation and creating a skilled and employable workforce, thereby contributing towards knowledge-intensive people. There is a realisation among policymakers that many of the poor are unemployable because they lack certain basic skills demanded by the labour market (Pauw & Mncube, 2007:5). The HRDS, which was developed in conjunction with the national JIPSA, also aims to achieve the following objectives (GPG, 2006b:5-6):

i. The development of the GPG's capacity to drive human resource development and skills development;
ii. Improving the supply of high quality skills, especially scarce skills;
iii. Focussing on labour absorbing initiatives, both in and outside the government; and
iv. Supporting the creation of a globally competitive city region with appropriate human capital competencies.

The HRDS focuses on improving human resource and skills development in the province's labour market and ultimately enhancing the GPG's priorities of developing healthy, skilled and productive people and fighting poverty. To achieve the objectives of this strategy, GPG established a Global City Region Academy (GCRA) to implement the HRDS in order to address provincial skills challenges and strengthen joint planning between the stakeholders involved. Like any government, the main instrument in achieving strategic goals is through its budget and expenditure management, which is outlined in the following section.

2.5 Conclusion

The post-election government is faced with development challenges, including high poverty and unemployment rates. As a result, provincial government's policies have been aimed at addressing these challenges. The objectives of these policies were to reduce the high rates of poverty and unemployment and also to eliminate the backlogs in the provision of basic services.

This chapter has aimed at describing the socio-economic background of the Gauteng province. The socio-economic analyses have shown that Gauteng province has kept momentum in the South African economy as it contributed the most in terms of economic growth. However, social indicators posed challenges of high population translating into increased demand in the provision of services. Other challenges include high rates of unemployment despite having recorded high economic growth rates. As a result, one can say the province has had what is called a "jobless growth" whereby economic growth is not able to create employment.

In terms of the provision of basic services, Gauteng recorded improvements in the provision of education through the decline in leaner to teacher ratio and declines in provincial literacy rates. However, data provided show that the percentage of households with access to services like electricity, formal housing and water has declined between the years under review. The decline in the percentages on the access to services could be as a result of the increases in the number of households in the province, which pushed up the percentage of households in informal dwellings. Although the analysis of data shows some achievement with regard to the provision of some services, there is still much to be achieved for developmental goals to be reached by the set 2014 based on the anticipated positive impacts of the policies implemented.

Chapter Three

Provincial Government Expenditure and Fiscal Framework

3.1 Introduction

The purpose of this chapter is to provide an overview of the provincial government expenditure and fiscal framework in South Africa and provinces. It also discusses the provincial fiscal position in terms of revenue and expenditure trends given the goals as set in the provincial government policies. The chapter will focus on the Gauteng province's ability to raise revenue, given the fiscal framework that is in place in South Africa, and also analyse how the provincial government spends its public resource to ensure the delivery of social services.

The Constitution gives provinces the mandate of delivering service delivery to the population. As a result, provinces are assigned certain functions to ensure service delivery based on their competence while other services are delivered concurrently with the national government (RSA, 1996:148). Government concurrent functions include the provision of education at all levels, health services, housing public works and transport, while functions such as defence is an exclusive function of the national government. Provincial functions include provincial roads, liquor licences and ambulance services. The execution of all these functions would ensure that provincial government achieves its programme of actions for all citizenry to have a better life, and also achieve its mandate to alleviated poverty.

3.2 Government Expenditure as an Instrument of Fiscal policy

Fourie (2001:11) defines fiscal policy as "the use of government's budget instruments such as the structure of taxation, spending and borrowing by fiscal authorities to pursue fiscal objectives". The government is responsible for providing public goods and service delivery to the society. The manner in which government spends public resources influences the economy and the society's wellbeing. Provincial government expenditure has focussed on the provision of social services as highlighted annually in budgets. Through the use of budget and spending, government contributes to the achievement of macro-economic goals and other

objectives, such as economic growth, poverty alleviation, job creation, price stability and redistribution of income (Black, Calitz & Steenkamp, 2005:239). Black et al (2005:239) further distinguish between the macro and sectoral goals. The macro goals of fiscal policy include economic growth, job creation, price stability and poverty alleviation. Sectoral goals of fiscal policy are those goals dealing with the development of particular economic sectors like agriculture or manufacturing, and the pursuance of social goals pertaining to sectors such as housing, education, health and welfare. Policies aimed at achieving sectoral goals are also referred to as social policies. As a result, the provision of public goods, such as education, health and other basic services like housing and sanitation, can assist in the alleviation of poverty, enhance the income from economic activities and ultimately enhance economic growth. Thus, by spending on public goods, the government works towards the achievement of societal wellbeing or the improvement of the populace and the right of the citizenry in terms of the Constitution's Bill of Rights.

Since the election of the new government in 1994, provinces have introduced policies in order to address transformation and the achievement of the macro objectives through service delivery in line with the national policies. Two issues at the centre of policies are poverty and inequality. Poverty and inequality are influenced by different factors such as the lack of income resulting from unemployment and lack of assets and the lack of basic services. These factors have become a concern and have contributed to the spending pressures faced by both the national and the provincial government budget. Sen (1999:36) states that policy makers should direct more attention to the aspects that drive poverty and inequality. For example, policies aimed at reducing poverty should address the lack of access to income or assets, lack of access to basic services such as education and health services and uneven income distribution (Sen, 1999:36).

The national government uses its policies to ensure that it achieves an equitable distribution of income and assets among the society. Among the important objectives of government is the increased welfare of the society and that resources are allocated in such a way that the lives of its citizens are enhanced. As a result, to ensure that one person in society is better off without causing the others to be worse off, government should follow what is referred to as Pareto

efficiency (Rosen, 1999:40). Government priorities on expenditure should be channelled in such a way that the whole of society or all citizens are better off. This role is fulfilled through government's budget of which expenditure is an instrument. Thus, strategic allocation of fiscal resources is a tool for achieving the macro-economic goals. The budget, both at national and provincial levels, details the expenditure priorities against the available revenue raised through taxation (National Treasury, 2007:iii). These priorities are based on government's strategic policies and goals to ensure development.

Addressing the developmental challenges and fighting poverty and inequality in a country require the government to adjust its expenditure priorities. The adjustment is done through budgeted expenditure as it is one of the government's instruments to ensure that it will reach its goals. A budget is used as the government's key planning tool and an instrument for allocating resources to programmes that would alleviate poverty (Fourie, 2001:263). The importance of budgets as an instrument of poverty reduction cannot be overstated (SARPN, 2006:1). In an effort to address the poverty challenges in Gauteng, the GPG's poverty alleviation programmes have, over the years, shifted focus to meet the changing demands. Budget allocations were reprioritised in the 1997/98 financial year to make provision for special programmes and broaden the inclusion of short-term poverty relief (National Treasury, 2006:4). The special programmes included the provision of basic services and social nets to the poor.

The growing importance of the government budget and its expenditure on social services results from increasing government obligations, or, seen from another side, citizens' entitlements in the social area (Tanzi & Schuknecht, 2000:32). Thirlwall (1999:223) states that government not only has a moral duty to address inequalities and help those in poverty, but also has a duty to build a strong political and economic case as the poor and vulnerable can be the cause of civil unrest and political instability due to insecurities brought about by poverty. As government has to rebuild and ensure stability the result is that the economic and political instability deter economic growth because of the negative impact on the economy. The expenditure on the provision of social services builds confidence in the society, especially the poor, as this is part of distribution of income to them.

The lack of entitlements was identified in the previous chapter as the lack of access to basic services such as education, health and housing. The lack of these entitlements is seen as the cause of poverty and income inequalities, which forces policy makers to pay more attention to redirecting policies in order to address the poverty and inequality challenges (Sen, 1999:36). It is the role of the government to provide these entitlements in order to achieve its developmental goals, namely that of reducing income inequalities and poverty.

The provision of social services is seen partly as an instrument of improving income and assets and partly as a matter of restoring human dignity and achieving equity (GPG, 2005:9). Poverty also brings about absence of opportunities that would allow the society to develop a better quality of life, such as education, quality health services and housing, of which the provision of social services brings about those opportunities, including income. Hence, the government uses its budget to deliver services and achieve the developmental goals of halving unemployment and poverty. The expenditure on service delivery to achieve developmental goals is driven from the demand side, as opposed to the supply side, as it reflects the demand for government services or programmes by the society as a whole. Demand-driven government expenditure, also known as the backward linkage, occurs when the government decides to acknowledge that poverty is high and decides to spend more – either by increased social spending or service delivery through grants or provision of public goods such as economic and social infrastructure to people (Tanzi & Schuknecht, 2000:33). Supply-driven expenditure, also known as the forward linkage, tends to influence production. Supply-driven expenditure involves spending on human capital or investment to influence production, which records impact in the long term (Tanzi & Schuknecht, 2000:33). The demand-driven expenditure will also play an important role in the next chapter as we analyse the impact of changes in fiscal policies in the province, as it tends to affect how consumers or household demand goods and services, especially the provision of basic services. As a result, it is important to note that demand-driven expenditure will inform the aim of this study based on how households, as economic agents, behave given price changes on goods and services.

Although there has been an improvement in service delivery, the reduction of income inequality and the poverty rates in the province and at national level do not show significant improvements (UNDP, 2003:1). The rewards of economic growth have not been distributed equitably among households, hence there is still a significant number of people living in poverty in both Gauteng and the country as a whole (UNDP, 2003:1). The UNDP (2003:1) also states that even though the province has experienced improvements in economic growth, poverty has not been responsive to economic growth. To address these challenges, the GPG priorities encompass the expenditure on social and economic services. The section below discusses the fiscal framework that informs how provinces fund their expenditure in line with the policies.

3.3 Intergovernmental Fiscal Framework in South Africa

In terms of the Constitution (Act 108 of 1996), there are three spheres of government, namely the national, provincial and local spheres, which are distinctive, interdependent and interrelated (RSA, 1996:25). The Constitution also outlines and assigns each of the three sphere's revenue and expenditure powers or functions in line with the intergovernmental fiscal relation and gives effect to nine provinces in the country. As stated earlier, the Constitution distinguishes between concurrent and exclusive powers or functions. Concurrent powers or functions are areas of responsibility shared between national and provincial government as listed in Schedule 4 of the Constitution. These include the provision of education at all levels, housing and health services. Exclusive responsibilities or functions are those areas assigned solely to one sphere of government. For example, defence and international relations are national government's responsibilities; provinces are solely responsible for provincial roads and traffic, while the local government sphere is responsible for municipal parks and beaches (RSA, 1996:148-150). Although the Constitution assigns different powers or functions to different spheres of government, the national government oversees the formulation of policies to be implemented by all spheres. Thus, the policies at sub-national levels have to be informed by the national policies.

As a result of the concurrent functions between the national and provincial levels of government, as listed under Schedule 4, the provinces rely highly on intergovernmental transfers from national government, while the local government have a greater autonomy and scope to raise own revenue (Financial and Fiscal Commission (FFC), 2009:4). Due to the Intergovernmental Fiscal Relations Act, the provinces have a limited capacity to raise such own revenues.

The spheres of government have different sources of revenue. According to the Constitution (RSA, 1996:124), government, through parliament in consultation with the FFC, has to divide the nationally raised revenue equitably among the three spheres of government. This division should ensure that all spheres of government are able to perform all functions as assigned to them by the Constitution. According to Black *et al* (2005:313), the limited capacity to raise own revenue by provinces, compared to the other two spheres of government, creates an imbalance between the expenditure mandate of sub-national levels of government and the financial resources that they can raise on their own account. As a result, provinces are highly reliant on the revenue from the national government. In addition to the equitable division of revenue, all spheres of government may raise revenue from sources such as donor funding and borrowing. The next section provides an overview of intergovernmental transfers, especially the sources of revenue for the provincial sphere of government.

3.4 Intergovernmental Transfers

Although different functions or responsibilities are assigned between the three spheres of government, most taxes are raised at a national level to consider issues such as administration. Between the three spheres, government functions are funded through the intergovernmental transfers. Black et al (2005:307) defines intergovernmental transfers as transfer payments from one sphere of government, mainly from national government, to another sphere of government. A further distinction is made between conditional and unconditional transfers. According to Black et al (2005:307), conditional grants are those funds spent on specific functions or services stipulated by the sphere of government making the transfer, or the grantor, while the unconditional grant may be spent by the recipient

government as determined by its mandate or policies. Both the conditional and unconditional transfers are those transfers stipulated in Section 214 of the Constitution, which states that Parliament must provide for an equitable distribution of revenue raised at national level among the three levels of government after consulting the provincial and local governments' spheres and the FFC (RSA, 1996:124). According to FFC (2009:4), provincial revenues consist mainly of three sources of revenue, namely the provincial equitable share (PES), conditional grants and provincial own revenue. The PES and the conditional grants are transferred as either conditional or unconditional transfers from national government.

Sources of revenue are not limited to these three sources. In addition to the three main sources of revenue for a province, Section 228 of the Constitution and the Provincial Tax Regulation Process Act (Act 53 of 2001) permit provinces to impose taxes, levies and duties other than income tax, (VAT), general sales tax (GST), property rates or custom to increase the provincial fiscal revenue. The provinces may also impose flat-rate surcharges on any taxes imposed by national legislation other than corporate income tax, VAT, property rates and customs (RSA, 1996:132). Section 230 of the Constitution and the Borrowing Powers of the Provincial Governments Act (Act 48 of 1996) also assigns provinces the powers to borrow for capital and current expenditure in accordance with national legislation after any recommendations of the FFC have been considered (RSA, 1996:133). According to Agbor (2008:306), the imposition of taxes at provincial level would assist provincial governments to mobilise financial resources from various sources in order to satisfy the expanding spending demands. This reserves the most productive taxes for national government while substantial expenditure responsibilities are delegated to provinces, creating an imbalance between the expenditure mandates of the sub-national government spheres.

The imposition of taxes and levies and the making of loans by provinces may be done in such a way that they do not hamper national development objectives. The Constitution and the Provincial Tax Regulation Process Act clearly state that the taxes and levies imposed by provinces may not, in any way, materially and unreasonably prejudice national and provincial economic policies, economic activities across provincial boundaries and the national mobility of goods, services, capital and labour (RSA, 2001:3). Also, legislation such as the Provincial Tax

Regulation Process Act sets out conditions under which provinces may borrow. These include the conditions that the loans may be raised to finance expenditure on capital projects and not for current expenditure. However, the only exception to raising loans for current expenditure is when the government uses the loans for bridging finance and it has to be paid back within the same fiscal or financial year.

3.4.1 Provincial Equitable Share

As per legislation, including the Constitution, Intergovernmental Fiscal Relations Act (Act 13 of 2005) and the recommendations of the FFC, the national transfers to provinces are determined through the PES formula which takes into account the expenditure responsibilities assigned by the Constitution. The FFC was established in terms of Section 220 of the Constitution to make recommendations to Parliament on financial and fiscal matters, including equitable allocations of the national revenue between the three spheres of government, and any intentions of provincial governments to levy taxes, surcharges and loans as well as to set the criteria for such purposes (RSA, 1996:129). The distribution of revenue raised at a national level to provinces is referred to as the vertical division of revenue (Black et al, 2005:314). After the pool has been allocated to provinces, it is followed by a horizontal split among the nine provinces. The PES is a discretionary funding instrument which enables provinces to deliver constitutionally mandated services or functions due to their limited capacity to raise revenue (FFC, 2009:2). According to Black et al (2005:315), the formula is mainly driven by the size of each population, but is also weighted in favour of rural people as a proxy for backlogs in basic services and poverty. The 2009 recommendations were based on a formula consisting of demographic and economic indicators for each province as follows:

i. Education share consisting of the size of the school-age population and the number of learners enrolled;
ii. The health sector, based on the share of population with and without medical aid respectively;
iii. The basic share which is based on each province's share of population in relation to the total of the country;

iv. A poverty component based on the number of people below the poverty line, aimed at reinforcing redistribution;
v. An economic activity based on the GDP of each province; and
vi. An institutional grant to the province is based on national institutions situated in some provinces, but used by all.

The components in the formula have different weights based on national development objectives. The largest weight of 51% is assigned to education. The second biggest weight is on health at 26%, while the basic, poverty and economic activity shares have weights of 14%, 3% and 1% respectively. The Institutional grant weighs 5% and is shared equally among the province. According to FFC (2009:2), the PES allocation constitutes the largest share of transfers to provinces' revenues from national government at 83% in 2010 financial year.

