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## **The Determinants of Unemployment in Swaziland: An Econometric Perspective and Investigative Analysis**

By

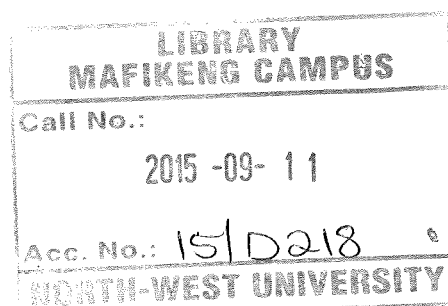
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## DECLARATION

I, Zitsile Zamantungwa Khumalo, hereby declare that all the resources that I have employed in this study have been indicated and acknowledged by means of complete references. This study has not been previously submitted by me for a degree in another university.

Full names..... Date.....

Signed.....

Signature..... Date.....

Supervisor

## **ACKNOWLEDGEMENTS**

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## **ABSTRACT**

Unemployment is possibly the most economically crippling challenge facing the Kingdom of Swaziland today. Although unemployment affects other age groups, its effects are most evident amongst the youth. The problems of unemployment are made profound by the economy's inability to create new jobs at the same rate that new job seekers enter the labour market and this has resulted in the country having one of the highest unemployment levels on the African continent. This study therefore aims to examine the probable causes for the high unemployment rate in Swaziland and to propose policy recommendations that may be applied to alleviate the unemployment issue in the country

The determinants of unemployment are analysed using cointegration analysis from an econometric perspective with annual data from 1991-2012. The study identifies the potential gross domestic product, inflation (indicated by the consumer price index) and government spending as some of the determinants of unemployment in Swaziland. The results suggest the existence of a long-run relationship between unemployment and its determinants. For further examination of the relationship between unemployment and its determinants, the Granger causality technique and model simulation experiments were conducted. The simulation experiment revealed that the linear model is a good fit because the simulated (forecasted) unemployment tracks the actual values of unemployment.

**Keywords:** Unemployment, Determinants, Econometric Analysis, Swaziland

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## LIST OF ACRONYMS

<b>ADF:</b>	Augmented Dickey Fuller
<b>AGOA:</b>	African Growth and Opportunity Act
<b>ARDL:</b>	Autoregressive Distributed Lag
<b>COMESA:</b>	Common Market for Eastern and Southern Africa
<b>CPI:</b>	Consumer Price Index
<b>ERS:</b>	Economic Recovery Strategy
<b>FAR:</b>	Fiscal Adjustment Roadmap
<b>FDI:</b>	Foreign Direct Investment
<b>GDP:</b>	Gross Domestic Product
<b>JB:</b>	Jarque-Bera
<b>IMF:</b>	International Monetary Fund
<b>ILO:</b>	International Labour Organisation
<b>OLS:</b>	Ordinary Least Squares
<b>PP:</b>	Philipps-Perron
<b>SACU:</b>	Southern African Customs Union
<b>SADC:</b>	Southern African Development Community

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# Chapter 1

## Introduction to the Study

### 1.1.Introduction

Swaziland, the second smallest state in mainland Africa once possessed one of the continents highest income levels per head. In 2001, the World Bank's gross national income (GNI) estimates led to the classification of Swaziland as a 'middle income' economy. In 1985-89, the country recorded significant average annual growth in its gross domestic product (GDP) of 10 % which was the second highest after Botswana (Matthews, 2004). However, Swaziland is now a shadow of its former self as it has been engulfed with numerous problems that have threatened the economic stability of the country.

The 2008 global financial crisis further intensified the problems faced by the country as it lurched into a fiscal crisis. The fiscal crisis of 2011 brought to the fore underlying problems such as the weak business environment, low Foreign Direct Investment (FDI) influxes, an overvalued exchange rate, an extraordinary HIV and AIDS burden and most critically, a high unemployment rate. According to Brixiova *et al.* (2012), by the late 2000s, the unemployment rate, which had been gradually rising since the mid-1990s, was one of the highest rates among Sub-Saharan Africa's middle income countries. In 2007 and 2010, the official unemployment rate (strict definition of unemployment) reached 28.2% and 28.5% of the labour force (ages 15 and above), whilst the unemployment rate stood at 38% in 2007 and 40.6% under the relaxed definition of unemployment. There were various discrepancies that also developed across subgroups: youth unemployment (for people aged 15 to 24) was at 53% and this figure was far above the 13% rate for people aged 45 to 64 years. The Kingdom also had the highest HIV and AIDS rate in the world (26.1% of population aged 15 to 49) and this heightened the country's socio-economic challenges. The unemployment rate has remained high in the aftermath of the global financial crisis.

Unemployment is regarded by some scholars as one of the greatest economic ills. Al-Habees and Rumman (2012) defined unemployment as a multi-dimensional phenomenon; they described it as an economic phenomenon showing imbalance in economic activity. Moreover, it is also

considered a social phenomenon because of its effects on the social structure of societies. The two economic and social dimensions of high rate of the unemployment increase its complexity and impose adopting extensive analysis to understand the causes and effects as well as to identify the responses to such phenomenon. Levinsohn (2008) revealed that unemployment is associated with social problems such as poverty, crime, violence, a loss of morale and degradation.

In light of the challenges above, the country has made several attempts of combating the unemployment epidemic. The Swaziland Government, in collaboration with Workers and Employers Organisations, has integrated national sectoral or local employment policies and programmes in their policy frameworks. Labour market information systems in Swaziland measure unemployment rate including gender disaggregation on a regular basis. Employment-intensive infrastructure programmes for local development in Swaziland aid in the creation of decent jobs. The Government, Employers' and Workers' organisations in Swaziland have taken initiatives in policy areas that facilitate transition of informal activities to formality (International Labour Organisation, 2010). Despite attempts made at fighting unemployment, it continues to be a problem in the small Kingdom. It is thus imperative to investigate the determinants of unemployment in Swaziland. The study paints a picture of the distribution of unemployment in Swaziland and further proceeds to investigate relevant literature, microeconomic and macroeconomic models of unemployment.

## **1.2. Background to the study**

### **1.2.1. Swaziland: Country Setting**

Swaziland is a landlocked country that measures approximately 17 364 square kilometres. It has four administrative regions namely; the Hhohho Region, Lubombo Region, Manzini Region and the Shiselweni Region and it is bordered by South Africa on three sides and Mozambique on the north (Mkhonta, 2007). The country is one of the world's last absolute monarchies and the head of state is King Mswati III. The country is a member of Southern African Development Community (SADC), African Union (AU) and Common Wealth of Nations. Swaziland is also a member of Southern African Customs Union (SACU) and the Common Market for Eastern and Southern Africa (COMESA) and its main trading partners are South Africa, the United States of

1990s (International Monetary Fund, 2002). The loss of the regional advantage set Swaziland on a trail of declining economic growth. In 2002, economic activity weakened even further, with manufacturing showing most effects of additional closures by foreign firms and agricultural output affected by the drought (International Monetary Fund, 2002). According to Whiteside *et al.* (2006) statistics indicated that the GDP had slowed down to 1.5% in 2005. The democratisation of South Africa led the economy in Swaziland to become increasingly dependent on South Africa.

Dickovick (2013) illuminates the extent to which the economy in Swaziland is dependent on the South African economy by citing that the Swazi currency is pegged to the South African rand. The African Development Bank (2010) further expounds this fact as Swaziland is a member of the Common Monetary Area and its currency, lilangeni (SZL) is fixed at parity with the South African rand. This means that Swaziland gave up its independent monetary and exchange rate policy. The country's oil is imported from South Africa as is its electricity and 85% of its consumer goods while trade is over 100% as per the norm with smaller countries.

Swaziland encountered a difficult 2011 due to the decline of transfers from SACU receipts, an excessive level of expenditure and limited ability to borrow. The crisis resulted in reduced capital and social spending thus, limiting aggregate demand and discouraging future growth (African Development Bank, 2010). Vandomes *et al.* (2013) was of the opinion that the economic structure would hinder job creation and prevent development at grass-root level, even if economic growth was higher. The spread of corruption, politicisation of the economy and the large public sector have crowded out private-sector activity and has exacerbated the socio-economic problems in the country with the level of unemployment topping the list.

### **1.2.3. Unemployment in Swaziland**

Widespread unemployment has sent rippling shockwaves in the lives of the people of Swaziland. It has become a fact of life in Swaziland and as it continues to soar, it leaves behind a trail of mass destruction. Although unemployment affects all age groups, its effects are most evident amongst the youth. The problems of unemployment are made profound by the economy's inability to create new jobs at the same rate that new job seekers enter the market and this has resulted in the country having one of the highest unemployment levels in the African continent.

The noteworthy challenge to date is that of generating employment opportunities in adequate numbers so as to reduce the rise in unemployment or eradicate it completely. Evidence has shown that stagnant economic growth in Swaziland has been unable to provide the compulsory job opportunities which has thus resulted in a rising unemployment rate. The problem has been aggravated by the HIV prevalence rate and the great number of new entrants into the labour force amongst other things. This means that labour absorption has been far lower than the rates necessary to hold the unemployment levels constant or prevent them from rising.

Equality in the labour force is still far off in regards to access to employment opportunities. Unemployment is concentrated in particular demographic and geographic defined groups. Hence, those worst affected by unemployment are females, poorly educated, the youth (15-24 year olds) and those who form part of the rural population. Even amongst the groups considered to be in advantageous positions, it is more difficult to find employment due to the ever increasing unemployment rate. Jobs have become relatively scarce and unemployment has become a permanent feature of life for many people in the country. Unemployment is quite catastrophic and it has severe consequences for human resources/capital provided by these individuals. Unemployment abrades their skills or makes their skills out-dated thereby further reducing their chances of employment.

A trend of a rapidly growing number of unemployed workers with relatively high levels of education has been observed in the economy; despite skills shortage in Swaziland, there are a rising number of highly educated people without employment. This also characterises one of the most important challenges facing the government: ensuring that the education system produces the mix of skills required by the labour market. Even though jobs may have been created in the past it is important to note that a majority of these jobs were created in the informal sector, where jobs are usually of low quality and are less stable and lower paying than formal sector jobs.

### **1.3.Problem Statement**

Unemployment is a macroeconomic phenomenon that has been well documented in literature. Economists in history have had different views of the unemployment phenomenon, there have been various theories formulated by different schools of thought in regards to unemployment. For



example, the Keynesian economists and Monetarists have had contrasting views about the unemployment problem.

The nature of unemployment in developing countries such as Swaziland is different than in other developing countries. In developing countries, unemployment is seen to be protracted rather than temporary. Swaziland is a country that was once ranked as a country with one of the strongest economies in Africa. Ironically, the dominant feature in the Swazi economy today is poverty and unemployment. According to the Swaziland Central Statistical Office (2014), the unemployment rate in Swaziland currently stands at 40.6% (relaxed definition of unemployment) and at 28.5% (strict definition of unemployment). The high unemployment rate can be attributed to factors such as skills shortages, slow pace of economic reforms and deterrents to investment such as heavy regulations that repel FDI. The unemployment problem has also had dire effects on the economy as a whole. Swaziland's real economic growth has been declining, it declined to an estimated 0.2% in 2009 from 2.4% and growth is projected to remain slow.

The various attempts that have been made as means of alleviating the unemployment problem seem to have failed because the unemployment rate in the country continues to rise. This study therefore, aims to make policy recommendations that can be adopted by the Swazi government as means of alleviating the unemployment problems based on the results of this investigation.