3.4.2 Conditional Grants

The second source of provincial revenue is in the form of conditional grants form national government. Conditional grants are transfers from national government to provinces to cover a proportion of the cost of providing certain functions or services, particularly in funding of policies of national importance (FFC, 2009:5). According to Black *et al* (2005:312) conditional grants are used to fund public goods or services considered by national government to be of high priority and affording the national government better control over budget and how it is spent. Examples of conditional grants to provinces include the Comprehensive Agricultural Support Programme grant aimed at assisting farming communities and farmers, and the Comprehensive HIV/AIDS grant aimed at ensuring the provincial department provides healthcare services to HIV/AIDS patients, amongst others (GDF, 2010a:11).

3.4.3 Provincial Own Revenue

The third source of revenue is called provincial own revenue which refers to revenue raised within the province or on behalf of the province. This includes provincial taxes, motor vehicle licences and fees, rental income and interest earned. According to the FFC (2009:4), South

Africa has a weak assignment of revenue sources for provincial government and it has questioned the discretion that provinces can exercise over national transfers and provincial allocative efficiency. The FFC has also identified challenges with regard to the design of the formula and the intergovernmental system in place. These include the overlap of expenditure assignments between the national and provincial governments which creates a distortion in the allocation or funding process, and the lack of exercise of provinces' revenue powers. The FFC has, in 2009, recommended that provinces should be provided with greater revenue autonomy as it will be a viable route for them to raise own revenue, but has cautioned that regardless of the appropriateness of the level of revenue autonomy by provinces, the PES formula is perceived to be biased against the capacity of provinces to raise revenue (FFC, 2009:4). However, this cannot be disregarded in the long run as there is increasing pressure on the provincial spending as a result of increased demand for basic services.

3.5 Gauteng Fiscal Situation

While national government is responsible for policy formulation, the Gauteng province plays a key role in the provision of social services and policy implementation (GPG, 2005:3). Gauteng, being the most populous province, spends its budget in line with the challenges currently in existence in the country and this also reflects this sphere's key role in the delivery of social services, including school education, health, which includes academic and regional hospitals, as well as primary healthcare, social welfare services, housing and roads (National Treasury, 2006:7). An analysis of the provincial government revenue and expenditure assists policy makers to track areas of achievement and identify where developmental gaps arise when public funds are spent (Ramuhashi, 2007:42).

3.5.1 Gauteng Provincial Revenue

Like all provinces, the GPG consists of three sources of revenue: the two main sources of revenue being those transferred from national government through the PES and conditional grants, while the third source of revenue is provincial own revenue The revenue raised by provinces on their own accounts for the smallest shares to total revenues in all provinces,

which shows the high reliance of provinces on transfers from national government. The Gauteng PES transfers from national government accounts for 73,2%, conditional grants for 22,3% while provincial own revenue accounts for 4,5% for the 2010/11 financial year (GDF, 2010a:7).

Table 3.1: Gauteng Provincial Revenue, 2007/08-2012/13

	Audite Outcome		Main Appropriatio	Adjusted Appropriatio	Medium-term estimates		
R'000	2007/08	2008/09	2009/10		2010/11	2011/12	2012/13
Provincial revenue							
Transfer receipts from National	**38 505 226**	**45 447 281**	**52 247 794**	**54 201 957**	**58 862 969**	**63 608 366**	**66 813 799**
Equitable share	*28 464 501*	33 811 732	*38 896 845*	*40 365 193*	*45 134 335*	*48 791 833*	*51 459 021*
Conditional grants	*10 040 725*	11 635 549	*13 350 949*	*13 836 764*	*13 728 634*	*14 816 533*	*15 354 778*
Provincial own receipts	**2 758 922**	**2 351 735**	**3 035 411**	**2 826 638**	**2 801 234**	**3 061 030**	**3 187 558**
Total provincial revenue	**41 264 148**	**47 799 016**	**55 283 205**	**57 028 595**	**61 664 203**	**66 669 396**	**70 001 357**
Share to Total Revenue							
Transfer receipts from National	**93.3%**	**95.1%**	**94.5%**	**95.0%**	**95.5%**	**95.4%**	**95.4%**
Equitable share	69.0%	70.7%	70.4%	70.8%	73.2%	73.2%	73.5%
Conditional grants	24.3%	24.3%	24.2%	24.3%	22.3%	22.2%	21.9%
Provincial own receipts	**6.7%**	**4.9%**	**5.5%**	**5.0%**	**4.5%**	**4.6%**	**4.6%**
% Growth							
Equitable share		**18.8%**	**15.0%**	**19.4%**	**11.8%**	**8.1%**	**5.5%**
Conditional grants		**15.9%**	**14.7%**	**18.9%**	**-0.8%**	**7.9%**	**3.6%**
Provincial own receipts		**-14.8%**	**29.1%**	**20.2%**	**-0.9%**	**9.3%**	**4.1%**
Total revenue		**15.8%**	**15.7%**	**19.3%**	**8.1%**	**8.1%**	**5.0%**

Source: GDF, 2010a:7

Table 3.1 provides a summary of the revenue sources for Gauteng since the 2007/08 financial year and the 2010 medium-term estimates as indicated by the Medium Term Expenditure Framework (MTEF) that is used as government budget planning framework. The aggregated provincial revenue increased from R41.2 billion in the 2007/08 financial year to R61 billion in the 2010/11 financial year, representing an increase of 8.1%. The equitable share transferred from national government increased from R28.4 billion to R45.1 billion between 2007/08 and 2010/11. The share of equitable transfers increased from 69% to 73.2% in the same period. The share of conditional grants declined marginally from 24.3% to 22.3% while the share of own revenue decreased from 6.7% in 2007/08 to 4.5% in 2010/11, which shows the challenge that the province is faced with in terms of raising its own revenue. Implicitly, the negative effect

of this is that the province's spending priorities are also increasing, creating pressure for more financing requirements. The equitable share allocations from national government increased by 11.8% in the 2010/11 financial year while conditional grants and provincial own revenue declined by 0.8% and 0.9% respectively. This is as a result of the negative impact of the economic crisis that affected the national tax revenue (National Treasury, 2010:71). The following section provides an analysis of provincial own revenue.

Given Section 228 of the Constitution, which allows provinces to impose certain taxes but in a limited manner, provincial own revenue in Gauteng accounted for the smallest share of total provincial revenue at 4.5% (GDF, 2010a7). In the 2009/10 financial year, the share of provincial own revenue was adjusted from 5.5% to 5.0%, mainly as a result of the negative impact of the economic crisis (GDF, 2009b:14). The provincial own revenue consists mainly of tax receipts and non-tax receipts, of which tax receipts account for the major part. The GPG have implemented liquor licences for all liquor trading institutions and individuals to supplement own revenue generation in the province. The tax receipts consist mainly of motor vehicle and liquor licences, and casino and horse racing taxes, while non-tax receipts consist mainly of the sale of goods and services, interest other than capital and other sales, and the smallest share accruing from sale of capital assets (GDF, 2010a:12).

Table 3.2 below provides information on provincial own revenue from 2007/08 to the 2010/11 medium-term estimates. According to GDF (2010a:12), the provincial own revenue has increased from R2,7 billion in 2007/08 to R2,8 billion in 2010/11, mainly consisting of tax receipts. The tax receipts account for the majority of total receipts and are susceptible to economic swings because of the nature of these taxes. Furthermore, the tax receipts account for an estimated 79% of total provincial own revenue, of which motor vehicle licences formed the most productive tax, accounting for 72% of tax receipts. Due to the economic downturn in 2008 and 2009, these tax receipts were negatively affected because of the lower demand for consumer products related to these taxes. As a result, the GPG revised the 2009/10 projections downwards in line with other provinces and national projections to minimise the adverse impact of under-collection (GDF, 2010a:13). Furthermore, the report also states that

the Gauteng province's equitable share allocation has been reduced by R2.1 billion over the 2010 medium term due to the revision of data used in the PES formula.

Table 3.2: Breakdown of Provincial Own Revenue by Source, 2007/08-2012/13

	Audite Outcome		Main Appropriation	Adjusted Appropriation	Medium-term estimates		
R'000	2007/08	2008/09	2009/10		2010/11	2011/12	2012/13
Tax Receipts	**1 976 530**	**1 750 556**	**2 237 666**	**2 237 666**	**2 227 963**	**2 392 481**	**2 430 503**
Casino Taxes	502 128	521 608	593 911	593 911	525 203	556 718	590 118
Horse Racing Taxes	30 691	31 871	32 085	32 085	72 671	77 031	81 653
Liquor Licences					16 000	16 000	16 000
Motor Vehicle Licences	1 443 711	1 197 077	1 611 670	1 611 670	1 614 089	1 742 732	1 742 732
Non Tax Receipts	**782 392**	**601 179**	**797 745**	**588 972**	**573 271**	**668 549**	**757 054**
Sale of Goods and Services other than Capital	**385 461**	**389 391**	**488 147**	**488 262**	**463 561**	**507 103**	**554 159**
Sale of Goods and Services Produced by	384 369	388 402	486 979	488 259	462 343	505 885	552 941
Sales by Market Establishment	*3 223*	*3 717*	*42 053*	*42 332*	*21 701*	*23 680*	*23 978*
Administrative fees	*398*	*440*			*470*	*495*	*521*
Other Sales	*380 748*	*384 245*	*444 926*	*445 927*	*440 172*	*481 710*	*528 442*
Sale of Scrap, waste and other used current goods (excl capital assets)	1 092	989	1 168	3	1 218	1 218	1 218
Transfers Received From	**341 348**	**146 615**	**263 668**	**43 685**	**62 351**	**113 482**	**154 410**
Public corporation and private enterprises							
Fines, penalties and forfeits	5 370	5 305	6 604	6 602	7 227	7 950	8 745
Interest, dividends and rent on land	335 978	141 310	257 064	37 083	55 124	105 532	145 665
Interest, dividends and rent on land	*335 519*	*141 310*	*257 064*	*37 083*	*55 124*	*105 532*	*145 665*
Rent on land	*459*						
Sales of Capital Assets	**1 802**	**8**	**72**	**-**	**72**	**72**	**72**
Land and sub-soil assets	1 643						
Other Capital assests	159	8	72		72	72	72
Financial Transactions in assets and liabilities	**53 781**	**65 165**	**45 858**	**57 025**	**47 287**	**47 892**	**48 413**
Total Own Receipts	**2 758 922**	**2 351 735**	**3 035 411**	**2 826 638**	**2 801 234**	**3 061 030**	**3 187 557**

Source: GDF, 2010a:12

3.5.2 Gauteng Provincial Expenditure

The provincial expenditure on service delivery has improved over the post-apartheid years, showing that the government's expenditure is in line with strategic priorities (National Treasury, 2006:1). Again, a review of government expenditure would determine areas that require further developments as one tries to match expenditure with service delivery, especially on the provision of social services. According to GDF (2010a:15), the Gauteng provincial budget for

the 2009/10 financial year was adjusted from R55.2 billion to R57 billion due to accelerated spending driven by an increased demand for public services. The following table provides a summary of expenditure analysis and medium-term estimates in Gauteng.

Table 3.3: GPG Expenditure, 2007/08-2010/11

	Audite Outcome		Main Appropriation	Adjusted Appropriation	Medium-term estimates		
R'000	2007/08	2008/09	2009/10		2010/11	2011/12	2012/13
Social Sectors	**28 253 403**	**34 110 212**	**37 512 790**	**39 125 986**	**44 722 910**	**49 251 095**	**51 583 927**
Education	13 829 368	16 688 394	18 987 052	19 981 832	22 485 539	24 925 237	25 885 941
Health & Social Development	14 424 035	17 421 818	18 525 738	19 144 154	22 237 371	24 325 858	25 697 986
Non Social Sectors	**13 488 711**	**17 806 619**	**17 746 329**	**19 414 073**	**16 133 736**	**17 012 506**	**16 932 044**
Total provincial payments	**41 742 114**	**51 916 831**	**55 259 119**	**58 540 059**	**60 856 646**	**66 263 601**	**68 515 971**
Share of total payments							
Social Sectors	**67.7%**	**65.7%**	**67.9%**	**66.8%**	**73.5%**	**74.3%**	**75.3%**
Education	33.1%	32.1%	34.4%	34.1%	36.9%	37.6%	37.8%
Health	34.6%	33.6%	33.5%	32.7%	36.5%	36.7%	37.5%
Non Social Sectors	**32.3%**	**34.3%**	**32.1%**	**33.2%**	**26.5%**	**25.7%**	**24.7%**
% Growth							
Social Sectors		20.7%	10.0%	14.7%	14.3%	10.1%	4.7%
Non Social Sectors		32.0%	-0.3%	9.0%	-16.9%	5.4%	-0.5%
Total provincial payments		**24.4%**	6.4%	**12.8%**	**4.0%**	**13.2%**	**12.6%**

Source: GDF, 2010a:16 & own calculations

Table 3.3 provides an overview of the provincial expenditure from 2007/08 to 2009/10 and over the MTEF period. Gauteng provincial expenditure increased from R41.7 billion in 2007/08 to R58.5 billion in 2009/10 and further increased to R60.8 billion in 2010/11 financial year. The social sectors, which consist of education, health and social development excluding sports, arts, culture and recreation, constituted the largest share of provincial expenditures (GDF, 2010a:19). Again GDF (2010a:19) argues that the growth in expenditure on social services is mainly driven by the provincial government's commitment to deliver on general public services like public education, primary health care and health and other social infrastructures. The following section provides an analysis of provincial government expenditure trends per sectors.

3.5.2.1 Social Sectors

a. Education

Most development economists and institutions, such as the World Bank and the UN, agree that education is the key driver for human development, poverty reduction and sustainable economic growth (UNDP, 2003:164; World Bank, 1990:3). The lack of access to education, which is a direct social effect of poverty, reduces the earning potential of people and impact negatively on the achievement of human development and poverty reduction (Sen, 1999:36). The more educated people are the higher their chances of securing jobs, income, and access to services and therefore the improvement in the distribution of income leading to improved quality of life. As a result, the South African government has identified education as the top priority and that is why such a large share of the budget is allocated for education. As a result, the provision of quality education as a national priority contributes the largest share to social cohesion (National Treasury, 2006:11). Education is therefore a key instrument for promoting social cohesion, which aims to provide all people with the possibility to participate in the economic and social development of society and benefit from it, by endowing people with the necessary knowledge to cope with change and new conditions.

Observing from table 3.3, expenditure on education has increased from R13,8 billion in the 2007/08 financial year to R22,4 billion in the 2010/11 financial year, hence the share of expenditure on education ranged from 33.1% in 2007/08 to an average of 37% in the 2010/11 financial year (GDF, 2010a:16). It should be noted that expenditure on education would be more substantial when one takes into consideration that education is a concurrent expenditure function shared between the provincial and national governments, and that the figures in the table do not include the shares of expenditure spent by national government. For example, provincial government spends on schools for aspects such as early childhood development (ECD) which caters for children up to four years, the funding of public schools, and the provision for Adult Basic Education and Training (ABET) while the tertiary institutions, including further education and training (FET), are financed partly from the national government (RSA, 1996:148).

Compared to the other provinces in South Africa, Gauteng had the highest percentage of its population attending educational institutions, except for the school category in 2007 (Statistics South Africa, 2008b:18). Of the total number of people attending Technikons in 2008, 41% were in Gauteng, followed by Kwazulu-Natal with 16%. Gauteng also recorded 40% of all students attending university in the country, and again followed by Kwazulu-Natal with 12% of all university students, while college students accounted for 37% in Gauteng (Statistics South Africa, 2008b:16).

Except for a few education categories, the Gauteng province shows dominance in terms of the population attending educational institutions (GDF, 2007:17-18). However, this population cannot be taken as the Gauteng population solely, as most of the students come from other provinces and some are from neighbouring countries. As a result, the high percentages in education expenditure may not be a true reflection of the number of Gauteng residents attending educational institutions. The increasing education budget reflects the substantial additional resources available to the education sector and this shows the government's commitment to educate its people. However, the South African government has yet to come up with an effective policy that will ensure a work transition programme that enables people to secure employment once they have finished school (Altman, 2005:8).

b. Health and Social Development

The provincial Department of Health mandate aims to promote health, and prevent and manage illnesses or conditions with the emphasis on poverty, lifestyle and psychological factors (GPG, 2008:39). The emphasis on promoting the health of the poor includes provision of health services to children, pregnant women and elderly people. Other health promotion programmes that appear to be successful are the provision of antiretroviral treatments to those infected by the Human Immune-deficiency Virus (HIV) and the provision of Tuberculosis (TB) treatment (GDF, 2009a:39). The Department of Health and Social Welfare has other programmes which are aimed at improving the quality of live for people, especially the poor, such as the integrated food security programme (which provides adequate food nutrition

required to sustain a healthy life) and the school feeding programme for ECD to ensure that pupils at schools have access to adequate nutrition.