#### **1.4.Purpose of the Study**

The primary goal of this study is to investigate the determinants of unemployment in Swaziland. The study provides alternative policy solutions to the problem that has resulted in the destabilisation of the Swazi economy and jeopardised the stability of Swaziland as a country.

#### **1.5.Aims and Objectives**

The study aims to:

- investigate the determinants of unemployment in Swaziland;

- investigate the causal relationship between unemployment and its determining factors;
- conduct an econometric analysis on the effect of such determinants on the recent unemployment trends in Swaziland in order to deduce some policy implications.

## **Objectives**

The objectives of the study are:

- to analyse the impact of the determinants of unemployment on the economy in Swaziland;
- to utilise the granger causality test to determine the existence of a causal relationship among the variables;
- to determine the trends of unemployment in Swaziland using econometric tools for analysis in order to deduce some policy implications.

## **1.6. Research Questions**

- What are the factors that determine unemployment in Swaziland?
- Does a causal relationship exist amongst the variables, that is, unemployment and potential economic growth, unemployment and inflation, unemployment and government spending?
- What econometric tools will be employed in the analysis of the determinants in Swaziland in order to draw meaningful policy conclusions?

## **1.7. Significance of the Study**

Although the unemployment problem has been persistent in Swaziland, this is the first study that has attempted to solve the problem by applying econometric analysis. This study will allow policy makers to have an in depth view of unemployment in Swaziland so as to allow them to decide on a suitable policy that will help bring down the unemployment rate while sustaining appropriate inflation level and attract sufficient FDI flow. The results obtained will help provide insight to the nature of the relationship between unemployment, economic growth, inflation and government spending. The results will also educate policymakers about the degree and relationship of

economic growth that is necessary to reduce the unemployment rate, or at least keeping it from rising.

### **1.8.Limitations of the Study**

The unavailability of unemployment data has led to the study being confined to a certain time period in which the relevant unemployment data was available. Hence, the study employs the unemployment rate modelled International Labour Organisation estimate from the period of 1991 to date.

### **1.9.Deployment of the Study**

The study consists of six chapters. Chapter one is the introduction and orientation of the study which gives an overview of the problem at hand and this chapter contains the statement of the problem. Chapter two is an overview of the unemployment phenomenon in Swaziland. Chapter three is the literature review which reviews both the theoretical and empirical literature based on the topic. Chapter four presents the empirical research methods which are used in collecting and analysing data. The chapter consists of the research design and outlines the methodology used. Chapter five presents the study results and discussion, summarises the results of the responses, data gathering processes, data analysis and interpretation. Chapter six provides the summary of the whole study or findings; conclusions are drawn from the results of the study and recommendations are made based on the results of the study.

## **Chapter 2**

### **An Overview of Unemployment in Swaziland**

#### **2.1. Introduction**

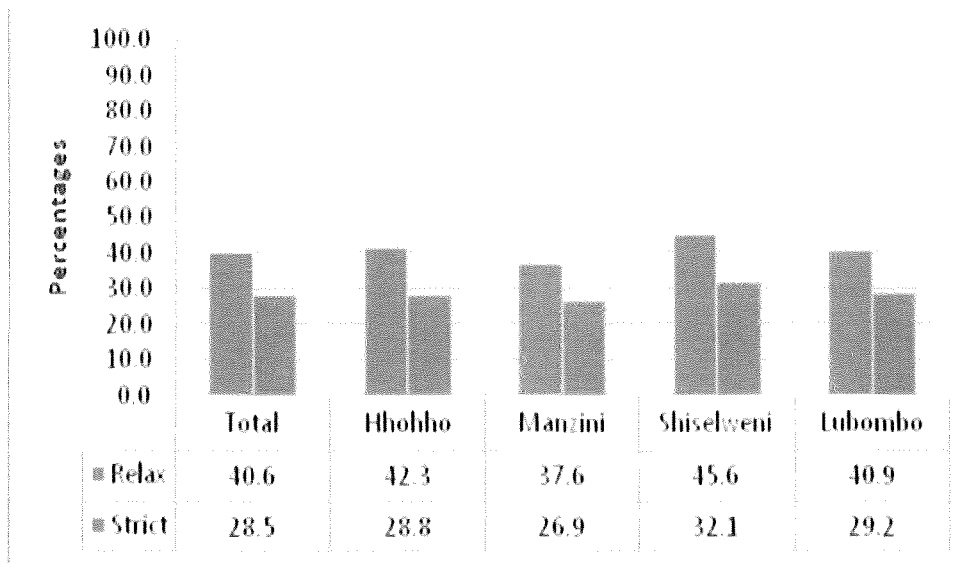
This chapter provides an overview of the progression of the unemployment pandemic in Swaziland. The dynamics of unemployment, employment, the impact of the unemployment pandemic on the labour market and the overall effect on the country's economy are discussed in this chapter.

#### **2.2. Unemployment Dynamics**

The concept of unemployment ought to be discussed in relation to the occurrence of informal employment and how much of informal employment is underemployment due to few formal employment possibilities and the power of social safety nets. Effective labour market policies aimed at addressing the problem of unemployment in Swaziland should be informed policies that are familiar with characteristics of the labour force in Swaziland. This section presents the crucial attributes of the largely unemployed.

The unemployment rate stood at 40.6% and 28.5% in 2010 (see Figure 1) when measured by the relaxed and strict definitions of the unemployment rate and this qualified Swaziland as the country with the highest unemployment rate in the SADC region. The South African unemployment rate was estimated to be 25% whilst in Botswana it was estimated to be 17% and the unemployment rate in other African countries remained within the single digit boundary (Government of Swaziland, 2010).

**Figure 2.1: Unemployment Rate by Administrative Regions in Swaziland**

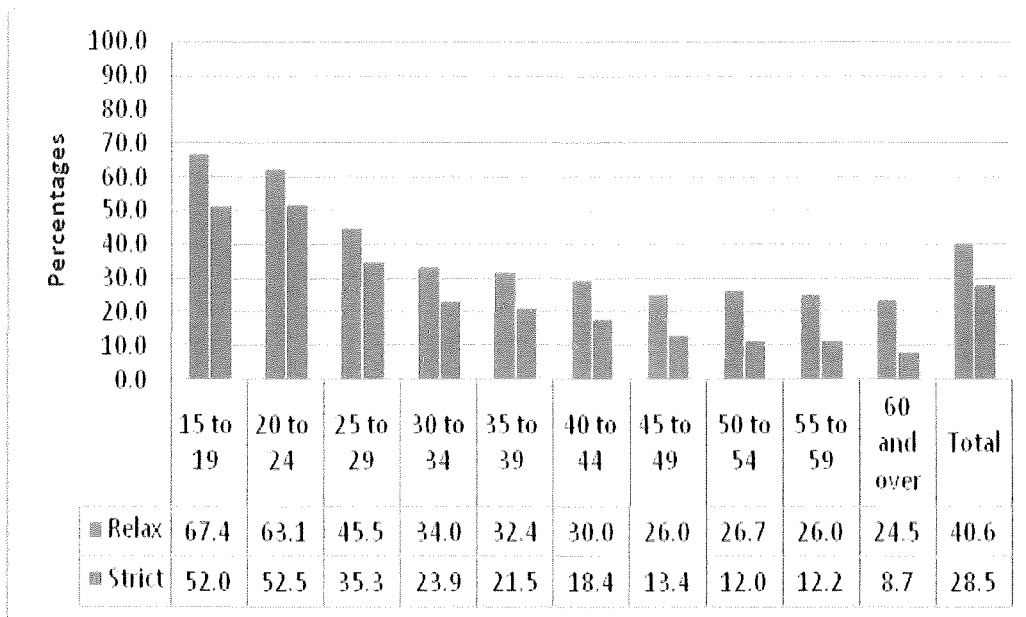


Source: The Swaziland Integrated Labour Force Survey 2010

*The Shiselweni region had the highest unemployment rate compared to other regions at 45.6% and 32.1% for the relaxed and strict definition. On the other hand, the Manzini region had the lowest unemployment rate when using both definitions.*

Youth unemployment was found to be exceedingly high at 53% (as depicted in Figure 2) and youth unemployment among the uneducated was found to be common. The youth unemployment rate was very problematic as it was alleged to be almost double the unemployment of every other age category. Like most African countries, a large number of young people enter the labour force each year. The Labour market profile of Swaziland (2013) projected that, of the over 10 000 school leavers that entered the labour market each year, approximately 2 000 were absorbed into the labour market every year. The older one is, the higher the probability of one to get employment in Swaziland. The opposite holds for the younger people in Swaziland, the younger one is, the harder it is to compete and enter into the labour market. The extraordinary unemployment rate is thus a signal of an oversupply and underutilisation of the relatively low skilled and inexperienced young workers (Government of Swaziland, 2010).

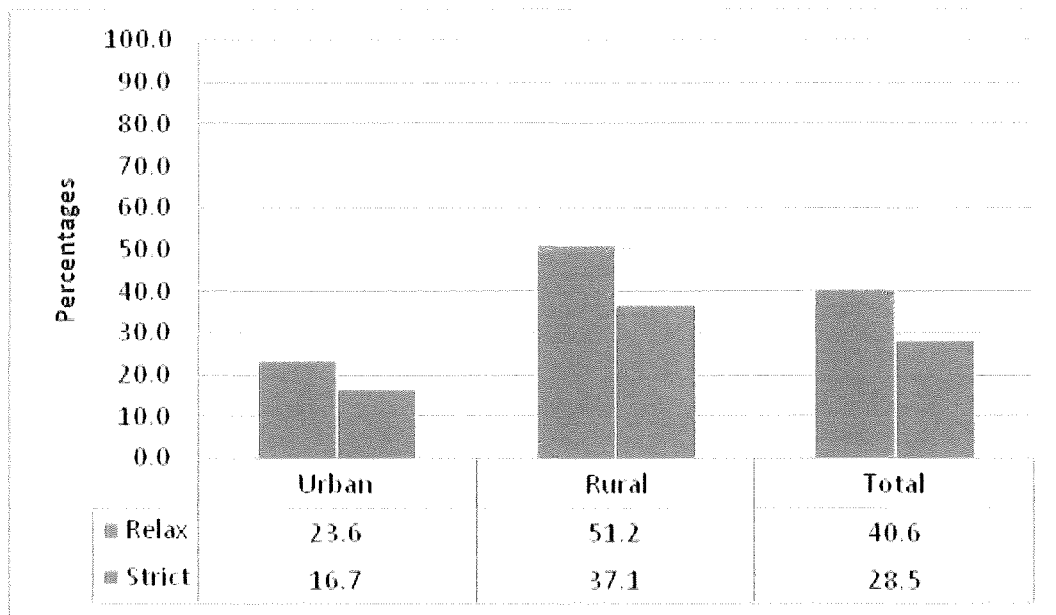
**Figure 2.2: Unemployment Rate by Age Groups**



Source: The Swaziland Integrated Labour Force Survey 2010

Fundamentally, half of the population within the age working group in the rural areas fell under the pool of unemployed people. The rural areas unemployment rate doubled that of the urban areas for both the relaxed and strict definition of unemployment. The unemployment rate in the rural settlements was 51% and 37.1% for the relaxed and strict definition of unemployment as compared to 23.6% and 16.7% in the urban areas (see Figure 3). This scenario was seen to be a unique feature for Swaziland as many countries usually have higher urban open unemployment where people come and register for jobs with employment agencies (Government of Swaziland, 2010).