The provision of these health and social development projects is aimed at eliminating the socio-economic challenges as stated in the GGDS. The provision of health services and social development is aligned with the provincial strategic priorities of promotion of quality healthcare services, the fight against poverty and the building of safe, secure and sustainable communities which would facilitate human development and improve the quality of life of the people of the Gauteng province (GPG, 2005:3).

According to the National Treasury (2007:29), the increased budget allocation across the provincial governments has enabled progress on a range of initiatives critical to public health across provinces. Based on the 2010/11 financial year, the departments of health and social development were reconfigured into one department and the budget expenditure provided in Table 3.3 aggregated the expenditure of the two departments. However, the biggest part of the expenditure is allocated to health as it accounted for 91%, while social development accounted for 9% (GDF, 2010a:16). Provincial expenditure on health and social development increased from R12,1 billion in 2007/08 to R22,2 billion in the 20010/11 financial year, and it is estimated to increase to R25,697 billion in the 2012/13 financial year, with the objective of ensuring healthy and productive citizens (GDF, 2010a:110). These expenditure estimates are based on the provincial health statistics, population growth and projections.

3.5.2.2 Non-Social Sectors

Expenditure on other functions includes mainly the economic and governance sectors. These include departments such as Public Transport and Roads, Infrastructure Development, Agriculture & Rural Development as economic sectors, and the Legislature and Office of the Premier as the governance sectors. The economic sectors mainly contribute to the job creation initiatives identified by the GPG through different projects, such as the Expanded Public Works Programme (EPWP) which is aimed at poverty alleviation. Another infrastructure project that is aimed at contributing to job creation is the Gautrain Rapid Link which was partly funded

through a conditional grant from national government aimed at the improvement of public transport in order to avoid traffic congestions on provincial roads (GDF, 2010a:12).

According to the GDF (2010:16), expenditure on economic and governance sectors increased marginally from R13.4 billion in the 2007/08 financial year to an estimated R16,1 billion in 2010/11, while its contribution to total expenditure increased from 32.3% to 33.2%. Other expenditure policy areas included as non-social sectors include economic affairs and the provision of housing and public transport, all of which contribute to the progress on social basic services. Other functions included in the non-social sectors is the provision of anti-poverty programmes such as the EPWP and the food security programme under the departments of Public Works, Roads and Transport and Rural Development, with programmes having shown positive impacts on poverty reduction initiatives (GPG, 2007:2). By spending public resources, national and provincial governments aim to redistribute income to the people. However, government expenditure on public goods and services has disadvantages for others.

In terms of an overall comparison of the provincial government revenue and expenditure above, there is spending pressure as the expenditure estimates do not match the provincial revenues. The provincial government expenditure allocation in the 2009/10 financial year was R55.259 billion and was adjusted to R58.540 and the revenue estimates were adjusted from R55.283 to R57.028 (GDF, 2010a:16). The difference between revenue and expenditure translates into the spending pressures that are faced by the provincial government in terms the provision of social and other services, which would translate into the achievement of provincial developmental goals. A number of factors that contribute to the spending pressures in the province are discussed below.

3.6 Factors Impacting on Increased Social Spending Pressures in Gauteng

In line with the developmental objectives of the national ASGISA and the GGDS, Gauteng aims to halve poverty and unemployment by the end of the 2014. In order to achieve these objectives, there is a need for government to address the backlogs in the provision of basic social services, including infrastructure. Infrastructure projects for addressing such challenges

include the transport infrastructure and infrastructure on building and maintaining schools and health facilities. Examples of transport infrastructure include the Gauteng Freeway Improvement Plan (GFIP), and the Gautrain Rapid Rail Link which are aimed at improving the traffic congestions around the province, but also at contributing to the provincial economic growth and job creation. Other initiatives for achieving the objectives include rural development and urban renewal projects to improve housing and the livelihoods of the society (GDF, 2009a).

In the second quarter of 2009 South Africa experienced the first economic recession since 1992 (National Treasury, 2009:18). This has caused concerns over the decline in personal income due to job losses, decline in domestic and international investments and the general impact on poverty and inequality. These factors have impacted negatively on government revenues. The estimated tax revenue to be collected by national government is projected to be R68.9 billion less than the budgeted revenue estimated in November 2009 (National Treasury, 2010:71). In addition, the National Treasury (2010:72) reports that, due to the impact of the economic slowdown, revenue from VAT and customs duties declined substantially, followed by corporate income tax. The other negative impact of the crisis is the increase in the number of unemployed people in different economic sector activities. According to the FFC & UNICEF, (2010:19) there is evidence that the number of unemployed people has increased the number of people applying for child support grants from government. As a result, there is an increased demand for social services and overall government expenditure places a spending burden on the provincial government.

Another factor is that of immigration into the province. According to Statistics South Africa (2009a), Gauteng province is the net gainer in terms of inter-provincial migration and it is estimated that the figure might rise to 450 000 people from other provinces in 2011, mainly in search of employment to better their lives, and some moving to be with family members. The Merafong municipality was demarcated back into Gauteng provincial boundaries in 2009, which also requires spending on infrastructure and provision of social services (GDF, 2009b:27). Immigration into the province adds more strain on existing infrastructure. As a result, there will be a need for increased infrastructure as these people require basic services,

and there will also be an increase in the number of school going children who require health services and formal housing. All these will put a strain on the existing expenditure burden due to an increased need for education, formal housing, quality healthcare and other services necessary to improve the quality of lives of the population. This could add to the existing infrastructure backlogs in the provision of basic services. To achieve sustainable development, the GPG needs to spend in order to implement poverty alleviation and job creation policies whose programmes include spending on infrastructure and provision of basic social services.

3.7 Conclusion

This chapter provided an overview of South Africa's Inter-governmental framework and focused on how expenditure in the province is financed given the functions assigned to it by the Constitution. As indicated, provinces are assigned the responsibility of providing services like education, healthcare, social welfare and provincial public transport, some of which are concurrent functions with the national government. However, provinces have a limited capacity to raise revenue as most profitable taxes are raised by the national level. As a result, provincial government is highly reliant on transfers from national government to fund the majority of its expenditure. These transfers are based on a formula of national government called the provincial equitable share which divides nationally raised revenue equitably among provinces.

Furthermore, the chapter provided an overview analysis of the Gauteng provincial budget as tool of fiscal policy as informed by the provincial priorities to achieve the developmental goals. When analysing the overall provincial revenue and expenditure, it was noted that the expenditure for some financial years was more than the revenue, indicating some revenue shortfall or spending burden for the province. The provincial expenditure by sectors indicated that the majority of expenditure goes to social services, including education, health and social development. It is in these sectors where the province experiences a high increase in the demand for social services due to factors such as the high poverty rate, immigration into Gauteng which causes an increase in the demand for infrastructure, and the negative impact of the economic crisis. Improvement in these sectors is necessary, however, for the province to achieve development and improve the lives of the population.

Chapter Four

Overview of the Theory of Taxation: The Case of Provincial Taxation

4.1 Introduction

Gauteng province has identified the need to increase spending on infrastructure and social services in the province as a result of the increasing demand for public services. To meet the increasing demand, the provincial government would require additional funding. One of the possible ways to acquire additional funds could be through increase in taxation. In the previous chapter the intergovernmental framework in South Africa was discussed, as well as how provinces are funded to deliver on the functions mandated to provincial government. As the province has limited revenue raising capabilities, one possibility to finance the increasing spending pressures, especially on social spending, could be through increases in taxation.

Agbor (2008:306) argues that taxation is the main instrument of fiscal policy used to mobilise financial resources to satisfy expanding spending demands. Apart from taxation, borrowing has been identified as another instrument of fiscal policy.

Chapter four provides the theory on taxation and discusses the possible taxes that can be raised in the province in an effort to increase provincial own revenue to alleviate some of the spending pressures. This chapter is organised as follows: section two provides the general theory on taxation which includes the impact of changes in taxes and, more importantly, focuses more on commodity taxes. Section three provides an overview of the provincial taxation and also the legal and administrative feasibility. This section also lists the possible taxes that the provincial government of Gauteng may impose and the proposed tax changes. Section four concludes the chapter.

4.2 General Theory on Taxation and Tax Incidence

Taxation takes on different forms. The mostly used definition is that it is the set of funds that economic agents pay to government. Any government around the globe needs tax revenue to

pay for the provision of public goods such as basic social services, public infrastructure and defence at all spheres of government. Agbor (2008:306) is of the view that the imposition of taxes is also used for the objective of redistribution of income and wealth. In addition to Agbor's view, the National Treasury (2010:71) states that the tax policy of any country should be supportive of the overall economic performance. For example, low tax revenue is taken into account when government follows a countercyclical fiscal policy which adjusts to the swings in the business cycle. Therefore, as the economy recovers, government may increase taxes to recover tax revenues.

Inherent in the theory of taxation is that there is a need to determine how taxes affect income distribution and how the burden of taxes is shared by the economic agents. This also depends on the type of tax as government has a number of tax components to raise tax revenue, with personal income and corporate tax being the main ones. Other taxes include social contributions and savings, consumption and capital gains tax, among others (National Treasury, 2010:73). More importantly is to note that the analysis of tax burden should be able to distinguish between statutory and economic incidence.

In as far as the tax burden is concerned, Rosen (1999:256) distinguishes between statutory incidence and economic incidence. The statutory incidence of a tax indicates who is legally responsible for the tax, while economic incidence is 'the change in the distribution of private real income brought about by a tax'. Sulija (2009:293) states that the analysis of tax burden permits one to understand what economic and legal interrelationship exists between the formal taxpayer and an actual taxpayer. Based on Rosen (1999) and Sulija (2009), the analysis of taxation is more concerned with who actually bears the burden of the tax. However, the difference between the economic incidences of a tax may differ from the statutory incidence due to prices changes (Hassett, Mathur & Metcalf, 2009:157). This difference between the statutory and economic incidence is called tax shifting, which states that the burden of many taxes may be shifted to the final consumer and therefore the tax may not have a legal effect on the taxpayer (Sulija, 2009:293). For example, indirect taxes are shifted to other persons who pay for the goods and services, and both the economic and statutory incidences could be determined or measured.

4.2.1 Tax Incidence

For any tax imposed, one could measure or analyse the effect of that particular tax on the distribution of economic welfare, sometimes referred to as tax incidence or tax burden. Hassett et al (2009:157) define tax incidence as a measure of the ultimate impact of a tax on the welfare of members of the society. However, the measurement of tax incidence would require certain assumptions. Some of the assumptions identified include the determination of the appropriate unit of observation and what is taxed in terms of goods, services or factors, and also the allocation of the tax burden between consumers and producers (Hassett et al, 2009:157-159). Rosen (1999:260) also illustrates the twofold analysis of tax incidence, that is the partial equilibrium and the general equilibrium analysis. Rosen (1999:260) also illustrates that, in terms of analysing the imposition of taxes, one need to distinguish between the partial equilibrium and the general equilibrium model.

Rosen (1999:274) explains that the partial equilibrium model takes into account the market in which tax is imposed without considering ramifications in other markets, while the general equilibrium model takes into account the ways in which various markets are interrelated. By making use of the general equilibrium model, one can analyse various taxes on commodities, income tax, general tax on labour and partial factor taxes given by the Harberger model, which provides for a simple two-sector, two-inputs model that can be applied to determine how a tax in one sector affects the prices of both factors in both sectors. According to the model, the analysis can determine the output and production effects of imposing these taxes. Fullerton & Heutel (2007:256) used an analytical model of general equilibrium incidence of capital tax and found that a tax on capital affected both capital and labour. This shows how owners of both factors are burdened by the tax as it passes through the economy via general equilibrium effects. However, the model depends on other economic considerations.

The analysis of both the partial and general equilibrium models depends on the price elasticity of supply and demand for the taxed good, service or factor (Rosen 1999:282). Further to the analysis of taxation by Rosen (1999), Black et al (2005:143) added that the price elasticity of both the demand and supply curves, which measure the quantity demanded and supplied of a

good or service, changes when price changes . However, the general equilibrium model analysis shows that a change in a tax on a single factor used in a particular sector can end up affecting the returns to all other factors in all sectors. According to Gooroochum and Milner (2004:18), the distributional effects of taxation under the general equilibrium model also depend on the composition of the use and the source of income of the different household groups. All these factors are considered to establish whether or not the tax has an excess burden, which is explained in the next section.

4.2.2 Taxation and Economic Efficiency

One of the properties of a good tax is economic efficiency. However, most tax changes affect the relative price of goods and services and the allocation of resources, thereby introducing inefficiencies. Black et al (2005:140) argue that efficient taxes are taxes that minimise the distorting effect on the choice of decision makers in the economy. Furthermore, Black et al (2005:141) argue that selective taxes cause an excess burden whereas general taxes do not. Price changes are key in determining who of the economic agents bears the burden of the tax, but the price changes also depend on other factors, such as the market structure, price elasticity of demand and supply and mobility of factors (Black et al, 2005:143-144). Thus, taxes impose a cost on economic agents over and above the tax revenue collected by government. This is referred to as the excess burden and is caused by tax-induced distortions (Rosen, 1999:303). The burden or inefficiencies differ depending on the type of tax and the good or factor which is taxed or the tax bundle.

Economic theory states that when the price of a good or commodity changes, due to tax or other policy changes subject to budgetary constraints, consumers would choose to buy the goods in such a way that it maximises their utility. Rosen (1999:292) refers to these changes as the income and substitution effects respectively. Rosen (1999:292) furthermore defines the income effect as the reduction or loss of income or the resources available to taxpayers, brought about by the changes in prices or as resources are transferred to government. The substitution effect, on the other hand, may result in a reduction in the country's resources by bringing about a move to less productive activity, translating into inefficiencies. In addition,

these two effects depend also on that good's demand elasticity, which reflects the way in which consumers respond to changes in the influencing factors of good demand in terms of direction and magnitude (Fullerton & Heutel, 2007:255).

When determining the incidence of the proposed environmental tax through an extension of the Harbeger model, Fullerton and Heutel (2007:256) found that the results are affected by parameters such as factor intensities and substitution effects. In an example used by Rosen (1999:292) the total loss in inefficiencies is measured by the 'deadweight loss' resulting from sales tax on commodity or goods and services. Fullerton and Heutel (2007:256) also states that the total welfare loss as a result of tax efficiencies is excess burden. Thus, if the price of a certain commodity or good is R100 and the price is pushed up by 10% or R1, the consumer will have R1 fewer to consume on that commodity or good as it would cost more relative to other prices.

For a tax on commodities or goods, both the income and substitution effects lead to a reduction in the consumption of that commodity. However, the effects may differ for tax on income. The tax would decrease the post-tax wages with ambiguous effects on the labour supply as it depends on the relative size of income and the substitution effects. The effect of increasing income tax might cause an increase in labour supply because people's work efforts increase as income declines (Rosen, 1999:292). On the other hand, the substitution effect reduces labour supply as the price of leisure is the price of the forgone income for not working. As a result, the price of leisure declines as the post-tax wage declines and more leisure is demanded, hence the decline in the labour supply. The two effects apply to goods or commodities as the imposing of unit taxes increases the price and reduces the quantity of the traded commodity (Rosen, 1999:292). The reduction in the quantity traded determines the efficiency loss of the commodity.

With the commodity tax, the tax burden is shared between the consumer and the producer, with the total effects measured by the consumer and producer surpluses. The theory of the sales tax on a commodity can be analysed through the changes in the consumer and producer surpluses. Assuming that the tax increases the price of a good or commodity from p to (p+tax),

both the consumer and produces will be affected in some way. The pre-tax consumer surplus, which is the additional amount that a consumer is willing to pay for a good above the market price rather than going without that good, would decrease. The producer surplus, which is the amount that producers benefit by selling goods at a market related price that is higher than the least that they would be willing to sell for will also decrease by the tax amount. The consumer surplus falls as the consumer pays a higher price for one unit. Also, due to the higher price, the consumer's willingness to pay for some units that were previously consumed decreases. From the production's side, the producer's surplus falls because the quantity sold is lower than prior to the tax and the price he gets for the same unit is lower (Rosen, 1999:292). Government revenue will increase by the amount of tax while the sum of the amounts decreased from consumers and producers is the net welfare or deadweight loss as a result of the tax. However, the loss of the consumer and producer is not lost as the taxes on the commodities result in government revenue. The net of the two effects is the welfare loss with sales tax which increases the commodity price above the competitive price.