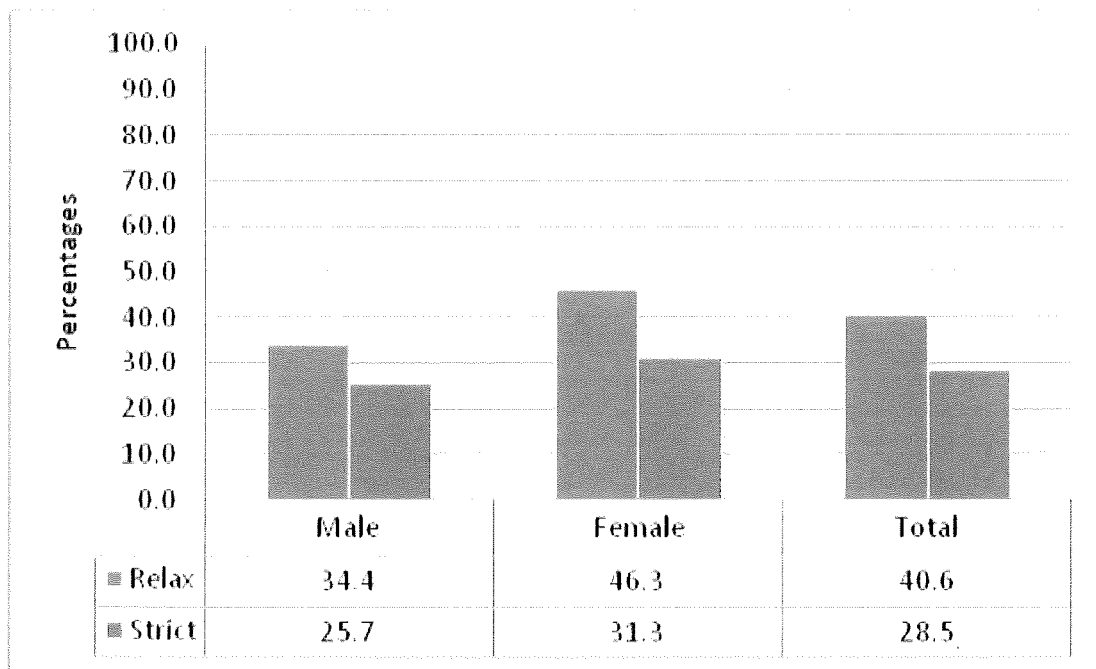
**Figure 2.3: Unemployment Rate by Type of Residence**



Source: The Swaziland Integrated Labour Force Survey 2010

There are also vast gender discrepancies in the labour force in Swaziland as highlighted by Brixiova *et al.* (2012). The labour force survey in 2007 reported that more women were unemployed than their male counterparts. The Labour force survey in 2010 exhibited similar results (as depicted in Figure 4). This is a great cause for concern and it calls for policies that will enhance gender balance in the labour force in Swaziland (Government of Swaziland, 2010).

**Figure 2.4: Unemployment Rate by Gender**

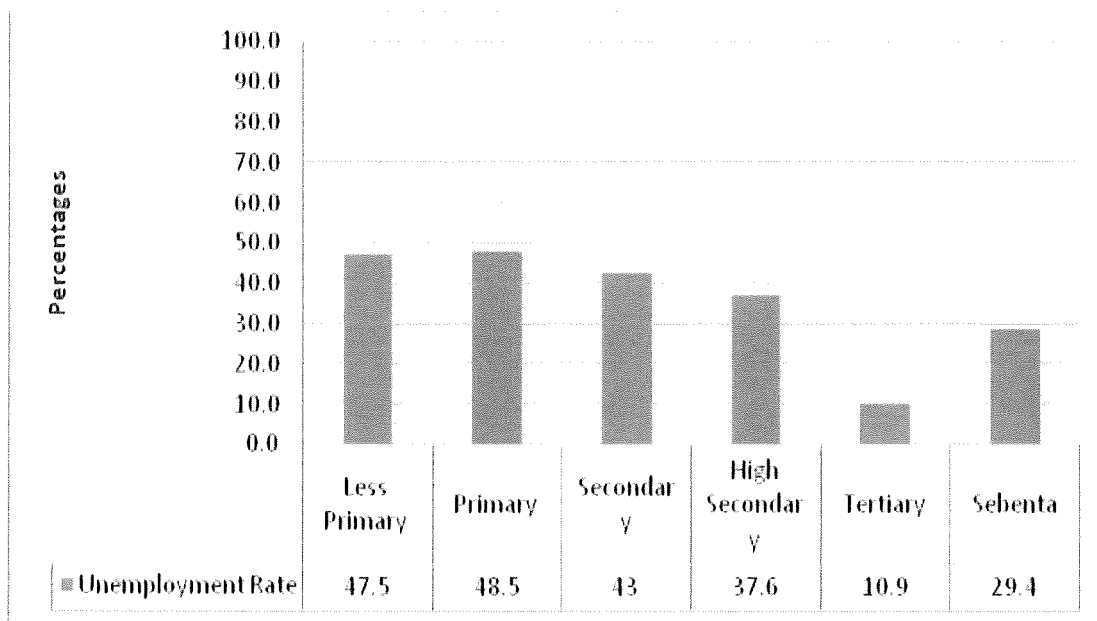


Source: The Swaziland Integrated Labour Force Survey 2010

The level of education reached has also been a major contributing factor to unemployment rate in the country. Evidence is seen in the figure below as it illustrates that those with less education levels, meaning that, less than primary education, primary and secondary contribute majorly to the pool of unemployed persons. Figure 5 illustrates that the more education one attains, the better the chances of finding employment as only 10.9% of persons with tertiary education were unemployed in 2010.



**Figure 2.5: Unemployment Rate by Education Level Reached**



Source: The Swaziland Integrated Labour Force Survey 2010

The inability of the economy of Swaziland to generate new jobs at the necessary pace coupled with an increasing size of the labour force has led to a rise in the broad unemployment rate. Unemployment rates have increased for almost every group in the population, that is, the youth, uneducated, men and women and have become exceptionally severe in a number of cases. More than 30% of females are unemployed, as is more than half of the rural labour force. Hence, the need for the government to develop and implement employment policies that will integrate the vulnerable groups, especially the youth, into the labour market.

### 2.3. Employment Dynamics

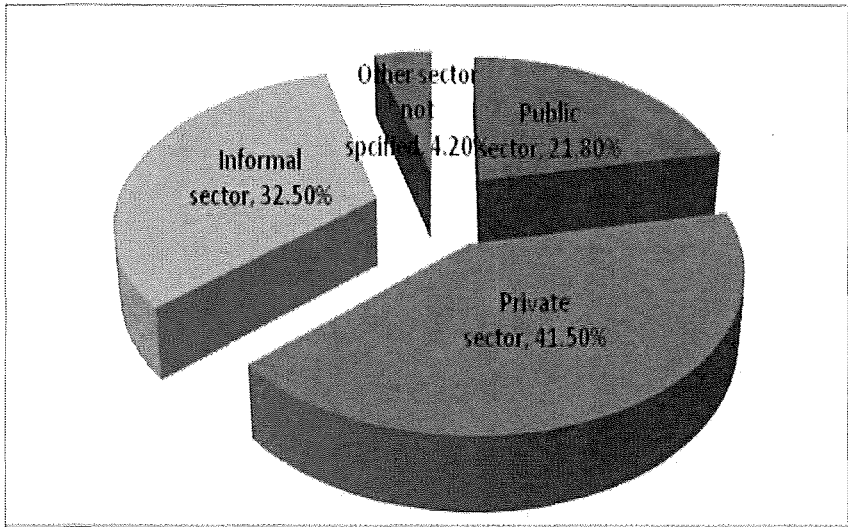
In the Labour Surveys conducted by the Ministry of Labour and Social Security, the term “employed people” referred to people who did some work for payment in cash or payment in kind. Furthermore, the term also referred to paid employees or the self-employed with or without employees for profit or family gain as those well as those who were temporarily absent from work due to sickness or leave but would definitely return to work. The concept of some work was defined in terms of an hour or more. Employment was deemed to be a way out of poverty, a part of an individual’s livelihood as people meet their livelihoods through employment. Employment was also thought to be the epicentre of economic development challenges facing many developing

countries such as Swaziland in this era (Government of Swaziland, 2010). The fact that no sustainable development can occur unless people have productive jobs which will in turn translate into a socially secure, stable and equitable society was acknowledged by the government. Hence, the government stressed the significance of creating new jobs through employment-intensive growth, address decent work deficits in the informal economy and in rural area, improve productivity of the working poor and pay greater attention to equity issues (Government of Swaziland, 2010).

A trivial proportion of the eligible working population is accounted for in the formal sector. The civil service is the largest formal sector employer. On the formal side of the economy, it was reported that 199 000 Swazis were engaged in formal sector work that paid regular salaries. The single biggest proportions were civil servants and parastatal employees. Other distinct groups under formal employment include the 10 000 working for private companies, of which the sugar industry has the biggest share, as well as those working for the labour movement and non-governmental organisations (NGO), which together constitute 9 000 employees (International Labour Organisation, 2010).

There is also a relatively high rate of informality in the country (see Figure 6). The 2007 Swaziland Integrated Labour Force survey reported that 48% (or 190 000) of those who were working were involved in the informal economy. Of these, 89% (or 160 000) engaged themselves in informal trading activities. These activities varied from selling goods in markets or on sidewalks, to running a small business such as a barbershop or to cross border trading. In as much as informal sector traders may appear disparate; in reality informal traders are often represented by umbrella organisations that lobby on behalf of their members (Hougaard *et al.*, 2011). A similar survey in 2010 reported that 52% of people were employed in the informal private sector because they could not find other forms of employment as the formal sector possessed inadequate resources to accommodate all of them though 3% cited supplementing their income for their families as a reason for engaging in this sector. On the other hand, this survey reported that employment in the formal private sector in the country had increased. This sector almost doubled people employed in the public sector as it employed 80 441 people against 42 000 from the public sector (Government of Swaziland, 2010).

**Figure 2.6:** Employed Population aged 15 years and above by Sector in Percentages

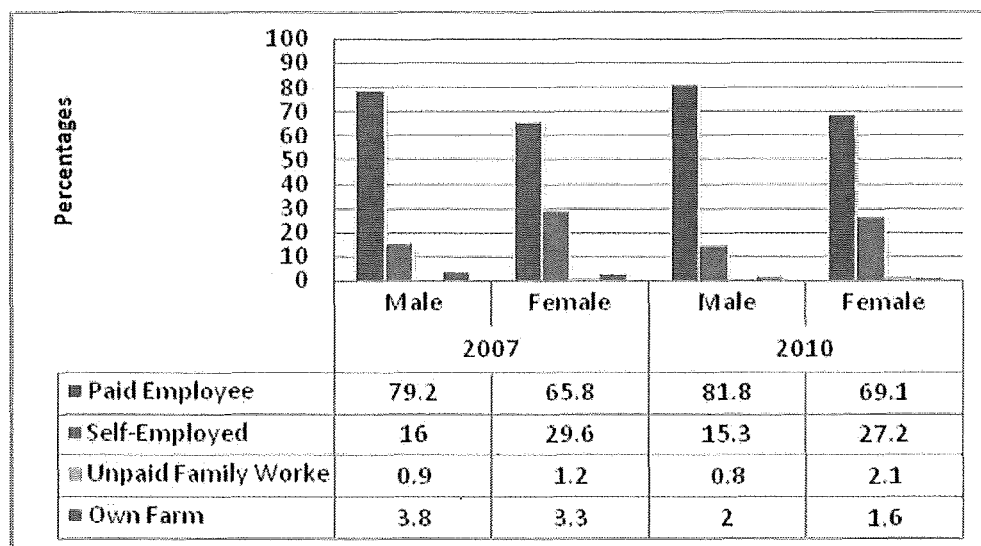


Source: The Swaziland Integrated Labour Force Survey 2010

*The figure above illustrates the employment patterns in various sectors of the country whereby the private sector became the largest employer of the country's working population in 2010 with 41.50%.*

The Labour Survey also showed that males dominated the formal sectors both the public and private sectors in terms of employment by sector. On the other hand, females were mostly employed in the informal sector. Approximately 26% of the male population was estimated to be employed in the private formal sector as compared to 16% females in the same sector, whilst 19% of females were employed in the formal sector in comparison to 13% males (Government of Swaziland, 2010). Figure 7 is an illustration of the relationship between the male and female employment status for 2007 and 2010. The results clearly depict that males dominate the workplace as compared to their female counterparts. This trend was observed in years when the surveys were conducted, 2007 and 2010, respectively.