The deadweight loss is affected by the price elasticity of both demand and supply, which was defined as the measure of how much the quantity demanded and supplied of a goods or service change when price changes (Black et al, 2005:143). Should the demand curve be elastic, the increase in the price of a commodity due to tax will not affect consumers' preference, and hence they will buy the same quantity of that good. As a result, there will be no deadweight loss because there was no change in quantity sold. The same effect takes place if the supply curve is inelastic as the quantity of commodity produced is fixed and not affected by changes in prices, resulting in no distortions (Rosen, 1999:292). Black et al (2005:142) also state that if inelastic, consumers tend not to adjust the quantities demanded by much if the price changes. This is because they are insensitive to any price changes compared to when the demand is elastic. If either the supply or demand curve is inelastic, no distortions will occur as there is no change in quantity. Therefore, deadweight loss is affected mainly by the elasticity of the demand curve – the more elastic the demand curve, the higher the decrease in quantity demanded after tax.

In summary, the deadweight loss may depend of three factors depending on different studies. Fullerton and Heutel (2007:255) stated that the incidence of environmental tax of pollution was affected by two factors: the intensities of the polluting and non-polluting industries and the elasticity of substitution in production between the polluting inputs and labour or capital. However, Rosen (1999:292) identified three factors determining the deadweight loss or excess burden. Firstly, the magnitude of the tax rate imposed, as the higher the tax rates, the bigger the distortion. The second factor is the price elasticity of demand and supply for the good. Lastly, the size of the market of a good or service being taxed also determines how consumers react to increases in prices due to taxation. All these factors contribute to the distortions caused by the imposition of taxes on the traded commodities or goods. But given all factors, for any tax to be considered efficient, its excess burden should be as small as possible.

4.2.3 Principles and Characteristics of a Good Tax

Many analyses and debates on taxation make reference to the theory of Adam Smith that a good tax policy should be in place to maximise tax revenue. Black et al (2005:123) mention that the properties of a good tax system are:

i. equity, meaning that taxes should promote equitable or fair distribution of income;
ii. economic efficiency, which ensures that the distortions caused by tax are minimised;
iii. administrative efficiency, for taxes to yield sufficient revenue but be efficient, administration and compliance costs should be kept low; and
iv. flexibility which means tax rates should adjust to economic conditions.

Adding to the debate of a good taxation system Murphy (2009:211) mentions the five reasons for imposing taxes as:

i. raising revenue;
ii. repricing goods and services in pursuit of social objectives;
iii. redistributing income and wealth;
iv. raising representation within the democratic process between government and those governed; and
v. reorganising fiscal policy.

In any argument for adopting a new approach to imposing taxation all these reasons must be taken into account. Murphy (2009:212) emphasises that tax must conform to equity, certainty, convenience and efficiency. As such, a good tax policy may not increase the burden on the society and must meet the basic principles of taxation as it is to be shared between the producer and consumer (Rosen, 1999:255).

4.3 Provincial Taxation, Legal and Administrative Feasibility

The SA Constitution gives provinces little authority to raise taxes revenue when compared to the national government. Section 228(1) of the Constitution (Act 108 of 1996) allows for provincial government to raise own revenue by imposing taxes, levies and duties other than income tax, value-added tax (VAT), general sales tax (GST), property rates or custom. The provinces may also impose flat-rate surcharges on any taxes imposed by national legislation other than corporate income tax, VAT, property rates and customs (RSA, 1996:132). However, when considering such taxation, the provinces must have considered the legal framework, and the administrative and economic feasibilities that have to be followed for provinces to impose provincial taxes (RSA, 2001:4). The other legal issue that has to be complied with is that the provincial government must conclude an agreement with the South African Revenue Services (SARS) as the collecting agent, or any other designated persons, to collect the provincial tax (RSA, 2001:6).

To maximise provincial tax revenue, the provincial government may impose taxes or change its tax policies on a number of provincial taxes in line with the Constitution and the Provincial Taxation Regulation Process Act of 2001 (Act 53 of 2001), referred to as the PTRPA . This can also be new taxes to increase the tax base or change the existing taxes. According to GDF (2010a:12), the province currently raises its own revenue from taxes on liquor licenses, casino and horse racing taxes and motor vehicle licenses as indicated in Table 3.2 of section 3.5.1 above.

In line with the Constitution and the PTRPA, Gauteng intends to increase the motor vehicle license by 10% in the 2010/11 financial year and is also investigating the possibility of taxes

such as a tourism levy and advertising fees (GDF, 2010a:22). However, for the province to institute any new provincial tax to increase the tax base, the Constitution provides that the province should take into account the constitutional and legal framework, as well as the economic and administrative feasibility. The increase in motor vehicle licenses by 10% is just an increase of tax rate in the existing tax base, which would only take into account the economic feasibility of the rate increase as the constitutional, legal and administrative feasibility have been established. Currently, motor vehicle license fees are collected by municipalities on behalf of the province and revenue collected is paid into the Provincial Revenue Fund (RSA, 1999:32).

In 2005 the Western Cape province also explored the possibility of introducing a provincial fuel levy in addition to the national fuel levy. (McDonald, Reynolds & Van Schoor, 2006:422). The process has not been instituted to date. Further to McDonald et al (2006:423), the province proposed a fuel levy of between 10 and 50 cents per litre, having considered the constitutional, legal, economic and administrative feasibility of the levy. The effective rate of the fuel levy is to be determined by the provincial Minister of Finance after consulting with the national Minister.

On the possibility of instituting a provincial tourism levy, the Tourism Business Council of South Africa, herein referred to as the TBCSA (2007:i), defines a tourism levy, also known as the bed levy, as a fee that is collected from the travel and tourism business clients and is utilised to fund approved international marketing projects in specific international markets. The provincial tourism levy will be levied in addition to the national tourism levy which is currently at 1% of tourism-related goods and services like accommodation and car hire rates. In line with the national tourism levy collection, the provincial tourism levy, if implemented, would be collected by the Tourism Marketing Levy of South Africa (TOMSA), which is administered by the TBCSA agency on behalf of the provincial government. The TBCSA is the official umbrella body that collects levies from the organised business in the South African travel and tourism industry as it is responsible for collecting and administering tourism levies. However, according to the TBCSA (2007:i), the tourism levy is used for the benefit of the tourism industry in South Africa. This may not solve the pressures on the provincial government, as the revenue raised from the tourism levy may be earmarked for tourism-related activities.

The province could also explore the feasibility of introducing an advertising fee or increasing the existing liquor and casino fees in line with the negative impact on the socio-economy associated with liquor and gambling. Other taxes include airport and provincial fuel levy as proposed by the Western Cape provincial government, or imposing green levies. However, for the purpose of this study, only motor vehicle licensing fees and a provincial tourism levy will be discussed. The discussion on the surcharge on Personal Income Tax (PIT) will also not be considered in the study due to the legal and political process that has to be followed when dealing with income taxes.

4.3.1 Proposed Provincial Tax Changes

This section provides an overview of motor vehicles as part of the transport sector and the tourism performance which is cross-cutting across a number of economic sectors.

4.3.1.1 Motor Vehicle Licenses

As the most populous province, Gauteng constitutes the largest share of motor vehicles. According to the Electronic National Traffic Information System, referred to as ENATIS, Gauteng had about 3.575 million vehicles at the end of 2008 which increased to 3.680 million vehicles in 2009, showing an annual increase of 2.93% (www.enatis.co.za, 2010).

Table 4.1 compares the number of vehicles in Gauteng and South Africa in 2008 and 2009. Also, according to GDF (2010a:12), motor vehicle licenses is the main source of provincial tax revenue in Gauteng having accounted for 68% and 72% of tax revenue in the 2008/09 and 2009/10 financial years respectively. According to Black et al (2005:121), motor vehicles are taxed using a graduated formula which distinguishes between vehicle type and weight. This translates into lower taxes or licenses for small cars while those that weigh more pay higher license fees. For the purpose of the study, motor vehicle licenses fall under the transport services sector.

Table 4.1: Motor Vehicle Population, Gauteng and South Africa, 2008 & 2009

	2008				2009			
	GP		SA		GP		SA	
Vehicle Class	**Number**	**%**	**Number**	**%**	**Number**	**%**	**Number**	**%**
Motor cars	2,201,397	62%	5,275,541	57%	2,256,780	61%	5,411,093	56%
Minibuses	108,837	3%	279,976	3%	110,845	3%	282,941	3%
Buses, bus trains	13,819	0%	42,893	0%	14,916	0%	45,217	0%
Motorcycles	125,751	4%	324,172	3%	141,423	4%	362,400	4%
LDV's (Light load vehicles)	613,328	17%	1,897,078	20%	626,637	17%	1,946,292	20%
Trucks (Heavy load vehicles)	120,953	3%	318,118	3%	121,769	3%	321,604	3%
Other self propelled vehicles	33,306	1%	203,420	2%	34,081	1%	213,632	2%
Total self propelled	**3,217,391**	**90%**	**8,341,198**	**90%**	**3,306,451**	**90%**	**8,583,179**	**90%**
Caravans	40,463	1%	103,774	1%	40,923	1%	105,462	1%
Light load trailers	263,826	7%	682,396	7%	278,239	8%	719,034	7%
Hight load trailers	48,574	1%	144,408	2%	49,296	1%	146,402	2%
Total trailers	**352,863**	**10%**	**930,578**	**10%**	**368,458**	**10%**	**970,898**	**10%**
All other vehicles	5,317	0%	32,732	0%	5,249	0%	33,704	0%
Total number of live vehicles	**3,575,571**	**100%**	**9,304,508**	**100%**	**3,680,158**	**100%**	**9,587,781**	**100%**

Source: www.eNatis.co.za, 2010

4.3.1.2 Tourism Levy

This sub section provides an overview of tourism as a sub-sector in Gauteng. Song, Kim and Yang (2010:5) define the tourism demand for a particular destination as the quantity of a tourism product, that is a combination of tourism goods and services, which consumers are willing to purchase during a specified period under a given set of conditions. As a result, measuring tourism economic activity that is derived from both domestic and international tourism in South Africa, is characterised by numerous challenges given the difficulty in measuring such activity directly, as, historically, there has been a lack of a common methodology for the measurement and categorisation of tourism data. In order to address this challenge more detailed information is being collected by Statistics South Africa on the travel behaviour and expenditure patterns of tourists, with the aim of quantifying the relative contribution of the tourism sector to the economy (Statistics South Africa, 2008c:10).

Since 2004 the tourism sector in Gauteng has exhibited continuous growth, having grown by 3.1% in 2003 to 10.5% in 2007 (Global Insight, 2010). These growth rates outstripped both the

global and South African average growth rates over the same period. The Gauteng Tourism Authority (2008:4) states that the core market of foreign tourists is from other African countries and this share represents 75% of arrivals in Gauteng, while the drivers of tourism growth were from the Americas and Asia & Australians with 16% and 18.4% growth rates respectively.

Shen & Tsui (2009:627) argue that tourism taxes are welfare-enhancing since the host country can, to a large extent, shift the tax burden to international tourists. They found that, in Mauritius, taxing tourism was more efficient and equitable than levying tax on other sectors. According to the Gauteng Tourism Authority (2008:7), Gauteng accounted for about 4.48 million of the total 9.1 million or 49% of foreign tourists who visited South Africa in 2007. This percentage of tourists would increase if inter-provincial tourists were added. The Gauteng Tourism Authority (2008:8) also reports that Gauteng received about R19.7 billion in provincial revenue from tourism. The TBCSA (2007:25) further reports that of the total tourism levy revenue collected, about 61% was collected in Gauteng. This indicates that tourism is a growing economic sector and may be a major source of income and employment creation, and therefore it is identified as a possible source of tax revenue in the province.

Based on the provincial statistics, there would be a high tax base for tourism taxation to generate additional provincial own tax revenue if the provincial tourism levy were to be implemented. According to Gooroochurn & Milner (2004:1), to be in line with the economic efficiency of taxation, the extent to which tourism is taxed is important for the design of the tourism and taxation for tourism-dependent, developing economies. However, if the province were to institute the proposed provincial tourism levy, it may decide how to spend the revenue raised in line with provincial government's strategic priorities which resulted in the institution of the levy in the first place.

Bird (1992:1145) also argues that developing economies tend to under tax their tourism sectors. Gauteng is considered to be developing, but not dependent on tourism, and therefore instituting a tourism levy may be based on both Gooroochurn & Milner (2004) and Bird (1992:1145). However, tax revenues on tourism would also be dependent on whether the demand for tourism commodities is inelastic or not. If the demand for tourism products is

inelastic, there is scope to generate more revenue (Gooroochurn & Milner, 2004:2). The tax on tourism may be on tourist operators or consumption taxes directly paid by tourists, but, for the purpose of simulations, tourism levy will apply to the sector specific for tourism in terms of the model.

With regard to the base of the proposed tourism levy, Gauteng has shown to be the largest tourism destination. The TBCSA (2008:24), which is responsible for collecting the tourism levies in South Africa, recorded that it collected R395.2 million in levies between 1997 and 2007. According to them, tourism demand elasticity provides “unit-free” measures of the sensitivity of an explanatory variable to tourism demand, given a pre-specified functional relationship. As such, how the goods in the tourism sector reacts, given the price increase, due to the imposition of a tax will depend on how elastic the demanded tourism goods are. An empirical study by Song et al (2010:2) concluded that the income elasticities of tourism demand, especially the demand for international tourism, are generally greater than one, thus indicating that tourism is a luxury. However, factors such as income, the type of tourism and length of stay would also determine how consumers react to price changes in tourism goods.

4.4 Conclusion

In this chapter the theoretical overview of taxation was analysed through focusing on tax incidence and economic efficiencies. The discussion centred on the tax burden or incidence resulting from imposing taxes on economic agents and determining who actually pays for the burden. Accordingly, the tax burden, which measures the ultimate impact of distortions in price changes due to taxation on the welfare of the society, depends on a number of factors. These are the price elasticity of demand and supply, the income and substitution effects and the market structure of the goods being taxed.

The chapter further discussed the importance of having a good tax system when government imposes taxes to maximise revenue. The main properties which need to be in place are equity, which states that taxation should promote fair distribution of taxed income, and economic and administrative efficiencies which are concerned with minimising the distortions caused by tax.

It was also important to discuss the legal framework for provincial taxation that should be considered before imposing or increasing provincial taxes. Chapter five provides a theoretical description of the CGE model and how it is applied.

Chapter Five

Theory and Application of the Computable General Equilibrium Model

5.1 Introduction

The previous chapter provided an overview of the theory on taxation and the different taxes that the provincial government can impose given its mandate in an effort to increase provincial own revenue. In this chapter the aim is to provide a theoretical background of the Computable General Equilibrium (CGE) model as the tool that will be used to analyse the impacts of possible changes in taxation by the Gauteng province. The characteristics of the CGE model will assist in this specific analysis as the model provides an economy-wide analysis of the result of a change in provincial taxation on a number of economic variables in the province.

This chapter is divided as follows: section two provides an overview of what the CGE model is before providing the theory on the Social Accounting Matrix (SAM) as the building block of the CGE model. The third section provides an overview of the Gauteng provincial CGE model which will be used for simulations in the study. This section will also provide a mathematical representation used in the provincial CGE model. The fourth and final section provides a summarised conclusion.

5.2 Computable General Equilibrium (CGE) Model

A CGE model is an economy-wide model consisting of a large number of equations and assumptions that describe the economy. The equations are derived from economic theory defining the behaviour of economic agents which follow rules captured by fixed coefficients (Lofgren, Harris & Robinson, 2002:8). By solving the model equations, one can measure the impact that changes in various factors such as policy will have on the whole economy. Thus, the model has been designed and used to simulate the impact of exogenous shocks, such as changes in import prices or government expenditure or injections or changes in policies, on the overall economy, for example on income distribution, poverty and macro-economic indicators. Examples of CGE models built for the purpose of the analysis of poverty and income

distribution include Decaluwe, Patry & Sarvard, (1998) and Chitiga, Mabugu, & Kandiero, (2007)).

A CGE model requires a SAM or an Input-Output table as a database to solve the set of equations and it requires a computer software package that links the model equations, database and the solutions. However, for the purpose of this chapter, only a SAM will be discussed. The SAM provides initial or base-year data for CGE and therefore makes CGE a static model. The CGE model provides an acceptable framework within which the economic impact of development projects and policy adjustments can be reviewed and assessed at both national and provincial/regional levels. Therefore, the CGE model follows the SAM disaggregation of factors, activities, commodities and institutions (Lofgren et al, 2002:8 and Davies & van Seventer, 2006:128)

5.2.1 Social Accounting Matrix as a building block of the CGE model

The genesis of the Social Accounting Matrix (SAM) goes back to Sir Richard Stone's work on social accounts in 1959. Santos (2005:10) and the UN (1993:483) define a SAM as a comprehensive, economy-wide database in a square matrix that contains information about the flow of resources that takes place among the different economic agents that exist within an economy, including business enterprises, households and government, during a given period of time, usually one year. The SAM highlights interdependence between the production structure of industries, supply of products from imports and domestic production, generation of income for each industry, redistribution of income among households and detailed expenditure patterns of households and other institutions. To some extent, the SAM has been applied to an 'analysis of interrelationships between structural features of an economy and the distribution of income and expenditure among household groups' (UN, 1993:483). A SAM captures the monetary value of economic transactions and organises them into a series of accounts reflecting the economy of the country or region (UN, 1993:461). In the SAM, all rows represent receipts while columns capture expenditures by economic agents or between institutions.

5.2.2 Structure of the SAM

There are six major accounts that form the basis of any SAM. They are as follows (UN, 1993:461 and Statistics South Africa, 2004):

i. Activity accounts capture the value of products/goods and services produced in an economy, also known as a goods and services accounts.
ii. Commodities accounts capture the value of goods and services that are traded in the economy. It buys goods from domestic producers and foreigners (imports) and sells them to demanders, including exports. The commodity account defines Gross National Product (GNP) from the expenditure side.
iii. Factors accounts capture the value of payments to factors of production (labour, capital and land). Most of the SAMs capture only the labour and capital factors of production which receive income from sale of their services to production activities in the form of wages and rent and net factor income from abroad. In turn, revenues are distributed to households as labour income. Factor accounts include labour and capital while labour is also disaggregated by skill levels, namely skilled, semi-skilled and unskilled (Statistics South Africa, 2004).
iv. Institutional accounts capture the value of transactions among institutions, which include the households, government and business enterprises. Households are further broken down into subgroups by socio-economic groups to show the significance of each. Household income consists of factor income, transfers from government and the rest of the world in the form of remittances and households spend the income on consumption of goods and services, transfers to government (paying taxes) and other households (inter-household transfers) and savings to be channelled to the capital account. Another institution is that of government, which spends on goods and services, pays salaries and makes transfers to households and business enterprises through social grants and subsidies. Government's savings is also channelled to the capital account. In the South African SAM, households are disaggregated into four population groups and their incomes define the 12 income groups called percentiles.

v. Capital accounts reflect the savings and investment in the economy by institutions. Total savings is the sum of savings by households, government, business enterprises and foreign or the rest of the world. Total savings is used as investment.

vi. The rest of the world records the value of trade (imports and exports) between domestic and foreign residents. The economy receives income from the rest of the world for the export of goods and services in the commodities' account, intermediate goods, factor payments and current transfers or non-factor income earned. Payments to the rest of the world include imports, factor payments and non-factor payments.

According to the UN (1993) a SAM serves many purposes as it is used in a wide variety of goals. Firstly, it is a framework within which information pertaining to the economic and social structure of the region can be described in a complete and consistent way. Secondly, it forms a statistical basis for building an econometric model. This new class of economic model is used for the purposes of forecasting and policy analysis. In many instances, a SAM has been applied to an analysis of the interrelationship between structural features of the economy and the distribution of income and expenditure among household groups. According to Malan (1998:78) a SAM "incorporates all major transactions within a socio-economic system" and is able to provide a flexible and yet consistent framework for socio-economic analysis. This is done by disaggregating households in the province for all population groups to show the significance of each in the economy. This is one of the advantages of using a SAM in measuring the impact of provincial government spending on the economy, specifically on poverty and income distribution. For example, Malan (1998) and Duchin and Hubacek (2003) used the multiplier analysis to study the impact of changes in exogenous variable on the flow of income on the economy.

Lastly, another advantage of the SAM is that it groups population groups according to their income generated. Pyatt & Round (1985), Thorbecke (1994) and Decaluwe, Savard, & Thorbecke (2005) used SAM and CGE models to study the income distributions and redistributions. The different income groups for households are used to measure income distribution from which a Gini coefficient is calculated. Because of its characteristics, the provincial SAM is a useful tool for analytical purposes. A SAM can be used to do impact

studies of new infrastructure on the economy; it can quantify the impact of new projects or changes in policies initiated by both government and private sector on employment creation, and can also be used to forecast future economic growth of the province, thereby highlighting potential sectors from which growth will come (Pyatt & Round, 1985).

5.2.3 Structure of the Gauteng Provincial SAM

The 2004 Gauteng Provincial SAM was compiled by Conningarth Economists comprising with six accounts, namely the activities, commodities, factor, institutional, capital and rest of the world (RoW) accounts (Conningarth Economists, 2007). The activities or production account consists of 46 activities, while the commodities account records the demand and supply of 47 commodities in the economy and traces out the sources and destinations of the commodities. A detailed list of the activities and accounts is provided in Appendix 5.1.

The factor account consists of labour and capital factors from which there are income flows. Labour is further aggregated by skill levels, population groups and remuneration according to skill, and also by occupation and population groups. A detailed list of skills is presented in Appendix 5.2.

Table 5.1 provides a summarised version of the SAM that can be disaggregated from the six main accounts into sub-matrices or sub-accounts with the explanation of the notations below. Table 5.3 provide a description of the notations used in Table 5.1

The household account has been sub-divided into 48 different household types, corresponding to the four population groups and twelve income categories per group. Households are disaggregated by population group and income group or 12 percentiles (P), whereby P1 represents the poorest 5% of the population and P12 the richest 5%of the population as provided Appendix 5.4. To conform to the System of National Accounts, income must equal expenditure and therefore income and expenditure groups would be equal. However, to conform to the provincial CGE model, the percentiles are referred to as households denoted by H01 to H12.

Table 5.1: Gauteng SAM Framework

Expenditure / Receipts		Activitie	Commodit	Factor Payments		Enterprises	Households	Governme	Capital Account	Rest of World	Total
				Labour	Capital						
		1	2	3	4	5	6	7	8	9	
Activities	1	-	P	-	-	-	-	-	-	-	g
Commodities	2	X	-	-	-	-	C	G	I	E	q
Factor Payment	3	Wa	-	-	-	-	-	Wg	-	We	el
Factor Payment Capital	4	Fa	-	-	-	-	-	Fg	-	Fe	ec
Enterprises	5	-	-	-	Qe	-	-	TrgE	-	-	Zu
Households	6	-	-	L	-	Qv	TrhH1	TrgH1	-	TrrH	Zh
Government	7	Ti	Ta	-	Tf	Tu	Td	TrgG	-	TrrG	Zg
Capital Account	8	-	-	-	-	Quv	Sh	Sg	-	-	Zc
Rest of World	9	-	M	Wl	Qr	-	TrhH2	TrgH2	Sa	-	Za
Total		G	Q	el	ec	Zu	Zh	Zg	Zc	Za	

The Government Account has been sub-divided into three sub-accounts: national, provincial and local government. The provincial government is further sub-divided by functions of government, including education, health, welfare, housing, public works, transport and other. The RoW account has been sub-divided between the rest of South Africa (RSA) and the RoW (outside the borders of South Africa). The following is a list of the number of components that make up each account:

i. Activities - 46 components
   Commodities - 47 components
ii. Factor payments: Labour - 44 components
iii. Factor payments: Capital - 4 components
   Enterprise - 4 components
   Households - 44 components
iv. Government - 9 components (Expenditure side)
v. Capital account - 2 components
vi. Foreign Trade - 6 components

5.2.4 Limitations of SAM

A SAM has limitations to its application with regard to policy analysis. Thorbecke (1994:18) identifies the main limitation as, firstly, that of assuming fixed coefficients for inputs into production and consumption pattern of households. Secondly, prices are assumed to be constant and labour supplies are perfectly elastic, showing no supply constraint. Thirdly, although prices can be endogenised or allowed to change, it will still be difficult to see supply responses and therefore adjustment in household consumption patterns. In order to address the fixed coefficient of the SAM model, the use of a Computable General Equilibrium (CGE) model is preferred.

5.3 Overview of the CGE model

The extension of the SAM database to the CGE model brought one major innovation for modelling, namely that the CGE is able to overcome the limitation of the SAM as one is able to endogenise the poverty line and the resulting poverty incidence among the different socio-economic household groups (Decaluwe, Patry, Savard & Thoberke, 1999:1).

Lofgren et al (2002:8) define a CGE model as an economy-wide model consisting of a large number of equations that describe a specific economy for all sectors. The model can be built at national, regional or multi-regional levels or for urban and rural regions. All CGE models have similar features, but different uses as provided in the section below.

5.3.1 Features of the CGE model

Various authors (Adelman & Robinson, 1978 and Lofgren et al, 2002) agree on a number of distinct features for CGE models for all accounts in the model. They are as follows:

5.3.1.1 Activities, Commodities and Factor Markets Accounts

i. The equations are derived from economic theory about the behaviour of economic agents or actors, households, government and the enterprises. These equations include

a set of constraints that have to be satisfied by the economic system (Lofgren et al, 2002:8). In any stylised CGE model, the number of equations must always equal the number of endogenous variables. The model's equations need to be translated into a modelling language and require a computer software package that links the model equations, database and the solutions. .

ii. Prices in the model guide the demand by economic agents, but are determined by the supply and demand function (Giesecke, 2002:250). Therefore, the market clearing conditions apply for commodities and primary factors.

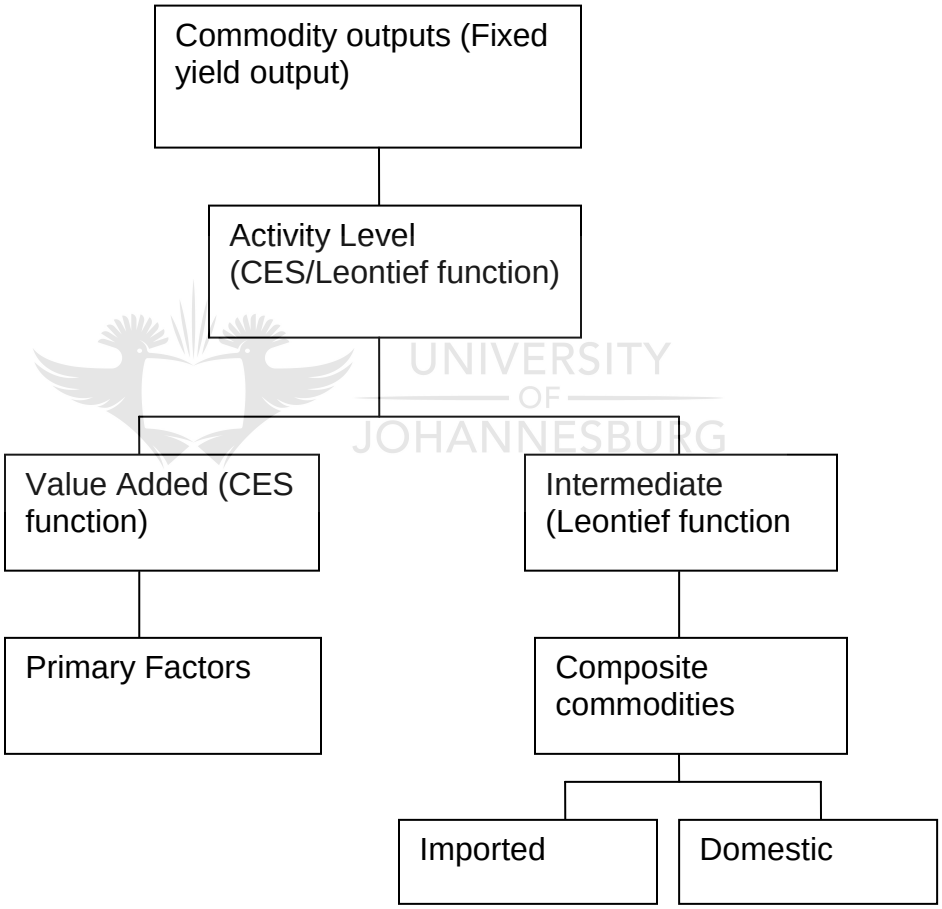
iii. The assumptions of neoclassical theory govern the behaviour of the model's economic agents (Adelman & Robinson, 1978:3). These assumptions include optimisation behaviour assumptions which involve issues around cost minimisation and profit or utility maximisation, while competition involves markets that aim to reduce production prices (Nicholson, 2005:6). Thus, each of the industries or activities engaging in production is assumed to minimise costs, subject to constant returns to scale, production technology and given input prices. Furthermore, households are assumed to be maximising utilities while investment of new capital to industries is based on expected rates of return.

iv. The substitutability between imported and domestic supply for each commodity is modelled using the constant elasticity of substitution (CES) assumption of Armington. The Armington assumption allows for product differentiation through imperfect substitution (Armington, 1969). This assumption gives CGE models the advantage of being practical by avoiding the extreme specialisation and price fluctuations associated with trade (McDonald et al, 2006:427). Lofgren et al (2002:14) states another advantage of the use of this assumption as "giving the domestic price system a degree of independence from international price due to trade and prevent unrealistic export and import responses to economic shocks".

v. The alternative to the CES function is the Leontief function which refers to the quantities of value added and intermediate input. The South African model (McDonald et al, 2006:427) explains that production of commodities uses a two- stage nested production process. Primary inputs are combined to form value added using CES technology with optimal ratios of inputs used, determined by relative factor prices as explained by Figure

5.1. Thus, in the first top-level stage, aggregated intermediate and primary inputs, also known as 'value added', are combined using CES technology. The second stage involves activities accounts using intermediate inputs in fixed proportions relative to intermediate input used by each sector. The CES for the labour factor provides for skilled and unskilled labour as good substitutes if a given change in the demand for labour leads to a change in the ratio of any of the two skills required. Thus, a change in price ratio of factor inputs causes changes in the input ratio.

Figure 5.1: Production Technology

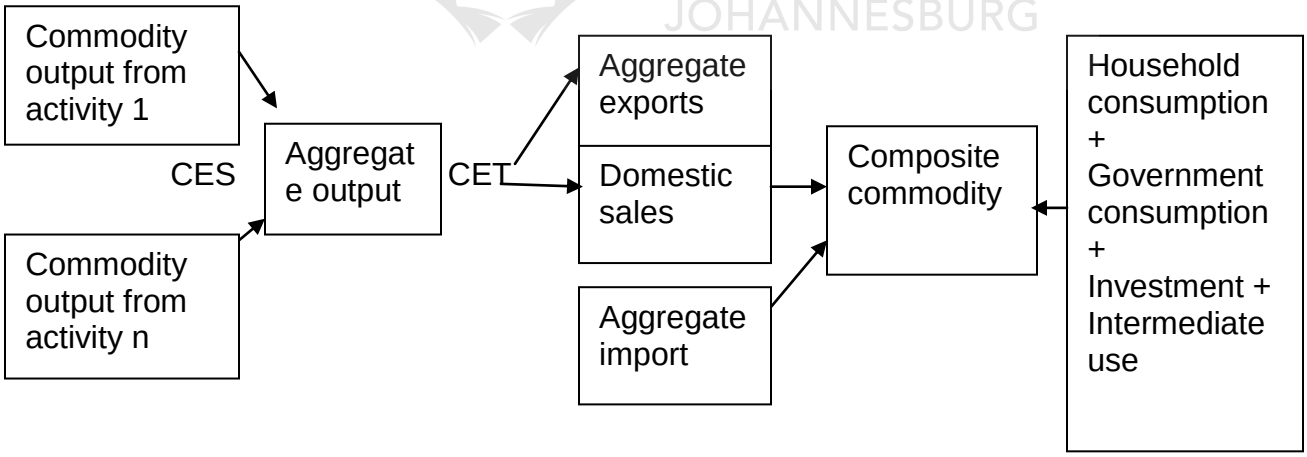


Source: Adapted from Lofgren et al, 2002

vi. Commodities demanded are determined by the domestic demand for domestically produced commodities and exports demand for domestically produced commodities. This is based on the assumption of imperfect transformation between domestic and export demands. Domestic demand for commodities consists of the sum of demands for

household consumption, government consumption, investment, intermediate inputs or value added and transaction inputs. This definition is in line with gross domestic expenditure (UN, 1993:5). As some commodities are imported, all domestic demands are for a composite commodity made up of imports and domestic output. Nicholson (2005:169) defines composite commodity as "a group of goods for which all prices move together" and the goods can be treated as a single commodity. The demand for imported commodities is in line with the international supplies that is elastic at any given world prices. Lofgren et al (2002:13) state that prices paid by domestic demanders include import tariffs fixed at ad valorem rates and cost of moving the commodity from borders to the demanders, also known as transport margins. These composite commodities follow the assumptions of imperfect substitutability and Armington as in the activity and factor market accounts (Lofgren et al, 2002:11). The distribution of aggregate output to exports and domestic sales and those of domestic sales and imports are based on CET assumption. Aggregate output is determined by CES assumption.