**Figure 2.7: Employment by Sector and Gender**



Source: The Swaziland Integrated Labour Force Survey 2010

A worrying trend observed in the employment dynamics of Swaziland is the lack of opportunities especially for the youth, as it can be noted from the section above that a majority of the youth is unemployed and that a majority of the youth partakes in low-value added activities. If individuals between 15 and 24 years of age continue being excluded from the labour force in greater numbers, unemployment for these groups is likely to rise rapidly. Another cause for concern is the size of the formal sector, the government of Swaziland should adapt measures that will attract foreign investment so as to broaden the formal sector and diversify the number of activities in the economy in order to generate substantial revenue and improve the economic standing of the country as a whole.

#### **2.4. Contrasting Employment and Unemployment**

It is a rational explanation that the employed and the unemployed will differ in certain ways. Certain individual attributes indicate increased or decreased probability of being unemployed. The aim of this chapter was to identify these attributes. Clearly, the absorption of the young labour market entrants has been generally poor as mentioned in the sections above. This has caused the age profiles of the employed and the unemployed to differ quite substantially. What can be derived from the sections above is the rapid increase in the number of unemployed youth and there has been relatively little change in employment over a long period. The key difference between the

age profiles of employment and unemployment is that unemployment is concentrated largely amongst individuals between the ages of 15 and 24, while the employed are concentrated between the ages of 25 and above.

The apparent inability of the economy to absorb new jobseekers particularly school-leavers is magnified at this point. Since the persistence of the years of stagnant economic growth, the flow in unemployment has been predominantly severe amongst labour force members who are classified as the youth. It can be noted that employment seems to be biased towards higher skilled, and therefore generally better educated, workers, while unemployment is highest amongst the less educated. In general terms, individuals employed in the formal sector within all age groups have more years of education than those who are unemployed or those employed in the informal sector. This pattern is not surprising as one would expect the years or level of education to be a major factor in determining which sector one will be employed under.

It is evident that individuals in urban areas stand a better chance of being employed than individuals in the rural areas. Individuals in rural areas are already marginalised and the lack of employment opportunities makes this problem more profound; and when employment opportunities arise, it is usually the labour intensive, informal type of employment. Government therefore, needs to intervene in creating sustainable employment in the rural areas that will make a substantial contribution to the country's ailing economy.

The public sector in Swaziland is overburdened and seemingly incapacitated as it is unable to employ the necessary number of workers that could reduce the unemployment rate each year. Hence, the government needs to invest in developing the understated private sector by pumping in more investments into the development of Small and Medium-sized Enterprises (SMEs) which are said to be powerful engines of economic growth and the main source of job creation. The benefits of a successful private sector is the expansion of the variety of goods and services in the economy and also leads to reduced prices thereby increasing the purchasing power of consumers amongst other benefits. Even though Swaziland is faced with the problem synonymous with most developing countries, that is, the lack of adequate knowledge and resources in terms of designing institutional, organisational and regulatory frameworks conducive for private sector investment, if the country is to progress it needs to undertake far reaching economic reforms. These reforms will

in turn enhance the economic growth which is an important tool that can be used to raise people's incomes, reduce poverty and thus raise their general living standards.

## **2.5. Policies Aimed at Addressing Unemployment and other Macroeconomic Problems in Swaziland**

In light of the topical macroeconomic problems, the government had to come up with plans or strategies in order to circumvent the macroeconomic problems such as the fiscal crisis and the problems resulting from the fiscal crises e.g. unemployment confronting the country. Swazi authorities solicited the assistance of the International Monetary Fund (IMF) to battle the problems that came with the fiscal crisis (Basdevant, 2011).

### **2.5.1. The Fiscal Adjustment Roadmap**

A Fiscal Adjustment Roadmap was adopted by Swazi authorities in late 2010 as an attempt of restoring fiscal sustainability in the country's ailing economy. The ultimate goal of the Fiscal Adjustment Roadmap was to decrease the fiscal deficit of the government to less than 3 % of GDP by 2014/15, while increasing the growth potential of the Swaziland economy through structural reforms. In developing the proposed reforms, the Fiscal Adjustment Roadmap drew largely from policies and reforms in the National Development Strategy (NDS), Vision 2022 covering the period 1997-2022, the Poverty Reduction Strategy and Action Programme (PRSAP) and the 2010 Budget speech (Government of Swaziland, 2010). The roadmap included short-term measures such as tax increments, a hiring and wage freeze amongst other things. Other short-term measures largely focused on strengthening the functions of the Finance Ministry such as public financial management, expenditure policy and revenue administration. The Swazi authorities roped in the IMF to scrutinise the roadmap through an IMF Staff-Monitored Programme. IMF staff and the Swazi authorities reached a consensus following some advice from the IMF staff. The agreement was that the IMF staff was to monitor the implementation of the Government of Swaziland's economic and financial program during a specified period. However, the approval of this agreement did not represent endorsement of the programme by the IMF Executive Board or involve IMF financing (Basdevant, 2011).

The Fiscal Adjustment Roadmap was adopted in October 2010 and it built on certain measures as an attempt to reduce the deficit to justifiable levels. On the revenue side, the FAR envisioned introducing a Value Added Tax (VAT) and a capital gains tax, the VAT was to replace the general sales tax starting with the 2012/13 budget. The FAR also aimed to strengthen revenue administration to fight tax evasion more effectively. The Swaziland Revenue Authority was projected start functioning from January 2011. On the expenditure side, the FAR included a freeze on the wage bill for the next three years which would be achieved by freezing vacancies and reallocating resources more efficiently, reducing the general size of the public service by at least 20% and by reviewing compensation policies and introducing performance management systems. The second measure on the expenditure side was to reduce expenditure on goods and services as the FAR foresaw firmer controls and better competences in the delivery of goods and services (International Monetary Fund, 2011).

Some of the measures that were recommended to correct the fiscal situation in Swaziland had the potential to backfire, that is, to have an opposite effect other than the desired effect. Reducing the public sector wage bill by reducing public service jobs could have reduced the wage bill yet on the other hand, this also had the potential to worsen the economic situation in the country as it could lead to compromised service delivery and an accelerated unemployment rate. This could also negatively impact on the already marginalised (poverty-stricken) population.

### **2.5.2. The Economic Recovery Strategy**

Faced by a deteriorating economy and fiscal problems that further perpetuated the socio-economic problems in the country, the government of Swaziland was faced with a challenge of coming up with policies and strategies to counter the economic situation. Hence, the Economic Recovery Strategy (ERS) that was drafted by Swaziland's Ministry of Economic Planning and Development in 2011, a multi-year plan aimed at achieving economic growth and job creating (KPMG, 2012).

The prevalent economic and fiscal situation compelled the government to embark on an Economic Recovery Strategy. The Economic strategy was a result of the government's desire to implement significant reforms that would salvage the economy from the socio-economic challenges it faced. The ERS was developed as means of laying a foundation for a shared, equitable and participatory approach to sustainable development, social and economic growth through addressing the

challenges and constraints taking into account, existing and potential opportunities and improving prospects for the socio-economic prosperity of future generations (African Development Bank, 2011).

The general aim of the ERS was to achieve a growth rate of at least 5% and create at least 30 000 jobs by 2014. The ERS sought to set a clear direction on the actions and measures to be taken to restore macroeconomic stability and shared economic growth for poverty reduction and sustained economic development. The ERS further mentioned the impact that the global financial crisis had on Swaziland, the setbacks that resulted from it and possible solutions to counter the effects it had on the economy. The elementary aim of the recovery programme was to reinforce macroeconomic management, re-establish investor and consumer confidence, undertake structural reforms, infrastructure development (increasing pro-poor and pro-growth investment), invest in human capital and empower the poor to generate income. The Government was therefore anticipated to draft and execute applicable fiscal policy in an addition to the implementation of appropriate monetary policy instruments that would offer a conducive environment for the private sector to thrive (African Development Bank, 2011).

The aims of the strategy as presented in the National Budget Speech (2011) that aimed at addressing challenges such as the impact of the global financial and economic crisis, the deteriorating fiscal outlook, escalating unemployment levels, high poverty levels and the high HIV/AIDS rate were:

- accelerated, shared and sustainable economic growth which was essential to re-dress the macroeconomic imbalances and other structural deficiencies in the economy;
- growing the economy so that reforms proposed in Fiscal Adjustment Roadmap could be achievable. These included diversifying the economy in order to increase the taxable base of both individuals and companies;
- empowerment and integrating SMEs into the mainstream economy to provide more job opportunities which can absorb retrenched civil servants under voluntary retirement scheme;
- provide relief to the national resources as more people graduate from social relief as they become empowered and self-reliant;
- and long-term solutions to structural problems that the country faces.



So far, the implementation of the ERS has been slow as the strategy has failed to address some fundamental long term problems in order to achieve sustainable development. In order to achieve the desired rate of employment and growth, government should develop policies that are youth oriented as the youth of nation determines the prosperity of the nation in future. Policies such as the youth wage subsidy and more investment in educating the youth should be considered in order to reduce the unemployment rate and increase the level of economic activity in the country.

## **2.6. Conclusion**

The economy of Swaziland is a shadow of what it used to be in the 1980s. Today, it faces numerous challenges. Perhaps the noteworthy challenge to date is, generating employment opportunities in adequate numbers so as to curb the rise in unemployment and then eventually reduce it. Evidence has shown that stagnant economic growth in Swaziland has been unable to provide the compulsory job opportunities which has thus resulted in a rising unemployment rate, which currently stands at 40.6% of the labour force to date. The problem has been aggravated by the HIV prevalence rate and the great number of new entrants into the labour force amongst other things. This means that labour absorption has been far lower than the rates necessary to keep the unemployment levels constant.

Trends that have been identified in terms of employment and unemployment have been discussed and highlighted in this chapter. This chapter observed a rapidly growing number of unemployed workers with relatively high levels of education; despite a skills shortage in Swaziland, there are a rising number of highly educated people without employment. This also characterises one of the most important challenges facing the government: ensuring that the education system produces the mix of skills required by the labour market. Even though jobs may have been created in the past it is also important to note that a majority of these jobs were created in the informal sector, where jobs are usually of low quality and are less stable and lower paying than formal sector jobs.

Another noteworthy problem was the inaccessibility of long-term labour market data for Swaziland. The 2007 and 2010 Labour Force Survey results were not freely available thus alternative sources had to be employed. The inaccessibility of such information is a hindrance to the country's development economically and otherwise. Researchers may want to study the

demographics of unemployment in the country in order to offer plausible solutions that could possibly reduce unemployment and boost the economy but the lack of information is a precarious barrier to the prosperity of the country. It is thus, clear that much remains to be done in order to achieve economic prosperity in the Kingdom with the labour market being key.

## **Chapter 3**

### **Literature Review**

#### **3.1. Introduction**

This chapter reviews various theories and empirical studies of unemployment and its subsequent relationship with various determinants (such as economic growth and inflation). The chapter explains the concept of unemployment, the causes of unemployment and consequences of unemployment. The chapter also presents the various theories of unemployment followed by the empirical literature.

#### **3.2. Unemployment: Conceptual Preliminaries**

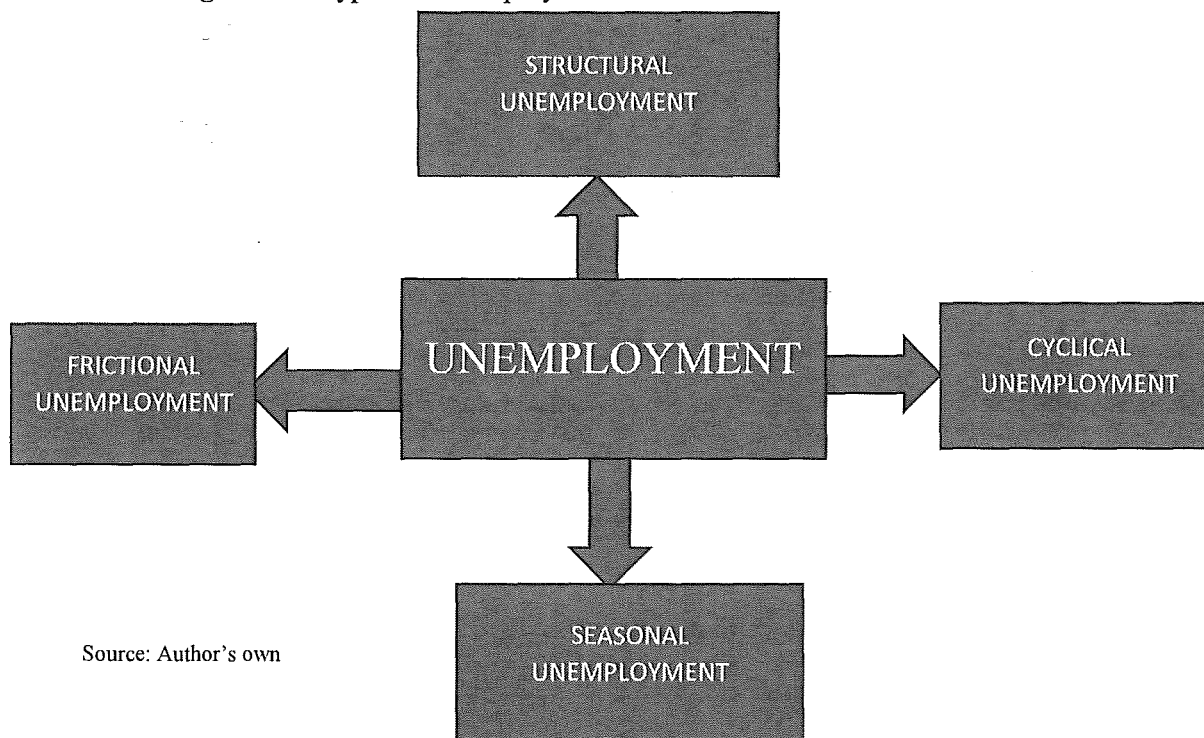
The concept of unemployment is a popular concept well understood by many people of various nations. The unemployment rate generally indicates the economic state of a country. In theory, the concept of unemployment seems straightforward however, in practice it is complicated because individuals have to be classified as employed, unemployed or out of the labour force by taking into consideration a lot of factors. In 1954, the International Labour Organisation (ILO) formulated a standard definition of unemployment that enabled countries to categorise individuals as either employed or unemployed. According to the ILO standards, a person is unemployed if he or she is: a) without work, b) currently available for work and c) seeking work.

However, the 13<sup>th</sup> International Conference of Labour Statisticians (ICLS) made a provision that allowed for the relaxation of the seeking work criterion that was emphasised in the initial standard definition of unemployment. The standard definition of unemployment was thought of as rather constrictive and unable to entirely capture the prevalent employment conditions in many countries. The latter definition of unemployment was confined to specific situations whereby the orthodox means of seeking employment were of partial significance, and cases where the labour market is largely unorganised or of limited scope, where labour absorption is at the time insufficient, or where the labour force is largely self-employed (Hussmans, 1990).

Since then, both developed and developing countries have adopted this definition of unemployment in some form. Authors in economics have also used this definition as a benchmark for their own definitions of unemployment. For instance, Kuper and Kuper (1996) defined unemployment in terms of not being employed and available and looking for work. Dwivedi (2005) defined unemployment as a situation in which those who are able and willing to work at the prevailing wage rate cannot find jobs. Dwivedi (2005) however, found this definition of unemployment ambiguous from a policy point of view as it did not specify the persons who should be and who should not be included in the category of job seekers. He further defined unemployment as the gap between full employment and the number of employed persons.

Unemployment is classified into four types. The four types of unemployment are: seasonal unemployment, structural unemployment, frictional unemployment and cyclical unemployment (D'Souza, 2009). Seasonal unemployment varies predictably with the seasons, structural unemployment occurs in periods of economic change, frictional occurs during a transition of a worker from one job to another or when workers enter the job market for the first time and cyclical unemployment is associated with a reduction in real output during periods of a recession (D'Souza, 2009).

**Figure 3.1: Types of Unemployment**



Source: Author's own

The sum of seasonal, frictional and structural unemployment is also referred to as the natural rate of unemployment. However, the focus of macroeconomics is cyclical unemployment; the unemployment that increases when there is a slowdown in economic activity and that decreases when real output increases (D'Souza, 2009).

### 3.2.1. Causes of Unemployment

- **Seasonal unemployment:** seasonal unemployment is caused by variations in seasons. For instance, in agricultural based economies, farmers and labourers have little work during off seasons. Other industries such as the tourism industry are also idle during off seasons due to little business. People who have jobs only in busy seasons are deemed seasonally unemployed (Gupta, 2004).
- **Cyclical unemployment:** adverse supply and demand shocks result in cyclical unemployment. Adverse supply shocks come in the form of falls in the work force and capital inputs, increases in the costs of labour, raw materials, energy and supplies, tax rates and firms expected inflation, poor weather amongst other factors. Some of these tend to increase the cost of production, which, *ceteris paribus* induces firms to cut their production. The others directly affect aggregate supply. Given the aggregate demand, the real income and employment falls. This in turn, results in retrenchments, redundant workers and lay-offs (Gupta, 2004).
- **Frictional unemployment:** frictional unemployment occurs because of the amount time it takes for one to find employment or to move from one job to another. There will always be workers who are changing jobs at any point in time. Persons who leave one job or are looking for a first job often do not find employment immediately although there are vacancies in the economy. Frictional unemployment is inevitable and it is not deliberated to be a serious problem in the economy (Mohr and Fourie, 2008).
- **Structural unemployment:** structural unemployment is a result of the incompatibility between worker qualifications and job requirements. Structural unemployment also occurs as a result of the disappearance of jobs due to structural changes in the economy (Mohr and Fourie, 2008).

- Other causes of unemployment include discrimination and foreign competition.

### **3.2.1.2. Consequences of Unemployment**

Unemployment is an undesirable phenomenon that carries a multitude of problems for the economy and individuals as well. According to Gupta (2004) the greatest cost of unemployment is the loss of GDP to the world economy and loss of income to the individual. However, the problem of unemployment extends beyond the loss of potential output as measured by GDP. Tucker (2010) stated that unemployment also has non-monetary costs. Unemployment leads to loss of feelings of self-worth; research has also associated unemployment with suicide, mental illness, heart attacks and other problems. Unemployment also causes despair, family break-ups and political unrest (Tucker, 2010)

Gupta (2004) however, stated that unemployment has a benefit of leisure time. Leisure may be considered a benefit for those who do not have it, that is, those who consider it scarce; on the other hand, those who have a lot of it do not consider it a benefit. It is evident that unemployment has no advantages economically and otherwise, it is merely a disease that society should rid itself of.

### **3.3. Theoretical Literature**

This section aims to review the theoretical underpinnings of unemployment. The theories discussed in this section include Okun's Law, the Classical Theory, the Keynesian Theory, the Monetarist Theory and Pigou's Theory of unemployment.

#### **3.3.1. Okun's Law**

In 1962, Arthur Okun reported on a pattern he observed in the relationship between unemployment and output. Okun perceived an inverse short-run relationship between unemployment and output (Ball *et al.*, 2012). Okun's law has been proven true in many countries and numerous studies have confirmed this finding hence, it is regarded as one of the most reliable empirical reliabilities in macroeconomics.

O'Hara (1999) defined Okun's Law as an unchanging association between the annual change in the rate of unemployment and the growth rate of real gross national product. Okun projected the

gain or loss of real GNP related with a decrease or increase in unemployment of one percentage point below or above four percent to be three percent for the US economy in the period 1947 to 1960. This relation is also known as the Okun coefficient. According to Kennedy (2000), Okun's law measures the output gap; negative numbers mark a loss of actual output relative to potential output and positive numbers mark periods of boom when the economy produces more than its "full employment output."

Under Okun's Law, the association between output and unemployment can be demonstrated by three different methods. a) By the correlation of variations in the unemployment rate with the growth rates of real GNP. b) By the correlation of unemployment rates with deviations of potential from actual GNP. c) By using the assumption of a constant ratio between actual and potential GNP and a constant growth rate of potential GNP. The first estimation method is relatively simple. Methods b) and c) require assumptions about the development potential of GNP or the non-accelerating inflation rate of unemployment (NAIRU) (O'Hara, 1999). According to Barreto and Howland (1993) Okun presented a convincing argument of the high cost of unemployment by utilising these three methods of relating output to the employment rate and a subjective weighting of coefficient estimates to arrive at the equation:

$$P = A[1 + .032(U - 4)] \quad (3.1)$$

Where: P is the potential output, A is the actual output and U is the unemployment rate.

Krugman and Wells (2006) explained that the unemployment rate is sensitive to fluctuations in real GDP around its long-run trend. The fluctuations in the unemployment rate are normally smaller than the corresponding changes in the output gap. Arthur Okun originally estimated that a rise in the real GDP of one percent above potential output would lead to a fall in the unemployment rate of only half of a percentage. Presently, the estimates of Okun's law is that the negative relationship between the output gap and unemployment rate find that a rise in the output gap of a percentage point reduces the unemployment rate by about half of a percentage point. Therefore, the modern version of Okun's law reads as:

$$\text{Unemployment rate} = \text{natural rate of unemployment} - (0.5 \times \text{Output gap}) \quad (3.2)$$

Although Okun's law was generally deemed a reliable and stable relationship, it was subject to criticism and questions of whether it was an end or means to an end. According to O'Hara (1999) Okun's original law neglected other relationships that have a significant impact on output and unemployment. These omitted relationships included investment activity on labour productivity and production potential; the nature and rate of technological innovation and endogenous technical progress.