Figure 5.2: Flow of Commodities



Source: Adapted from Lofgren et al, 2002

vii. Different factor market closures exist for the production and factor markets accounts. Market closures are mechanisms through which supply and demand for factor markets reach equilibrium (Lofgren et al, 2002:9). There are three factor market closures in CGE models, which is the number of features of the economy that may be endogenous or

those that can be changed. The first closure relates to the quantity of each factor supplied at full employment. As a result, wages vary to ensure that the sum of a factor demanded, be it from labour or capital, from all activities or production must equal factor supplied. The second closure assumes that a factor is unemployed and real wages are fixed, especially where "there is considerable unemployment for a given labour category. In this closure, wages are fixed or exogenous while the supply of a factor is flexible and can change. Lastly, each factor is activity-specific. Under this factor market closure, quantities of factor demanded and the economy wages are fixed, while activity-specific wages and factor supply are flexible. The first two factor market closures are preferred for long-run analyses, while the third closure is preferred for short-run analyses. According to Adelman & Robinson (1978:4), a CGE model is comprehensive in its degree of closures. Depending on what has to be modelled, household and income recipient accounts are determined endogenously based on their behavioural specifications. A detailed explanation of different closures is presented in section 5.3.1.3.

5.3.1.2 Institutions Accounts

According to the aggregate SAM framework, the CGE model is also represented by households, government, business enterprises and the rest of the world. The CGE model applies the same framework as the SAM, especially the households' disaggregation. Households receive their income for rendering factors of production to activities or production accounts and also from the transfers from other institutions like government and other households. In terms of behavioural relationships among households, activities and trade, households are assumed to choose a commodities mix they consume to maximise utility (McDonald et al, 2006:427). Different forms of utility functions exist for household demands. These include homothetic and non-homothetic utility functions (Nicholson, 2005:82-87). The first type of a utility function is a homothetic function, which shows the share of households' budget to depend on relative prices and not income. The homothetic function is used in the model and examples include the Stone-Geary, Leontief and CES as they allow for subsistence

consumption expenditures. Thus, households' consumption of commodities is also composite commodities.

The second type of household utility function is the non-homothetic function which means households' budgets depend on both the relative prices and income. Therefore, a change in income with prices held constant will result in a change in budget shares. An example of a non-homothetic function is the Klein-Rubin function which allow for non-unitary elasticity of expenditure depending on the commodity mix demand. The type of household utility function in the CGE model also depends on what needs to be analysed and, mostly, on the economic structure.

The production and demand for commodities from the RoW accounts follow the CES technologies (McDonald et al, 2006:427). Like the activities and factor market accounts, the demand for commodities is determined by the demand for goods produced locally and the quantity of exports demanded by the RoW. This demand follows the assumption of imperfect transformation.

The third institution is the government and its demand for commodities. Government levies various taxes for income and spends it on its demand for commodities, which are source-specific transfers to households, enterprises and RoW. Like households, government spends on other institutions. As it is source-specific, government demand for commodities trends with that of households.

The last institution is the business enterprise from which most of the household income is derived. Input decisions for and allocation of investment by enterprises are also based on CES like other institutions, and investment is mainly based on the rate of return for profit maximisation to be in line with the neoclassical theory (Adelman & Robinson, 1978:3).

5.3.1.3 Macro-Economic Balances

Robinsons (1991) identifies the three macro-economic balances necessary for all CGE models as the current or government balance, the current accounts of the Balance of Payments, including the trade balance, and lastly the Savings-Investment balance. The decision on closures is different for different accounts. Model closures are a choice of exogenous variables for which change will affect the economy.

The nature of the analysis essentially determines the appropriate closure required or chosen. The model closures are adapted depending on the assumptions made in respect of the time frames that are relevant to the particular shock under question. Thus, closures are either applicable for short or long run and assumptions can be made from either the demand or supply side. Lofgren et al (2002:13) states that the choice of one of the three closures does not constrain the choice for the other two. As indicated above, a CGE model is only possible if a proper database exists, usually a SAM, as it is used to solve the systems of equations. However, the model requires translation into a modelling language and implementation in a software programme to be solved (Lofgren et al, 2002:1). Different software exists to solve CGE models and the most used is the General Algebraic Modelling System (GAMS) and the GEMPACK programme but the theory behind CGE models is the same. By solving the model equations, one can measure the impact that changes in various factors, such as policy, will have on the whole economy.

5.4 Types of CGE models

Different types of CGE models exist for different purposes. There are two main types of CGE models that can be applied: the comparative static modelling and the dynamic model. The features of the model also determine whether a CGE model is of comparative or dynamic nature.

5.4.1 The comparative static model

Comparative static CGE models attempt to answer “what if’ questions in relation to normative economics (McDonald et al, 2006:427). The SAM is a database applicable to a specific year but as the modelling or simulation and changes can take place in years later than the actual year that the SAM was compiled for the main feature of the comparative static CGE model is that it shows the effect of policy shocks in terms of changes from the initial equilibrium or base data. The other feature is that the model consists of a great number of exogenous variables such as tax rates, factor endowments and technical coefficients. Examples of questions modelled include, but are not limited to, the following:

i. What if productivity in the agricultural sector increases by 1%?
ii. What if government increased the tax rate by 4%?; and
iii. What if imports were to be liberalised for the textile industry?

5.4.2 Dynamic models

Dynamic CGE models provide modellers with the tool to forecast the structure of the economy (Giesecke, 2002:249). Such forecasts are useful in policy analysis as they provide an explicit base case against which the impact of a policy will be compared. Unlike the comparative static CGE model, a dynamic model allows for tracking the path taken in economic variables and is useful for assessing inputs or costs adjustments (Giesecke, 2002:249 and Giesecke & Madden, 2006:230). The dynamic model also allows for predictable changes in the economic structure to influence measured effects of policy. Similar to the comparative static CGE model, the dynamic model also uses the SAM database compiled for a specific year, but the deviations from base cases is over a number of years. The study makes use of the comparative CGE model.

5.5 The Provincial CGE model

In this section we present the structure and mathematical presentation of the provincial CGE model. Regional (also referred to as provincial for South Africa) CGE models are extensions of

national CGE models with macro-economic balances applicable to specific regions. Therefore, the provincial or regional CGE model of Gauteng province is an extension of the University of Pretoria General Equilibrium Modelling (UPGEM) for South African based on the OraniG01 model.

The national CGE model was customised to the provincial level using both the 'Top-Down' and 'Bottom-Up' approaches of building models. A 'Top-down' approach is where national accounts were used to calculate some provincial accounts based on shares. Thus, a national SAM is extended to provinces by breaking down a quantity of variables according to region (Giesecke & Madden, 2006:231). With the 'Bottom-up' approach, provincial accounts are recorded and added to form national accounts. However, this approach does not allow for region-specific supply side shocks or supply constraints, which limit the applicability of using this approach. Also, only national prices are applicable (Giesecke, 2002:250).

The 'Top-down' approach creates CGE models for each region or province based on inter-regional flows, fiscal transfers and the national balance of trade constraint (Giesecke & Madden, 2006:231). However, the limitation of this approach is that there is a lack of data at provincial level to build such models. As both approaches have limitations, the use of both approaches is preferred.

5.5.1 Overview of the Provincial CGE Model

As the CGE model requires a SAM as a database, it follows the same framework as the 2004 provincial SAM and national CGE models. However, the activities and commodities of the SAM were aggregated to form 27 activities and commodities to be in line with the national UPGEM model. The provincial CGE model resembles that of a small open economy characterising a developing country that has no influence on the international economy and prices, hence a price taker. The following assumptions are applied to the provincial CGE model:

i. All the neoclassical assumptions of CGE models are applied and the Armington assumption governs imperfect substitution between regional and national suppliers.

ii. Details of taxation, spending and transfer activities are given according to the two levels of government, which are national and provincial.
iii. Inter-regional migration is determined by inter-regional wages or income deviations.
iv. There is partial price adjustment mechanism as real wages are sticky in the short run and adjust in the long run.
v. As the model is for a small economy that cannot influence prices, the nominal exchange rate is fixed as a numeraire or to a number 1.
vi. The provincial model is the same as South Africa's UPGEM, but the following are applicable to the provincial model:
    a. Workers are split by skill and population group.
    b. Households are split by income and population group.
    c. For a given commodity, the domestic and import ratios and shares of margin and tax in purchaser's price are assumed to be common over households. Also, there was an optional link between wage income by population group and household spending by population groups. A regional split has been made to UPGEM in order to show Gauteng variables. The regional shares were calculated based on the national and provincial SAMs.

The provincial model is implemented using the GEMPACK software programme and is solved in percentage changes. Giesecke (2002:229) used the regional CGE model to identify causes of divergence between regions due to policy changes in the regions. As it is based on the provincial SAM, the provincial CGE model also identifies agents in the economy and maintains accounting relationships in the SAM so the income and expenditure are always balanced.

An overview of the provincial CGE model in mathematical notation including the system of equations used in the CGE model based on Harrison and Pearson (1996). The equations of the CGE model are nonlinear as the model is square like the SAM, and the number of equations must equal the number of variables for all endogenous and exogenous variables. The equations are presented per the main accounts of the SAM and one for prices. The model consists of descriptions of data to be read and how the data are to be used to calculate values of parameters and pre-simulation values of other levels' variables occurring in equations.

Before defining the equations, it is necessary to have the following: variables (levels or linearised), SETs used to describe different variables, data to be read, formulae to calculate pre-simulation values of variables and parameters not read in the data and, finally, logical names of the associated data files and the headers on the data files usually called HEADER Array files. The system of equation used is listed in Appendix 5.5.

5.6 Conclusion

This chapter provided a theoretical overview of the CGE models and the theory of regional extension of the Gauteng provincial CGE model. An overview of the SAM was provided as it is the building block of CGE models. An attempt was made to point out the important principles underlying a SAM as a building block of the CGE model and also the principles the CGE model calibrated from the provincial SAM, as well as to specific shortcomings, which are inherent in the analysis based on SAMs. This chapter also provided a mathematical representation of the provincial model. Against this background, the application of the CGE model and analysis of the findings using the provincial CGE model will be discussed in the following chapter.

Chapter Six
Economic Study of Selected Provincial Taxes

6.1 Introduction

This chapter uses the provincial Computable General Equilibrium (CGE) model, discussed in chapter 5, to explore the impact of an increase in motor vehicle licensing fees and of the proposed provincial tourism levy on all tourism-related products. The effects of those shocks will be assessed on socio-economic variables such as GDP and employment as well as on provincial government revenues. Both simulations will be based on the commodity taxes of the related products of motor vehicles and tourism, respectively. The transport and related services sector will be simulated using 'transervice' sector, and hotel accommodation and restaurants, using 'hotelrest' sectors as proxies in the model. As a result, it is not possible for the simulation to single out explicitly, the sectors of vehicles and tourism. Consequently, the shock will be applicable to the transport related commodities which include sales tax on all transport in the provinces. The same applies to the sales tax on tourism services. Therefore, the simulation does not distinguish between types of motor vehicle or whether the levy is applicable to a particular tourism commodity.

6.2 Model Closures

Different closures are used for different reasons. To evaluate the impact of the taxation on economic activities in Gauteng, we use the standard comparative static provincial CGE model as explained in chapter 5. The model assumes that production factors are exogenous. This is based on the fact that the Constitution states that no taxation in the province may materially and unreasonably prejudice the mobility of labour and capital. Also, borrowing from McDonald et al (2006:427), skilled labour is deemed fully employed while semi- and unskilled labour are assumed not fully employed. The consumption preferences are assumed to be fixed.

Savings-investment closure is used since the model is unable to capture future welfare changes associated with current changes in investment. The closure applied for this particular

impact study was a short-run closure. The capital stock in each sector is assumed fixed, while the rate of return on capital is allowed to change.

As the economy of Gauteng is small and does not influence international markets, the world prices are assumed to be fixed or exogenous in the model. The provincial government is not allowed to borrow from other provinces and the rest of the world (RoW). As the aim of this study is to assess how the provincial government can raise revenue to finance the increasing demand in social services that will result in the increase in government expenditure, the simulations are carried out where sales tax on transport and related services and hotel accommodation are increased by 10%. As stated earlier, these accounts are used for the proxy of motor vehicle licence fees and tourism levy. A balanced budget closure is used where an increase in taxes translates into an increase in government expenditure through the reduction in households' disposable income as the adjustment factor. Variables such as employment, the rate of return on capital, all demand side variables and the trade balance were treated as endogenous within the model, and all other variables are endogenous.

6.3 Simulation Scenarios

Table 6.1 provides a summary of the four simulation scenarios that will be performed to determine the magnitudes and directions of reactions in socio-economic variables, mainly on the regional Gross Domestic Product (GDP), government income or revenue, employment and private consumption by households.

Table 6.1: Impact Scenarios

Scenarios	Description	Shock
1. Increase in motor vehicle license fee	General sales tax shifter	10%
2. Institution of provincial tourism levy	General sales tax shifter	10%
3. Increase both the motor vehicle license fee and provincial tourism levy	General sales tax shifter	10%

The tax will be simulated on the general sales tax representing indirect taxation on the 'transervice' and 'hotelrest' sectors as they are the motor and tourism intensive sectors respectively. It is important to note that the magnitude of the shock (10% increases in taxation) is in line with the intention of the provincial government (GDF, 2010c:25).

6.4 Analysis of Simulation Results

6.4.1 Scenario 1: 10% Increase in Motor Vehicle License Fees

This section discusses the potential results of the 10% increase in motor vehicle license fees in Gauteng. The effect of a 10% increase in motor vehicle license fees in Gauteng is shown in Table 6.2. Appendix 6.1 provides a list of the 2009 licenses per vehicle type to give an idea of what the proposed 10% increase in the license fees will cost per car type.

Table 6.2: The Impact of a 10% Increase in Motor Vehicle License Fees on Selected Economic Variables, % change

Economic Variable	% Change
Real GDP	-0.4051
Change in Government Income	4.4679
Aggregate Employment	-0.7823
Consumer price index	-0.4421
Real household consumption	-0.7708

Source: Model Results

Table 6.2 provides the signs and magnitudes of the impact of a 10% increase in motor vehicle licence fees on real household consumption by expenditure group. As expected, tax increases tend to affect the overall provincial economy negatively, while they increase government revenue or income. Also, tax levied on one sector of the economy affects all the other sectors as can be seen from the general equilibrium model. All the provincial economic variables reported in Table 6.2, with the exception of government revenue, decrease when simulating a 10% increase in motor vehicle license fees, using the increase in the price of the transport services' sector as a proxy. A 10% increase in motor vehicle license fees results in an increase

of 4.4 percentage point in government income. Due to imbalances from the demand side of the economy, there is less economic activity in the economy. Private households demand less of the taxed and other goods and this result in less household consumption. This also results in declining economic activity due to reduced demand in household consumption. In line with the consumption function, the decline in household consumption contributes to the decline in Regional Gross Domestic Product (GDPR). As a result, the household consumption and GDPR decline by 0.7708 percentage points and 0.4051 percentage points respectively. The decline in demand by household consumption also impacts positively on the consumer price level as it declines by -0.4421 percentage points.

However, as discussed in chapter 4, the impact is affected by the elastic nature of the demand for motor vehicles. The demand for motor vehicles is inelastic and, as such, the price increase of licenses may not affect the quantity demanded. As a result the reported decline in household consumption could be due to the overall effect of the change in one sector causing a decline in the consumption of commodities in the other sectors.

In 2008 the transport sector, combined with communication, contributed an estimated 7.9% to the GDPR. This sector has also been identified by government as one of the sectors that would contribute to growing the economy and therefore poverty reduction. The middle-income household group is the most affected, as shown in Table 6.3.

Table 6.3: % Change in Real Household Expenditure by Household Income Group

Household Expenditure Group	Real household consumption
H01	-0.7989
H02	-0.9196
H03	-0.9665
H04	-1.0657
H05	-1.1355
H06	-1.3314
H07	-1.3658
H08	-1.3783
H09	-1.1405
H10	-0.9276
H11	-0.657
H12	-0.4384

Source: Model Results

Table 6.3 disaggregates the impact of the 10% increase in motor vehicle license fees on household consumption. The middle-income household group which is assumed to consume the majority of the motor vehicles that are being taxed is affected negatively but can bear the effect. From Table 6.3 the middle-income household group from H06 to H08 is more negatively affected than other income groups. The impact declines from between -1.3314 percentage points in income group H06 to -1.3783percentage point in income group H08. The small negative changes in the high-income household groups H11 and H12, or the rich, are, as expected, due to the demand elasticity of the motor vehicles by that group. The decline in household consumption could be attributed to the decline in employment caused by the increase in taxation.