It is because of this reason that there have been different versions of Okun's law since its invention. The first version of Okun's law was the difference version that captured how the changes in the unemployment rate from one quarter to the next moved down quarterly growth in real output. The second version was the gap version that connected the level of unemployment to the gap between potential output and actual output. The third version of Okun's law was the dynamic version that bears some similarities to the original difference version. The last version of Okun's law is the production-function version which combines a theoretical production function with the gap-based version of Okun's law (Knotek, 2007).

The dynamic version has more explanatory variables including current real output growth, past real output growth and past changes of the unemployment rate thus it is the one most preferred by economists (Knotek, 2007). Empirically, the dynamic version of Okun's law is expressed as:

$$\Delta\mu_t = \beta_0 + \beta_1 \alpha_{y_t} + \beta_2 \alpha_{y_{t-2}} + \beta_3 \alpha_{y_{t-2}} + \beta_4 \Delta\mu_{t-1} + \beta_5 \Delta\mu_{t-2} \quad (3.3)$$

**Where:**  $\Delta\mu_{t-1}$  is the first lag of the unemployment rate

$\Delta\mu_{t-2}$  is the second lag of the unemployment rate

$\alpha_{y_{t-1}}$  is the first lag of GDP growth

$\alpha_{y_{t-2}}$  is the second lag of GDP growth

Okun's law was accepted as an empirical regularity rather than a theory (Prachowny, 1993). Okun's law was not considered a theory because it was based on observation as opposed to a result derived from theory. However, there have been various theories that have attempted to unpack the



unemployment phenomenon. The Classical theory of unemployment is discussed in the next section.

### **3.3.2. The Classical Theory of Unemployment**

Classical economists did not contradict the fact that depressions and high unemployment occur occasionally but they debated that the effects of such crises lay outside the market system, that is, in the effects of wars, tax increases, poor growing seasons and so forth. The outcome of these external shocks could be the reduction of output and employment but classical economists also thought that natural market forces such as the change in prices could correct these problems (McEachern, 2009).

According to the Classical Theory of Unemployment, full employment in a capitalist economy is a normal occurrence. This means, there cannot be general unemployment in a capitalist economy. In their opinion, full employment guarantees that actual output equals the potential output. Full employment coincides with the equilibrium level of output. In the classical view, total production is always sufficient to maintain the economy at the level of full employment in a free market economy. In their opinion, unemployment, if any is a temporary situation. Whenever there is unemployment, wages decrease. The decrease in wage rates makes employment of labour more profitable. This therefore results in increased demand for labour and the disappearance of unemployment. However, classical economists did acknowledge the existence of voluntary and frictional unemployment in the state of full employment (Dwivedi, 2010).

The Classical theory of unemployment is based on Say's law of markets and the assumption of flexibility wages, rate of interest rate and prices. Say's law of markets states that supply creates its own demand. This means that, whatever quantity is produced is sold as a whole. The producers need not worry about the sale of their produce. If the demand for a commodity falls, its price will also fall thus its production will be decreased. If the plummet in production causes unemployment, the money wage will be reduced. The reduction in the money wage will result in an increment in the demand for labour as it will equate to its supply. This will lead to the disappearance of the unemployment problem and will result in the re-establishment of the condition of full employment (Jain and Khanna, 2010).

According to Jain (2010) under the Classical Theory, the levels of employment in an economy are known by the equilibrium of demand and supply of labour.

- **Demand for labour:** In an economy labour is demanded because of productivity. Labour is demanded up to the extent that its marginal revenue productivity is equal to its wage;

$$W = MRP = P \times MPP \text{ or } W / P = MPP \quad (3.4)$$

Where:

**W** is the money wage

**P** is the price level

**MRP** is the marginal revenue of productivity

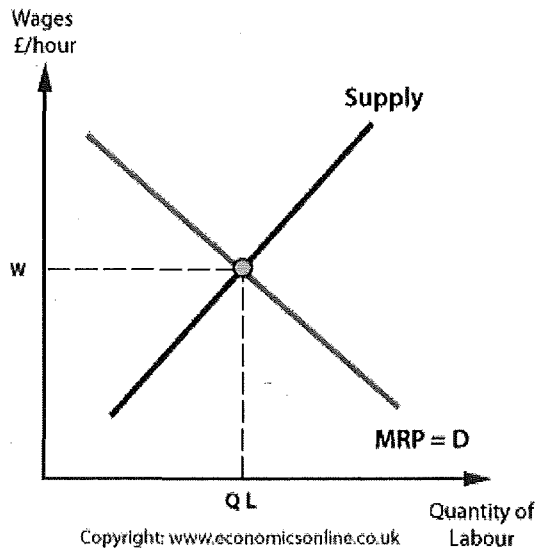
**MPP** is the marginal physical productivity

**W/P** is the real wage

- **Supply for labour:** supply of labour refers to the number of labourers who are willing to work at a given wage rate. Supply increases with the rise in the real wage and decrease with a fall in real wages.

The level of employment is determined by the interaction demand and supply. The equilibrium level of employment occurs at the point where demand and supply intersect. Classical economists held the view that equilibrium will occur under the condition of full employment. This is illustrated in Figure (3.2):

**Figure 3.2:** Equilibrium in the market for labour



Source: <http://www.economicsonline.co.uk>

Figure (3.2) illustrates the interaction of demand and supply and the point of intersection of the two graphs that represents the equilibrium point. The equilibrium point represents the number of labourers  $QL$  who are employed at the prevailing wage rate  $W$ . The graph represents a full employment situation. Those who are unemployed are those who are not prepared to work at the existing wage rate. This equilibrium shows that employers demand labourers up to a limit where their marginal physical productivity (MPP) is equal to the real wage ( $W/P$ ). In order to increase output as more labourers are employed, the MPP diminishes, thus an employer will demand more labour only when real wages or money wage (price level  $P$ ) remains constant.

The classical theory of unemployment was not spared from criticism. Keynes in particular criticised the classical theorists so much that he devoted much of his book to refute the classical theory as a basis for his own theory (Bondi and Scott, 2010). Keynes denounced the conclusion by classical macroeconomics, that the condition of full employment equilibrium could be maintained in the economy because of the application of Say's law of Markets and the flexibility

of wages, rate of interest and prices without any government intervention (Jain, 2006). Keynes theory came to be known as ‘The General Theory.’

### **3.3.3. The Keynesian Theory**

John Maynard Keynes set his position in contrast with that of the classical economics at every opportunity. In his book, he began with an introductory chapter which criticised the classical economics for dealing with a “special case,” the characteristics of which “happen not to be those of the economic society we actually live in,” Keynes then followed with a lengthy chapter entitled “The Postulates of Classical Economics.” (Knights, 2011). Keynes consequently attempted to cultivate a theory that would be relevant to the capitalist economics of his day (Asimakopulos, 1991).

Keynes opened the second chapter of *The General Theory* with the assumption that the nominal wage was constant as means of trying to simplify his argument. Keynes stated that the essence of his argument was precisely the same whether or not money wages were susceptible to change. Under the Keynesian theory, nominal wages were seen as a rule, a function of activity fluctuating with the level of output and employment. Keynes further argued that a nominal wage reduction would probably not decrease real wages as neoclassical economists predicted. Regarding the entire economy, nominal wage reduction that is not followed by a drop in price implies a ‘fallacy of composition.’ In this case, nominal wage reductions would not result in reduced unemployment since the level of wages would largely remain unaffected. In broad-spectrum, nominal wage changes can yield compound influences on output and employment which are difficult to generate (Meccheri, 2005).

Keynes’ analysis lacks an equilibrium rate of unemployment in regard to an unemployment rate equilibrating income claims but only in regard to unemployment being derived from the equilibrium on the goods market. In the short run, investment or more generally, autonomous expenditures are exogenously given and determine output which in turn adjusts such that investment equal savings (Stockhammer, 2000). However, “investment is not the only factor that affects the equilibrium level of employment but it is regarded as the most important factor because of its strong influence on incomes and because it is the factor which is most likely to change suddenly.” (Einbond, 1995).

Einbond (1995) further explained that, “employment is determined by two elements which of investment in turn affect the total income of the community and the sum of the community’s consumption and its investment.” Keynes called the relationship between the number employed and the total income the aggregate supply function also presented as  $Z=f(N)$  (where  $Z$  is the aggregate supply price and  $N$  is the number employed). Keynes then called the relationship between the number employed and the sum of consumption and investment the aggregate demand function, symbolically written as  $D=f(N)$  where ( $D$  is the aggregate demand price and  $N$  is the total number employed). There is only one value for which the total income equals the sum of consumption and investment and it is at this point that the equilibrium level is reached (Einbond, 1995).

According to Asimakopulos (1991), Keynes validated that unemployment could be an equilibrium phenomenon, that there could be net forces at work in the economy to increase the level of employment even though workers wanted to supply additional labour at the existing real wage rates. Employment would be an equilibrium position of rest in this case. On the contrary, the output of firms and consumption and investment expenditures of individuals and firms would all be in chosen positions of equilibrium. Keynes’ investigation posed a threat to the classical theory which saw unemployment as a temporary disequilibrium occurrence due to cyclical disturbances.

After completing his analysis of the unemployment phenomenon, Keynes concluded that the main cause of unemployment was the deficiency of aggregate demand. Keynes therefore, suggested that unemployment could be removed by increasing the aggregated demand. The three components of aggregate demand are: a) demand for consumption goods, b) demand for investment goods and c) government expenditure. Keynes was of the opinion that government interference was the key to combating unemployment and attaining the objective of full employment (Jain and Khanna, 2010).

#### **3.3.4. Monetarism or Neoclassical Theory**

The famous Monetarist, Milton Friedman, interpreted The General Theory as a market-clearing model in which an increase in nominal wages induced workers to increase the amount of labour supplied as they confuse a change in nominal wages for a change in real wages (Garrison, 1984). This led to the development of a counter unemployment theory known as the Monetarist theory of unemployment. Milton Friedman proposed that unemployment is the difference between labour

supply and demand. Standard economic theory states that households and firms base their decisions on labour supply and demand on real wages and not on nominal wages. This implies that the real wage should rise where there is excess demand for labour and it should fall when there is excess supply (Gottschalk, 2002).

According to Bin-Obaid (1997) the Monetary Theory states that the real wages is the money wage that has been adjusted for cost inflation. Bin-Obaid further stated that the natural rate of unemployment exists when firms and workers estimate correctly the prices and thus real wages. Workers are unwilling to work longer hours in response to an increase in their money wage if their real wages have not increased. Firms are also not willing to produce more output if their selling prices increase by the same rate as the cost of production.

In Friedman's theory the natural rate of unemployment is determined by all real conditions affecting the supply and demand for labour. Chernomas (1983) defined the natural rate of unemployment as the equilibrium in the labour-market, where there is no excess supply or demand in the aggregate for labour. These factors include all institutional arrangements such as the degree of unionisation, minimum wage laws, proportion of women in the workforce, status of worker education and so forth. Friedman noted however that in the short run, the natural unemployment rate may be higher or lower than the natural rate of unemployment (Ekelund Jr and Herbert, 2013).

However, deviations from the natural rate of unemployment occurred when there were errors in expectations of the price level and therefore of the real wage. Government demand-creation leads to unexpected changes in the price level thereby lowering the real wage, and driving unemployment below the natural rate (workers mistake their growing nominal wage for a higher real wage). When unemployment is driven below the natural rate by excess demand, the excess employment produces an upward pressure on wages, removing the higher rate of employment and any real long-range change in output. In order to sustain this level of employment, the government must fast-track demand and inflation if workers are to remain misperceiving their real wage. (Chernomas, 1983).