Table 6.4 shows the negative impact of the 10% increase in motor vehicle license fees on employment as disaggregated by occupation. In terms of economic theory, income will decrease as GDP declines, which will impact negatively on the economic contributions that this sector have on GDPR. The change in income, mainly determined by wages, would impact on the total labour employed. As a result, the decline in GDPR will translate into losses in employment, which is shown by the decline of -0.7823 percentage points in aggregate employment in Table 6.2.

Table 6.4: % Change on Employment Indicators by Occupation

Occupation	Employment by occupation	Average wage by occupation	Aggregate payment to labour
Legislators	-0.9151	-0.4421	-1.3539
Professional	-0.6866	-0.4421	-1.1262
Technicians	-0.7935	-0.4421	-1.2327
Clerks	-0.7606	-0.4421	-1.1999
Service workers	-0.5373	-0.4421	-0.9774
Craft workers	-0.7801	-0.4421	-1.2193
Operators	-1.4405	-0.4421	-1.8773
Elementary occupation	-0.6974	-0.4421	-1.137
Domestic workers	-0.6192	-0.4421	-1.0591
Unspecified	-0.7704	-0.4421	-1.2097

Source: Model Results

It can be seen from Table 6.4 that the 10% increase in motor vehicle licence fees results in the decline in the average wage by occupation by 0.0676 percentage point. The impact on employment by occupation differs across occupations. The most negatively affected occupation by magnitude of the percentage changes in employment and aggregate payment is the operator occupations by -1.4405 and -1.8773 percentage points respectively, and this is attributed to the high intensity of demand for motor vehicles that require the skill level of operators. As a result, the most affected occupation is operators. The impact on the unspecified occupation is not explained.

6.4.2 Scenario 2: Instituting a 10% Provincial Tourism Levy

The province did not indicate an official tax rate that will be instituted and, as a result, the study simulated a 10% rate.

Table 6.5: The Impact of a 10% increase in Tourism Levy on Selected Economic Variables, % change

Economic Variable	% Change
Real GDP from expenditure side	-0.1085
% Change in Government Income	1.0404
Aggregate Employment	-0.2009
Consumer price index	-0.0676
Real household consumption	-0.1972

Source: Model Results

Table 6.5 provides the results of the impact of a 10% increase in the tourism levy. Like the increase in motor vehicle license fees, the tourism levy impacts negatively on the regional economy, except for government income. A 10% increase in tourism levy results in 1.0404 percentage points' increase in provincial government income. However, the gain in government income would be at the cost of the regional economy or GDPR, aggregate employment and real household consumption.

Like the increase in the motor vehicle licence fees, the 10% increase in tourism levy would result in price changes that would cause imbalances in the demand for tourism goods. The high price of tourism goods would results in lower demand by household, which would result in a decline in real household consumption by 0.1972 percentage points. A decline in household consumption will cause the real GDPR to decline by 0.1085 percentage points in line with the consumption function. The decline in GDPR is due to the reduced demand for tourism and related goods.

The demand elasticity of the tourism goods also played a role in the directions of the impact, but as tourism goods are mostly considered luxury goods they are thus inelastic in consumption. Therefore, a price change in tourism-related goods may not necessarily impact negatively on consumption. In addition, the consumption of tourism goods would mainly be by non-poor consumers, but the model does not distinguish among consumption by income level.

However, the decline in household consumption impacts positively on the consumer price index. An increase in the tourism levy would increase the price level or inflation in the region toured, depending on whether a distinction was made between domestic and foreign tourism, which the model does differentiate between. The direction of the impact is also influenced by the income and substitution effects, as well as the number of tourists, as they affect consumption of tourism-related goods. The direction of the impact is based on the overall impact of imposing a tax in the 'hotelrest' sector which incorporates tourism-related goods. Based on this the negative impact of the 10% tax on 'hotelrest' resulted in a change of -0.0676 percentage point in the consumer price index, which could also be as a result of the decline in real consumption expenditure by 0.1972 percentage points.

Table 6.6 disaggregates the impact of the 10% increase in tourism levy on real household consumption by income groups. A 10% tourism levy would result in negative real consumption by all household groups. However, as tourism goods are more luxurious goods, the negative impact is felt mainly by the medium- to high-household income groups represented from H05 to H12 respectively. The results show that the impact is more negative for high-expenditure household groups than for poor household groups. The real household consumption for high-

income group declines by 0.2132 and 0.2646 percentage points respectively, while the poor income groups' decline by smaller percentage changes of 0.0282 and 0.0413 percentage points for H01 and H02 income groups respectively. The decline in real household consumption could further be explained by the negative impact in aggregate employment.

Table 6.6: % Change in Real Household Consumption by Household Income Group

Household Expenditure Group	Real household consumption
H01	-0.0282
H02	-0.0413
H03	-0.0492
H04	-0.0471
H05	-0.0807
H06	-0.0724
H07	-0.0804
H08	-0.1224
H09	-0.152
H10	-0.1686
H11	-0.2132
H12	-0.2646

Source: Model results

Table 6.7 shows the percentage change in employment by occupation or skill, and the price paid for labour due to the 10% tax levied on tourism goods in the 'hotelrest' sector. Due to the decline in demand of goods and therefore a decline in production, there was a decline in GDPR. As employers adjust to the decline in the demand for goods, it results in a decline in employment.

A 10% increase in the tourism levy affects all employment occupations negatively as shown by the negative percentage points in Table 6.8. The average wage of occupation is affected by -0.0676 percentage point, while the impact on employment, and that on aggregate payment of labour differ across occupations. The high magnitude of changes in occupations like services and operators of -0.2437 and -0.3046 percentage points respectively could be due to that fact that they are employed by the tourism sectors and hence are the most negatively affected. As in the motor vehicle licenses scenario, the impact on the unspecified labour is not explained.

Table 6.7: % Change on Employment Indicators by Occupation and Population Group

Occupation	Employment by occupation	Average wage by occupation	Aggregate payment to labour
Legislators	-0.239	-0.0676	-0.3065
Professional	-0.1846	-0.0676	-0.2521
Technicians	-0.2037	-0.0676	-0.2712
Clerks	-0.1955	-0.0676	-0.263
Service workers	-0.1762	-0.0676	-0.2437
Craft workers	-0.159	-0.0676	-0.2265
Operators	-0.2371	-0.0676	-0.3046
Elementary occupation	-0.1842	-0.0676	-0.2517
Domestic workers	-0.1784	-0.0676	-0.2459
Unspecified	-0.2773	-0.0676	-0.3448

Source: Model Results

6.4.3 Scenario 3: Instituting a 10% Increases in Both Motor Vehicle License Fees and Tourism Levy

When one considers a simultaneous increase in both the motor vehicle license fee and tourism to the magnitude of 10%, results shown are similar to all variables in the first two scenarios above.

Table 6.8: The Impact of a 10% increase in Both Motor Vehicle License Fee and Tourism Levy on Selected Economic Variables, % change

Economic Variable	% Change
Real GDP from expenditure side	-0.5151
% Change in Government Income	5.4849
Aggregate Employment	-0.983
Consumer price index	-0.5055
Real household consumption	-0.9679

Source: Model Results

Table 6.8 provides the signs and magnitudes of the impact of a 10% increase in both motor vehicle licence fee and tourism levy on economic variables such as GDPR, government income, real household consumption and employment. As expected, a 10% increase in both

the motor vehicle license fee and tourism levy tends to affect the overall provincial economy negatively while it increases government income. The result shows a 5.4849 percentage points in government income. However, like most of the tax increases, the 10% increase in both the motor vehicle licence fees and tourism levy creates an imbalance in the demand for both motor vehicles and tourism-related goods due to higher prices. The increase in prices may reduce the demand for these goods and therefore cause a decline in real household consumption by 0.9679 percentage points. The decline in demand for goods would therefore result in a reduction in economic production and also a decline in consumer price index by 0.5055 percentage point. As a result, the GDPR declines by 0.5151 percentage point. To adjust the labour employed to the declining economic production, employers would reduce aggregate employment as shown by -0.983 percentage points.

The nature of the motor vehicle and tourism goods also determines how these goods are demanded when price changes due to changes in taxes. As a result, the decline in real household consumption due to the 10% increase in both the motor vehicle license fee and tourism levy is further disaggregated in Table 6.10.

Table 6.9: % Change in Real Household Consumption by Household Income Group

Household Expenditure Group	Real household consumption
H01	-0.8276
H02	-0.9612
H03	-1.0159
H04	-1.113
H05	-1.2161
H06	-1.4037
H07	-1.4459
H08	-1.4998
H09	-1.2918
H10	-1.0958
H11	-0.8702
H12	-0.7033

Source: Model Results

Table 6.9 provides the results of the impact of a 10% increase in both the motor vehicle licence fee and tourism levy on households by income groups. As indicated, households demand less

of the taxed goods by the negative signs of all household income groups. The motor vehicle sector contributes a large share of the household consumption basket and the result tends to follow those of the 10% increase in the motor vehicle license fee only. The household groups that are most negatively affected are the middle-income groups. The percentage changes range from -1.4037 percentage points for income group H06 to -1.4998 percentage points for income group H08. The richest households, as shown by income groups H11 and H12, are affected the least by -0.8702% change and -0.7033 percentage points respectively. This also shows that the elasticity of demand for goods is important in analysing the impact of such a tax change on households for different income groups.

Table 6.10 shows the impact of a 10% increase in both the motor vehicle licence fee and tourism levy on employment in Gauteng. Due to the decline in economic production and GDPR, some of the employment is laid off. Hence there is a decline in aggregate employment of 0.983 percentage points, as indicated in Table 6.8.

Table 6.10: % Change on Employment Indicators by Occupation and Population Group

Occupation	Employment by occupation	Average wage by occupation	Aggregate payment to labour
Legislators	-1.1538	-0.5055	-1.6544
Professional	-0.8714	-0.5055	-1.3732
Technicians	-0.997	-0.5055	-1.4983
Clerks	-0.9558	-0.5055	-1.4572
Service workers	-0.7129	-0.5055	-1.2154
Craft workers	-0.94	-0.5055	-1.4415
Operators	-1.6761	-0.5055	-2.1745
Elementary occupation	-0.8815	-0.5055	-1.3833
Domestic workers	-0.7974	-0.5055	-1.2995
Unspecified	-1.0469	-0.5055	-1.548

Source: Model Results

A 10% increase in both the motor vehicle license fee and tourism levy will result in negative percentage changes in employment of between -1.2154 and -2.1745 percentage points respectively across all sectors. The most negatively affected occupation is the operators which

experienced a -1.6761 percentage points, while the aggregate payment experienced a -2.17451 percentage points. This is not surprising as the motor industry, which has a large share of the simulated sectors, employs most of the operators. Hence it would be this occupation that has to experience a decline in employment. The services occupation to which the tourism sector mostly employs also had a decline of 1.2154 percentage points. On average there was a -0.5055 percentage point in average wage of occupation.

6.5 Conclusion

A CGE model is well suited to determine changes in taxation. The aim of this chapter was to determine the impact of increasing motor vehicle license fees and the provincial tourism levy on the selected economic variables, recognising that Gauteng constitutes the largest share of motor vehicle population and income from tourist arrivals. The results for increases in motor vehicle license fees and tourism levy, as manifested in increases in sales tax, in isolation will impact on positively on government income but impact negatively on the overall real GDP, employment and consumer price level as shown by the negative sign of these variables. However, the impacts of the taxes vary in magnitudes.

From the analysis above it can be concluded that the increase in motor vehicle license fees or the institution of the tourism levy is likely not to have major negative effects on the economy as shown by the percentage changes on the selected variables. However, the economy in impacted more negatively when the tax increase is imposed for both the motor vehicle license fee and the tourism levy simultaneously. Again, the effects on the economy may depend on how the provincial government uses the revenue gained from raising provincial taxes.

Chapter 7
Summary and Recommendations

7.1 Summary

This study aims at determining the impact of the change in taxation on socio-economic activities in Gauteng province. In order to achieve this aim, the study made use of the CGE approach whereby the effects of the change in taxation on motor vehicle licence fee and tourism levy are assessed.

The study was divided into seven chapters. Chapter one provided an introduction of the study by briefly discussing the aim, relevance, methodology and outline of the structure of the study in the context of Gauteng province.

Chapter two provided an overview of the socio-economic characteristics and poverty dynamics of Gauteng. The importance of this chapter is that the measurement of the socio-economic indicators is important to track developmental progress and determine areas on which government should focus to address developmental challenges and inform policies. Included in the socio-economic analysis were social indicators such as demography, access to services and poverty trends, while economic indicators included provincial economic performance and unemployment rates. Based on the analysis, it can be concluded that although the province has achieved much in the provision of services and alleviating poverty, much still needs to be done.

The chapter further discussed an overview of the policies and strategies that have been implemented at both national and provincial levels with the aim of achieving goals such growing the economy and socio-economic development including employment creation. The main provincial strategy or Gauteng Growth and Development strategy aims at halving unemployment and poverty rates by 2014. Inherent in the strategy is the Gauteng Human Resource Development and the Gauteng Social Development Strategies which are used as tools to achieve provincial developmental goals and informs expenditures priorities.

The main aim of chapter three was to provide an overview of provincial government expenditure and the intergovernmental fiscal framework in South Africa and provinces. From the analysis, Gauteng province and the other provinces depend highly on transfers from national revenues in the form of equitable share transfers which include both conditional and unconditional grants. Only a small share of about 4.5% of total revenue is raised by the province. This is mainly because of the intergovernmental system that is in place in South Africa, which is designed in such a way that provinces are assigned small revenue raising powers while the major revenue raising powers rests with national government. This is despite the fact that the Constitution assigns provinces with high expenditure responsibilities. This chapter also discussed the provincial fiscal position in terms of revenue and expenditure trends given the goals as set in the provincial government policies. Based on the revenue trends, Gauteng receives the majority of its revenue from national government in the form of equitable share and does not have much capability to raise own revenue. This is mainly due to how the intergovernmental system was designed based on the Constitution. Accordingly, the Constitution and legislation allow provinces to raise own revenue, although they do not allow for larger taxing powers.

As Gauteng province is faced with socio-economic challenges, this chapter concludes by identifying factors that have impacted on these socio-economic challenges as increasing population, 'in-migration' into the province, the increased need for infrastructure and backlogs on the provision of services. The negative impact of the economic crisis in the form of a lower economic growth rate and high unemployment also adds to the challenges faced by government. All these factors add to the spending pressures that the Gauteng provincial government faces.

Chapter four provided the overview of the theory of taxation in light of the proposed changes in tax policies in the province. The main aim of this chapter was to determine how economic agents, especially households, react when prices of goods change due to the imposition of taxes or changes in tax rates. This included determining the excess burden or the distortions induced by taxes, and establishing which of the economic agents bears the burden of such taxes. From the discussion, it was explained that the extent of the burden, subject to budgetary

constraints, is dependent on a number of factors. The main factor determining the extent of the tax burden is the income and substitution effects. The other two factors that determine how households react to taxes were identified as the price elasticity of demand and supply and the type of market structure for the good being taxed.

Further to the tax theory, we also noted that the direction of the tax revenue from taxes on goods also depended on the three factors that determined the excess burden between the consumer and suppliers. The chapter further discussed the legislative framework that govern provinces on raising own revenue and discussed the performance of the two proposed taxes and how consumers may possibly react to the proposed changes. The applicable legislation, which is mainly based on the Constitution and the Provincial Tax Regulation Process Act, states the criteria which need to be adhered to for provinces to impose taxes. The criteria included the need for imposed taxes not to prejudice national and economic policies, the mobility of labour and capital as production factors, that a province may impose provincial taxation if it will be able to administer such taxes, and for provinces to ensure that they conduct feasibility studies on the proposed changes. The discussions of the tax theories were in preparation for the different simulations that were to be carried out as the main focus of the study and to be able to discuss the results based on theory.

Chapter five provided a theoretical background and application of the Computable General Equilibrium (CGE) model and the structure of the provincial model as a tool used in the study to determine the impact of taxes on economic activities in Gauteng. This chapter included a discussion on the Social Accounting Matrix (SAM) as the building block of the CGE model. Basically, the structure of the SAM informs how the CGE model is build and informs the abilities of the CGE model. However, the CGE model came about to address the shortcomings of the SAM model.