The Monetarists theory assumed that the level of full employment could be achieved and unemployment removed changing the money supply (Jain, 2010). Monetarists emphasised the

importance of money in macroeconomics because it temporarily affects the output and employment levels or by the fact that in the long run, change in the money supply affects only the price level. The theory also assumed that the velocity of money is constant hence changes in the supply of money directly influence the aggregate demand, that is, increase in money supply causes an increase in aggregate demand. This theory attaches greater importance to monetary policy than fiscal policy.

Monetarists, however, like most Keynesians attached little importance to labour markets and usually gave little emphasis to the role of wages in unemployment determination. Most monetarists seemed to believe that any unemployment creating wage imbalance likely had its origin in monetary disturbances. For instance, a decrease in the supply of money would leave prices and money wages unchanged, raise real wages, thus accelerating the unemployment problem (Vedder and Gallaway, 1997).

### **2.3.5. Pigou's Theory of Unemployment**

Britain was afflicted with a depressed economy in the 1920s and as a reaction to this affliction; Professor A.C. Pigou published his Theory of Unemployment in 1933. Pigou followed the principles of the conformist classical theory which resolved that labour was underutilised in Britain because it was expensive (Ventelou, 2005). "Pigou's general view was that monetary or fiscal policy could be used to moderate industrial fluctuations and that the 'plasticity' of the wage rates could ensure full employment." Therefore the prevailing feature of the Theory of Unemployment (1933) was the elasticity of the real demand curve for labour which Pigou claimed to be quite large (Collard, 2011). According to Laidler (1999) Pigou's theory of unemployment was proposed initially as a means of explaining a logical analysis basis for his view. Pigou strongly believed that the unemployment problem revolved around the labour market and that at the root of the unemployment problem were extremely high wages.

In summary, Pigou's Theory of Unemployment stated that the level of unemployment would be ascertained by the difference between the aggregate supply of and the demand for labour at any wage rate. According to the Theory of Unemployment proposed by Pigou, the supply curve which represented the size of the labour force did not respond to wages although individual labour supply

curves could either be upward sloping or backward bending and therefore could be treated as vertical. In the Pigouvian Theory, the demand for labour was downward sloping and depended on labour's marginal product. Since the unemployment rate was always positive, the supply of labour was always greater than its demand thus unemployment would have to be explained in terms of movements in wages and the demand for labour (Ahiakpor, 1998).

According to Sweezy (1934) the Pigouvian Theory of Unemployment was in accordance with the terms of a modified wage-fund doctrine. In Pigou's Theory of Unemployment the economy was supposed to be separated into industries which produce wage-goods and those which produce non-wage-goods. Export industries are normally regarded as wage-good industries, since they "produce" wage-goods by way of exchange. The wage-goods fund (the amount of wage-goods available for payment as wages) is flexible as it can be altered in a short period of time by subtractions from stocks and by restriction of wage-goods consumption by non-wage earners. These methods can be used to alter the wage goods fund in the short period as well as by additional output from the wage-good industries. This scheme seems to reduce the real demand for labour in the periods distinguished to dependence upon a relatively small and easily manageable set of factors.

It is also possible to determine the amount of labour which is likely to be demanded and the elasticity of demand for minor changes in the real wage rate, with a given real wage rate (in regards to wage-goods units) and a given supply of labour. This is fundamentally the schematic background of the treatment of demand for labour in the aggregate. It featured four central concepts. According to Sweezy (1934) all of these central concepts seemed to be open to serious criticism. The four central concepts were: (1) wage and non-wage-goods; (2) wage and non-wage-goods industries; (3) the short period; and (4) the period of production of the generality of wage-goods (on which depends the definition of the "very short period") (Sweezy, 1934).

In addition to dividing industries into the wage-goods industries and the non-wage goods industries, Professor Pigou further divided industries into those engaged in making wage goods at home and in making exports the sale of which creates claims to wage goods abroad (Keynes, 2006). In his assumptions, Pigou supposed  $x$  men to be employed in the first and  $y$  men to be employed



in the second. The output in value of wage-goods of the  $x$ -men he called  $f(x)$  and the general rate of wages  $f'x$ . Thus, though he did not indicate it, it was equivalent to assuming that marginal wage cost is equal to marginal prime cost, further he assumes that  $x+y=f(x)$ , meaning that, the number of men employed in the wage goods industries is a function of total employment. Pigou then demonstrated that the elasticity of the real demand for labour in the aggregate can be written as:

$$E_r = [f'(x)/f(x)].[F'(x)/F''(x)] \quad (3.5)$$

Where:

$E_r = [f'(x)/f(x)].[F'(x)/F''(x)]$  is the value of the output of the wage-goods industries in terms of the wage unit.

According to Collard (2011) Pigou's Theory of Unemployment received mixed reactions. Others saw it as a masterpiece and an intellectual achievement and they praised the great workmanship and some welcomed it as one of the greatest books of its time. Like most theories created before, Pigou's Theory of Unemployment received its fair share of criticism. Keynes critiqued Pigou by declaring that his theory of unemployment was no different from the Classical Theory which he had also strongly opposed (Collard, 2011). Blaug (1997) said that Pigou's argument was difficult to summarise because it seemed to hang together on comparative static grounds and appeared to depend on quasi-dynamic considerations introduced ad hoc in an otherwise static context.

### 3.4. Empirical Literature

The determinants of unemployment have been well documented in literature. Several studies have found that the unemployment phenomenon has a negative bearing on the economy and on the well-being of a country's citizens at large. It has been observed that most of the social ills experienced are a result of the unemployment problem as people resolve to indulge in preposterous acts in order to survive. Although this issue has been extensively researched and various policy solutions formulated as a means of combating the problem, unemployment still remains a thorn in the flesh

for both developing and developed countries. In other countries particularly developing countries, unemployment has become a permanent feature in the economy despite several attempts of combating the problem. The purpose of this section therefore is to review relevant empirical studies on the determinants of unemployment.

#### **2.4.2. Literature from Developed Countries**

Monastiriotis (2006) studied the macroeconomic determinants of UK unemployment and their subsequent relation to the effects on unemployment that are a result of the levels and types of employment flexibility in the country. The theoretical basis for the study was drawn from the Keynesian and Monetarist accounts of unemployment and expanded on how the two schools of thought regarded the role of price stability, accumulation, macroeconomic shocks and labour market rigidities for unemployment. Empirically, the study relied on a different set of flexibility indicators and examined their impact on regional unemployment, unemployment persistence and adjustment to economic shocks. The results offered valuable perceptions into the relationships studied and emphasised the areas and circumstances under which employment flexibility helps achieve favourable employment outcomes.

Valletta (2005) studied the reasons and costs of the increasing unemployment duration in the United States for the period 1976-2004. The duration of a typical unemployment spell had been significantly increasing as compared to the unemployment rate since the mid-1970s. The duration of completed unemployment spells was developed by means of the synthetic cohort approach, and the data was adjusted for changes in survey design that occurred in 1994. The empirical investigation focused on two main reasons for increasing unemployment duration and those were; the variations in women's labour force and variations in the incidence and duration of permanent job loss that relate to declining job security. The results provided support for both explanations, although the link to changing labour force attachment for women was less clear than the link to permanent job loss.

Le and Miller (2000) evaluated the numerous studies in Australia that have offered microeconomic and macroeconomic angles on the reasons of and solutions to the unemployment problem in Australia. They noted several imperative findings: Firstly, they noted that from cross-sectional

studies, economists have gained better insights into the factors causing a high probability of unemployment. Secondly, they noted that there was a general agreement from time series studies in regard to the estimates of the aggregate labour demand wage and output elasticities. Le and Miller further stated that it was widely recognised that lesser real wages and economic growth would assist in decreasing the high rate of unemployment. They also observed that slow progress was being made towards reducing the unemployment rate yet information was readily available. This slowness was attributed to political reasons and the uncertainty of how to administer wage cuts and faster rates of economic growth presented as solutions to the unemployment problem.

Arntz and Wilke (2006) used extensive individual administrative and regional aggregate data to investigate the degree to which certain factors were expected to contribute to the decrease of unemployment duration in Germany. They took into account the labour market restructurings, amongst other things aimed at reducing unemployment by limiting passive unemployment measures, emphasising local labour market policies and re-structuring public employment services. Arntz and Wilke estimated a semi-parametric model with three competing exit states for their study. The results obtained suggested that changes in unemployment compensation system instead of changes in local employment policies and administrative restructuring efforts would meet expected labour market outcomes.

Delaney *et al.* (2011) studied the experience of unemployment in Ireland using Thematic Analysis. The study was conducted on thirteen semi-structured focus groups of unemployed respondents in 2010. The aim of the study was to observe the personal experience of unemployment across a range of scopes. Fifteen all-encompassing themes arose from a comprehensive thematic analysis of the texts from the interviews. The themes emphasised a variety of callous psychological states related to unemployment. This paper concluded with a short discussion of the psychological effect of unemployment.

Kuroda (2003) used flow data between the three states of employment, unemployment and not in the labour force. Kudora (2003) scrutinised the factors causing changes in the rate of unemployment in Japan. The results of the study provided the reasons for the increment of Japan's unemployment rate since 1991. Firstly, the evolution prospect from employment to unemployment

rose, and at the same time the evolution rate from unemployment to employment deteriorated considerably. Secondly, the evolution prospect from unemployment to not-in-the-labour-force deteriorated for both men and women thus causing an accumulation of unemployment. Thirdly, the results also suggested that the unemployment rate was increased by the flow of workers from not-in-the-labour force to unemployment. Kuroda went on to project the Phillips curve using the flow data as a source of added material for predicting price trends. The results indicated that the predicted performance of the Phillips curve could be enhanced by using flow data between employment and unemployment which are subtle to trends in price levels and business conditions.

Pablo and Hector (2008) also analysed the unemployment problem during the period dubbed as the 'lost decade' in Japan. The 'lost decade' was a period of sharp upsurge in unemployment. The period began in 1991 with an unemployment rate of 2.1%, and concluded in 2002 when unemployment rate reached a historical maximum of 5.5%. Pablo and Hector adopted a macroeconomic perspective in order to evaluate the key reasons for this increment and to also estimate a reduced-form unemployment model. The model contained a rich set of variables with the reduction in private investment playing the main role whilst private consumption and the boost in government spending partially offsetting the recessive effect. In addition, the preliminary growth in participation rates and the East Asian crisis after 1997 further burdened the labour market. They concluded that a central issue in the medium-run was to circumvent the consequences of the continued deterioration of investment in regards to reduced productivity growth and a weaker international trade performance.

In conclusion, the unemployment problem generally affects countries in the same way such as, reducing economic growth, promoting social ills such as crime and so forth. However, developed countries adopt different approaches and policies to combat the problem; policies are designed specifically for the demographics of that country as developed countries are structured differently to developing countries. Studies from developed countries focused on the advanced issues of unemployment such as employment flexibility, the flow of workers, wage elasticity, that is, how lower real wages would influence the unemployment rate, the labour market, unemployment duration and the Philips curve which represents the relationship between unemployment and inflation which is also a contributing factor to the unemployment rate and some studies used the

Philips curve to predict the flow of workers. Other studies also acknowledged the slow progress towards the eradication of the unemployment problem and attributed this slowness to political reasons and the uncertainty on how to administer wage cuts.