The CGE model was chosen as a tool for the study based on its features. These included the inclusion of the social and economic activities of the provincial economy, which consists of a great number of exogenous variables such as tax rates, factor endowments and technical coefficients. However, one needs to note that this is the static type of the CGE model which

shows the effects of policy shocks in terms of changes from the initial equilibrium or base data as provided by the SAM. Also important to consider was the assumptions made on the provincial model, mainly the neoclassical assumptions and that of Armington which govern the substitutions between the supplies goods. Another assumption mentioned was that Gauteng province was small enough not to influence other provincial economies.

Finally, in chapter six, the analyses of the results from the provincial CGE model were discussed. The results analysed the possible impacts on provincial economic activities in Gauteng in line with the development objectives of imposing a 10% increase in motor vehicle license fees and the provincial tourism levy. The analysis of results focused on the impact on economic activities such as changes in the overall provincial economic growth rate, government income, employment, consumer prices and household consumption expenditure. These economic indicators were chosen in order to focus on the impact of the simulation towards the development objectives.

Based on the result, the conclusion is that the impact of a 10% increase in the motor vehicle license fees and on tourism levy would impact negatively on all variables except for government income which shows positive signs as expected when government imposes taxes. However, the loss in the overall economic growth, holding other variables constant, is not as large as the gains in government income. As a result, the loss in economic growth can be compensated by the gains in government expenditure. However, this may also depend on how government spends the revenue raised from such taxes. Government demand was exogenous in the model and therefore, assumes government deficit adjust to accommodate the loss in economic growth through increased government expenditure. The 10% increase in both the motor vehicle license fees and tourism levy also showed the same results for all variables with the income and substitution effect attributed as the reason for the directions of the impact.

In addition to the model results, the increase in both the motor vehicle licence fees and tourism levy does not interfere with the macro-economic objectives of national government. However, the model does not test whether the changes in provincial taxes would excessively prejudice

the economic activities of the other provinces based on the fact that the model is not linked to other provinces' economic activities.

7.2 Recommendations

In terms of the findings of the study, an increase in motor vehicle license fees and tourism levy results in the overall decline in economic activities while there is a positive impact on government income and consumer prices. According to the results, the increase in taxes results in an increase in government income in line with government objective to increase government income in order to sustain the increasing demand in social services. However, the increase in government income through increased taxation on both the motor vehicle license fees and tourism levy causes imbalances in the provincial economy which impact negatively on the provincial economy as measured by the Gross Domestic Product by region (GDPR) and socio-economic indicators such as employment and household consumption expenditure. Based on the results, Gauteng Provincial Government may not increase tax rates in order to raise tax revenue. This is due to the fact that the tax will result in less economic activities in the form of reduced household consumption leading to less economic activities and declining GDPR. As a result of less economic activities, there may be loss of employment.

When considering the magnitudes of the changes in percentage points, the increase of 10% in motor vehicle fees and tourism levy are not large enough to harm the economic activities although the impact of motor vehicle license fees is more than that of tourism levy. The anticipated revenue should be spent to enhance social infrastructure investment that will advance the provision of social services in the province. Failure to spend the revenue on the intended purposes will result in a negative impact on the provincial economy as indicated by the economy.

In addition to the recommendations, we acknowledge some limitation with the study. In terms of the Intergovernmental fiscal framework and the Constitution, provinces are assigned small tax powers while they are assigned more expenditure responsibilities. The design of the Intergovernmental framework or anything that involves legislation involves political processes

need to be revised. Thus, there is need for revising such system if provinces need to have larger taxing powers. However, the alteration of the framework to assign large taxing powers need to take into account other policies in place (mainly the redistributive policy), and also the ability of provinces to administers such tax powers. The current tax system is based on the ability of national government to impose and administer such large taxes while provinces are deemed incapable. In addition, there is also a need to include capacity on administration in the process of redesigning the intergovernmental framework. Given these, the province would be able to raise revenue to sustain increasing expenditure demands. This would result in provinces having the capacity to generate reasonable revenue for themselves in order to address backlogs in the provision of social services and address developmental challenges.

Another limitation was in terms of the provincial Computable General Equilibrium (CGE). One of the shortcomings relates to the fact that the model is based on assumptions about the behaviour of economic agents, which can be somewhat restrictive. However, all models are built on assumptions that do not reflect the world with 100% accuracy, but in spite of this shortcoming the CGE is still a powerful tool for the assessment of the impact of public policy on the provincial economy. As a result, the model needs to be enhanced to provide a true reflection of the Gauteng economy. Also, the study was not able to disaggregate some sectors in the Gauteng SAM which were important to conduct the analysis and, as a result, the study had to use aggregated sectors which are transport and related services as well as hotel accommodation and restaurant to assess the effect of the increase in motor vehicle fees and tourism levy. The province may consider building a CGE model with such capabilities or updating the model so that it is capable of determining the impact of policy changes on the overall economic activities. This study was one of the many uses that the province can apply the CGE model on in order to inform policy decisions. For further research we suggest that the Gauteng SAM be disaggregated further to include the ‘motor vehicle’ and ‘hotel and tourism’ account of commodities and that a simulation be run directly from those accounts.

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Appendices

Appendix 5.1: Accounts and Activities and Commodities included in the Gauteng SAM

Accounts	Activities
Primary Industries:	
Agriculture	Commercial Agriculture
	Subsistence Agriculture
Mining	Gold Mining
	Other Mining
Secondary Industries:	
Manufacturing	Meat, Fish, Fruit, Vegetables, Oils and Fat Products
	Dairy Products
	Grain Mill, Bakery and Animal Feed Products
	Other Food Products
	Beverages and Tobacco Products
	Textiles, Clothing, Leather Products and Footwear
	Wood and Wood Products
	Furniture
	Paper and Paper Products
	Publishing and Printing
	Petroleum
	Chemicals and Chemical Products (incl. Plastic Products)
	Rubber Products
	Non-Metallic Mineral Products
	Basic Metal Products
	Structural Metal Products
	Other Fabricated Metal Products
	Machinery and Equipment

Appendix 5.1: Accounts and Activities and Commodities included in the Gauteng SAM (continued)

	Electrical Machinery & Apparatus
	Communication, Medical and Other Electronic Equipment
	Manufacturing of Transport Equipment
	Handcrafts and Curios
	Other Manufacturing and Recycling
	Informal Manufacturing
Electricity and Water	Electricity
	Water
Construction	Buildings
	Other Construction
	Informal Construction
Tertiary Industries:	
Trade and Accommodation	Trade
	Accommodation
	Informal Trade, Accommodation and Entertainment
Transport and Communication	Transport Services
	Communications
	Transport – Combi-Taxis
Financial and Business Services	Insurance
	Real Estate
	Business Activities
Community and Social Services	General Government
	Health and Social Work
	Activities/Services

Appendix 5.2: Classification Occupation by Skills

Major group	Model Sign	Educational level
Legislators Professionals	Leg Prf	Education which begins at the age of 18 or 19, lasts three, four or more years, and leads to a university or post-graduate university degree.
Technicians	Tch	Education which begins at the age of 17 or 18, lasts one to four years, and leads to an award not equivalent to a first university degree.
Clerks Service workers Craft workers Plant and machine operators	Clk Srv Crf Opr	Secondary education which begins at the age of 13 or 14 and last about five years. A period of on-the-job-Skilled agricultural workers 2 training and experience may be necessary.
Elementary occupations Domestic workers	Elt Dwk	Primary education which generally begins at the age of 6 or 7 and lasts about 7 years. Including persons without any formal primary education, or with incomplete primary education.

Statistics South Africa, 2004

Table 5.3: Description of Notation in the SAM Framework

Column	Notation	Description
1: Activities / Production Account	X	Intermediate consumption; commodities required by activities as inputs
	Wa	Remuneration of Labour (wages).
	Fa	Remuneration of Capital
	Ti	Indirect Taxes raised on Activities
2: Commodities Account	P	Production of commodities by each activity
	Ta	Indirect taxes on products
	M	Imports from the Rest of RSA and RoW
3: Factor Account – Labour	L	Salaries and wages to Households in Gauteng
	Wl	Salaries and wages to households in the rest of RSA and RoW
4: Factor Account – Capital	Qe	Dividends and interests to Enterprises in Gauteng
	Tf	Indirect taxes (on capital and labour) to national Government
	Qr	Dividends and interest to Enterprises from the rest of RSA and RoW
5: Enterprise Account	Qv	Profits distributed to households
	Tu	Enterprise taxes
	Quv	Undistributed profits
6: Household Account	C	Private consumption expenditure by households
	$TrhH1$	Transfers between households in Gauteng
	Td	Direct taxes and transfers paid to government
	Sh	Household savings
	$TrhH2$	Transfers between households to the rest of RSA and RoW
7: Government Account	G	Government consumption expenditure
	Wg	Remuneration of government employees

Table 5.3 (Continued)

	Fg	Remuneration of government capital
	$TRgE$	Transfers to enterprises
	$TRgH1$	Transfers to households in Gauteng
	$TRgG$	Transfers to government
	Sg	Government Savings
	$TRgH2$	Transfers to households in the rest of RSA and RoW
8: **Capital Account**	I	Gross Investment
	Sa	Capital flow from/to rest of RSA and RoW
9: **Trade Account(RoW)**	E	Exports from Gauteng to rest of RSA and RoW
	We	Factor payments on labour from Gauteng to rest of RSA and RoW
	Fe	Factor payments on capital from Gauteng to rest of RSA and RoW
	$TrrH$	Transfers from households in Gauteng to households in the rest of RSA and RoW
	$TrrG$	Transfers from government in Gauteng to the rest of RSA and RoW

Appendix 5.4: Percentiles and Annual Household Expenditure, 2004

Percentile	Expenditure Strata (2004 prices)
P1	1 - 1 004
P2	1 005 - 10 60- 2
P3	10 603 - 15 802
P4	15 803 - 19 932
P5	19 933 - 24 172
P6	24 173 - 29 440
P7	29 441 - 37 185
P8	37 186 - 49 394
P9	49 395 - 70 464
P10	70 465 - 107 537
P11	107 538 - 141 062
P12	141 063 +

Statistics South Africa, 2004

Appendix 5.5: CGE Equations for Modeling

Demand for Commodities

Real consumption

(**all**,h,HOU)(**all**,p,POP1) V3TOTX(h,p)*x3totx(h,p) = **sum{**c,COM, HOUPUR(c,h,p)*x3h(c,h,p)**}**;

Household budget constraint

w3totx (**all**,h,HOU)(**all**,p,POP1) w3totx(h,p) = x3totx(h,p) + p3totx(h,p);

Consumer price index:

V3TOT*p3tot = **sum{**c,COM, V3PUR_S(c)*p3_s(c)**}**

Household budget:

w3tot = x3tot + p3tot

Subsistence demand for composite commodities:

(**all**,c,COM)(**all**,h,HOU)(**all**,p,POP1) x3sub(c,h,p) = q(h,p) + a3sub(c,h,p)

Demand for labour

Demand equals supply for labour of each skill:

(**all**,o,OCC) V1LAB_IP(o)*x1lab_i(o) = **sum {**i,IND,**sum {**p,POP1,V1LAB(i,o,p) *x1lab(i,o,p)**}}**

Demand for labour by industry and skill group:

(**all**,i,IND)(**all**,o,OCC)(**all**,p,POP1) x1lab(i,o,p) = x1lab_p(i,o) - SIGMA1POP(i)***[**p1lab(i,o,p) - p1lab_p(i,o)**]**

Flexible setting of money wages:

(**all**,i,IND)(**all**,o,OCC)(**all**,p,POP1) p1lab(i,o,p)= p3tot + f1lab_iop + f1lab_op(i) + f1lab_ip(o)+ f1lab_io(p)

Average wage of occupation:

(**all**,o,OCC) V1LAB_IP(o)*p1lab_i(o) = **sum{**i,IND,**sum{**p,POP1, V1LAB(i,o,p)*p1lab(i,o,p)**}}**;

*Employment by occ: (**all**,o,OCC) employ_ip(o)*

Aggregate employment:

Employ_ip (**all**,o,OCC) V1LAB_IP(o)*employ_ip(o) =**sum{**i,IND,**sum {**p,POP1,V1LAB(i,o,p) *x1lab(i,o,p)**}}**;

GDP

Real GDP from expenditure side:

x0gdpexp V0GDPEXP*x0gdpexp = V3TOT*x3tot + V2TOT_I*x2tot_i + V5TOT*x5tot + V6TOT*x6tot + V4TOT*x4tot - V0CIF_C*x0cif_c;

Appendix 6.1: Motor Vehicle License Fees, 2009

Tare		Type of vehicle			
Exceeding	**Not exceeding**	**Rigid Vehicles**	**Breakdown Vehicles**	**Tractors used on a public road**	**Trailers and semi-trailers**
	250 kg	R105,00	R567,00	R81,00	R96,00
250 kg	500 kg	R141,00	R567,00	R81,00	R120,00
500 kg	750 kg	R168,00	R567,00	R81,00	R150,00
750 kg	1 000 kg	R189,00	R567,00	R81,00	R180,00
1 000 kg	1 250 kg	R216,00	R567,00	R81,00	R210,00
1 250 kg	1 500 kg	R291,00	R567,00	R81,00	R273,00
1 500 kg	1 750 kg	R327,00	R567,00	R81,00	R327,00
1 750 kg	2 000 kg	R399,00	R567,00	R81,00	R381,00
2 000 kg	2 250 kg	R468,00	R567,00	R90,00	R468,00
2 250 kg	2 500 kg	R567,00	R567,00	R90,00	R537,00
2 500 kg	2 750 kg	R642,00	R567,00	R90,00	R630,00
2 750 kg	3 000 kg	R726,00	R567,00	R90,00	R708,00
3 000 kg	3 250 kg	R774,00	R567,00	R90,00	R1 344,00
3 250 kg	3 500 kg	R927,00	R567,00	R90,00	R1 476,00
3 500 kg	3 750 kg	R1 071,00	R567,00	R90,00	R1 644,00
3 750 kg	4 000 kg	R1 182,00	R567,00	R102,00	R1 815,00
4 000 kg	4 250 kg	R1 287,00	R567,00	R102,00	R1 944,00
4 250 kg	4 500 kg	R1 392,00	R567,00	R102,00	R2 136,00
4 500 kg	4 750 kg	R1 524,00	R567,00	R102,00	R2 304,00
4 750 kg	5 000 kg	R1 632,00	R567,00	R102,00	R2 484,00
5 000 kg	5 250 kg	R2 469,00	R4 767,00	R102,00	R2 712,00
5 250 kg	5 500 kg	R2 730,00	R4 767,00	R102,00	R2 916,00
5 500 kg	5 750 kg	R2 988,00	R4 767,00	R102,00	R3 132,00
5 750 kg	6 000 kg	R3 297,00	R4 767,00	R102,00	R3 360,00
6 000 kg	6 250 kg	R3 549,00	R4 767,00	R102,00	R3 600,00
6 250 kg	6 500 kg	R3 795,00	R4 767,00	R102,00	R3 840,00
6 500 kg	6 750 kg	R4 197,00	R4 767,00	R102,00	R4 068,00
6 750 kg	7 000 kg	R4 461,00	R4 767,00	R102,00	R4 308,00
7 000 kg	7 250 kg	R4 698,00	R4 767,00	R102,00	R4 548,00
7 250 kg	7 500 kg	R4 962,00	R4 767,00	R102,00	R4 812,00
7 500 kg	8 000 kg	R5 490,00	R4 767,00	R102,00	R5 304,00
8 000 kg	8 500 kg	R6 264,00	R4 767,00	R141,00	R6 024,00
8 500 kg	9 000 kg	R6 828,00	R4 767,00	R141,00	R6 624,00
9 000 kg	9 500 kg	R7 578,00	R4 767,00	R141,00	R7 332,00
9 500 kg	10 000 kg	R8 235,00	R4 767,00	R141,00	R7 968,00
10 000 kg	10 500 kg	R9 183,00	R4 767,00	R141,00	R8 892,00

Appendix 6.1: Motor Vehicle License Fees, 2009 (continued)

Tare		Type of vehicle			
Exceeding	**Not exceeding**	**Rigid Vehicles**	**Breakdown Vehicles**	**Tractors used on a public road**	**Trailers and semi-trailers**
11 000 kg	11 500 kg	R10 905,00	R4 767,00	R141,00	R10 560,00
11 500 kg	12 000 kg	R11 883,00	R4 767,00	R141,00	R11 508,00
Above 12 000 kg (for each additional 500 kg, or part thereof):		+ R972,00	+ R00,00	R00,00	+ R936,00

Source: ENatis, 2010