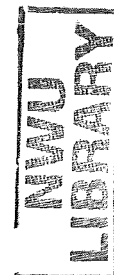
#### 2.4.1. Literature from Developing Countries

Eita and Ashipala (2010) investigated the causes of unemployment in Namibia for the period 1971-2007. The analysis was conducted through an all-encompassing review of the significant literature, microeconomic and macroeconomic models of unemployment. The unemployment model utilised macroeconomic variables and was estimated using the Engle-Granger two-step econometric technique. Eita and Ashipala's results revealed the existence of an inverse relationship between unemployment and inflation in Namibia. The results further revealed that unemployment responds positively if actual output is below potential output and if wages increase and that an increase in investment leads to a significant decrease in unemployment. They concluded that it was important to increase output up to the country's maximum potential and they also recognised a need for wage flexibility in Namibia and emphasised the need to increase investment in order to reduce unemployment.

Maqbool *et al.* (2013) analysed the determinants of unemployment in Pakistan over the period 1976-2012. The relationship between unemployment, population, foreign direct investment, gross domestic product, inflation and external debt was investigated. They hypothesised that these factors exerted a strong impact on the unemployment rate in the economy of Pakistan. The function for of their model was presented as follows:

$$UN = f(GDP, POP, FDI, PINV, EXD) \quad (3.6)$$

The Autoregressive Distributed Lag (ARDL) approach was used to test the determinants of unemployment. The results revealed that the gross domestic product, population, inflation and foreign direct investment were significant determinants of unemployment in Pakistan in the short-run as well as in the long-run.



Bakare (2011) investigated the determinants of the urban unemployment in Nigeria. He described the urban unemployment problem as one of the greatest economic challenges facing the Nigerian policy makers. This study was a bid to identify the major causes for the urban unemployment crisis in Nigeria. Bakare used time series secondary data and a parsimonious error correction mechanism to test the significant relationship between the level of unemployment and demand for labour, supply of labour, population, inflation, capacity utilisation, gross capital formation and nominal wage rate. The empirical research showed that the increasing nominal wages and the faster growth of population which affected the supply side through a high and rapid increase in labour force relative to the absorptive capacity of the economy seemed to be the main determinant of high unemployment in Nigeria. The econometric results on the other hand proposed the need for the government to undertake direct measures capable of creating jobs through industrialisation and mechanisation of agriculture.

Adawo *et al.* (2012) described the overall unemployment problem in Nigeria as alarming. They also stated that measurement of the unemployment problem by statistical authorities in Nigeria was not a true reflection of the problem at hand. The unemployment problem was believed to be worse than what the statistical authorities revealed. The study therefore aimed to investigate the deplorable unemployment rate in Nigeria. The results of the study revealed that the labour force in Nigeria grew at a steady rate of 0.3% every year while GDP growth rate at 1984 factor cost grew at 3.5% over a period of 33 years which suggested that Nigeria encountered a jobless recovery during that period. The factors influencing unemployment in Nigeria included poor infrastructure, insecurity and non-diversification of the economy and poor educational system that does not readily produce employable graduates. The study suggested that the government should form partnerships with the private sector and expand the economy in order to enhance job creation among other things.

Kabaklarli *et al.* (2011) investigated the economic determinants of the unemployment problem in Turkey using long-term cointegration analysis from an econometric analysis perspective. The Johansen Cointegration method was used for the analysis for the period 2005-2010. Kabaklarli *et al.* (2011) considered Turkey to be overpopulated and the youth population ration was approximately 17% and in working age, the unemployment problem particularly youth

unemployment was considered to be a major problem. Moreover, the youth unemployment rate in Turkey was nearly double the level of the total unemployment rate. The economic growth in the course of the years had an insignificant bearing on the youth unemployment rate as it has not decreased over the years. Subsequently, an overall joblessness rate of 11.9% and 21.7% youth unemployment and jobless economic growth continued in 2010. Therefore, the study analysed the youth unemployment problem, the causes of youth unemployment, the fight against policies and solutions for the youth unemployment.

Mahmood *et al.* (2011) designed a statistical study to detect the basic causes of unemployment among the educated segments in Peshawar Division of Pakistan utilising Logistic Regression. They used a sample of 442 individuals belonging to Peshawar Division and possessed at least a first degree (graduation degree) or capable of any professional/technical job whether they were employed or unemployed. Mahmood *et al.*'s study was an attempt to determine important factors effecting unemployment among the educated segments. The investigation revealed that 69.6% percent of the males and 30.4% of the females were educated and unemployed and therefore, the percentage of general employment was reasonably lower than developed countries.

Burger and Von Fintel (2009) studied South Africa's political evolution as means of gaining acumens into the reasons of the acceleration of an already great unemployment rate. Unemployment and other labour market outcomes were decomposed into cyclical, generational and life-cycle effects through the creation of a synthetic panel dataset. Burger and Von Fintel were of the opinion however that this dynamic view secluded groups which were at risk across the period and permitted a more nuanced understanding of the long-run and short-run impacts. Their results showed that higher unemployment rates faced by the youth were chiefly due to the difficulty of being absorbed into the labour market rather than it being a matter of age. Moreover, they separated the driving factor behind the long-run increase in labour market participation. Evidence of a relationship between the cyclical variation in unemployment and the business cycle was also found. This implied that jobless growth was not a relevant feature of the South African labour market. Burger and Von Fintel's study further confirmed many of the causes of unemployment that are hypothesised in literature.

Mosikari (2013) also studied the unemployment problem in the South African context. He particularly studied the impact of the unemployment issue in relation to the gross domestic product

(GDP), that is, this study examined the consequences of unemployment on the gross domestic product in South Africa. Annual time series data was used for the period 1980-2011. Mosikari employed the Johansen cointegration test and the Granger causality test. The results revealed that there was no causality between unemployment rate and GDP growth in South Africa. The study encouraged all policies on economic growth with the idea that enhanced growth would translate into employment in South African economy.

Luebker (2008) wrote a working paper for the International Labour Organisation investigating the unemployment problem in Zimbabwe. In the paper, Luebker noted that there had been a decline in formal sector employment since the late 1990s in Zimbabwe however the unemployment rate remained below 10%. Zimbabwe is synonymous with numerous economic problems therefore this figure seemed far-fetched. The paper found that the figure of unemployment was based on a consistent application of the international definition of unemployment. Luebker further stated that the unemployment rate alone was an insufficient measure of a country's labour market situation because it was not a reflection of the quality of employment. Hence, paper debated the necessity to extend beyond the employment/unemployment dichotomy and to consider the quality of employment as well.

Bashier and Wahban (2013) investigated the impact of macroeconomic variables on labour employment in Jordan for the period 1980-2012 by using the fully Modified Ordinary Least Square approach (FMOLS). The economic model constituted of the labour employment as the explained variable while the real Gross Domestic Product (GDP), real Foreign Direct Investment (FDI), and the value of total trade were the explanatory variables. The results of the time series tests revealed that all variables were integrated of order one,  $I(1)$  and cointegrated hence, signifying the existence of long-run equilibrium among variables comprised in the econometric model. The empirical conclusions exhibited that all variables had positive and substantial effects on employment level in the Jordan labour market. Furthermore, the results exhibited that real Gross Domestic Product had a significant impact on employment and a 10% increase in real Gross Domestic Product resulted in a 6.78% rise in employment level.

Vuluku *et al* (2013) analysed unemployment and underemployment using the gender gaps analysis. Data for the study was sourced from the Kenya Integrated Household Budget Survey for the period 2005/06. The study employed binary probit specification and decomposed the gender



gap to estimate the unemployment and underemployment probability functions independently for men and women. The projections from the probit estimates showed that it was more probable for women to be unemployed or underemployed than men even after controlling for differences in personal and household characteristics. The decomposition outcomes indicated that a large number (88.8 %) of the total female-male unemployment probability gap was described by female-male differences in individual and household characteristics and only 11.2% was inexplicable. On the other hand, only 5.4% of the female-male underemployment probability gap was described by female-male differences in individual and household characteristics whereas 94.6% was inexplicable. Unemployment and underemployment female-male gaps were attributed to factors such as: the region of residence, age, education level, marital status and adverse shocks in Kenya.

Wamuthenya (2010) likewise analysed the unemployment problem in Kenya, with particular focus on the determinants of formal and informal sector employment in the urban areas of Kenya. The study applied a multinomial logit model and economic theory to labour force survey data. The results of the study indicated that the determinants of employment in public, private and informal sectors of Kenya's urban labour market varied by age group and gender with the sex (being male rather than female), marital status, household-headship and education variables being particularly emphasised. Education was also seen as having a strong influence on formal sector employment yet a majority of women continued to work in the informal sector in spite of improving themselves. Two observations in particular were a cause for great concern these are, the high youth unemployment and gender imbalance in access to employment. Unemployment was seen to be predominantly high amongst women, predominantly younger women. Generally, the results confirmed that the urban labour market was varied and showed how labour supply factors were valued in the labour market.

The conclusion that can be derived from the studies above is that unemployment is an undesirable macroeconomic problem that is crippling many developing countries. The studies also revealed that the unemployment issue is becoming more of a problem synonymous with the youth as the highest prevalence of the unemployed is particularly among the youth. Previously, studies only focused on macroeconomic and microeconomic aspects of the causes of unemployment but some of the studies managed to incorporate social aspects such as gender discrimination particularly

against women as women were not considered to be participants in economic activities as they were only considered as 'homemakers', more especially in African societies.

### **3.5. Limitations of Empirical Studies**

The reviewed studies have made valuable contributions to the analysis and attempt of understanding the unemployment phenomenon and coming up with various policy solutions to fight the problem. However, these studies have neglected the impact of government spending on the unemployment rate yet government spending patterns have a significant impact on the resulting unemployment rate in a country especially in developing countries such as Swaziland. Government expenditure as an effect on the unemployment rate is underpinned by the Keynesian Theory which suggested the increment of government spending in order to reduce unemployment.

The Keynesian Theory presented a shift from the classical economists concern with production to a concern with consumption. Keynes stated that general overproduction was the problem and that men were unemployed because they produce too much. Keynes proposed a solution to increase consumption through government spending, his solution was to stimulate consumption and beat down production. He also stated that aggregate demand can be too low at times as compared to aggregate supply and that government spending was needed to fill the gap left by private sector demand to ensure full employment (Younkins, 2008).

Moreover, most of the reviewed studies include the period of the global financial crisis (2007-2009) in their time frames, yet the studies fail to capture or mention the impact that the financial crisis had on the overall unemployment in the various countries. Reports by the International Labour Organisation stated that the financial crisis resulted in many people joining the ranks of unemployment as millions of people lost their jobs worldwide, meaning that, in both developing and developed countries.

This study therefore incorporates these two aspects that have been neglected by other researchers in order to gain insight into the unemployment phenomenon on a broader spectrum and more specifically in a developing country context.

### **3.7. Conclusion**

Various theoretical models have been developed on the trends and behaviour of unemployment over the years. One of the first theories of unemployment emanated in 1962 from Arthur Okun who reported on a pattern he observed in the relationship between unemployment and output. Okun perceived an inverse short-run relationship between unemployment and output. Okun's theory came to be known as Okun's Law and it formed a basis for the study of unemployment in various countries across the world. Other theoretical developments have originated from proposals by different rival schools of thought, that is, the Keynesians, the Monetarists and the Classical. These schools of thought were in constant disagreement over the causes of unemployment however, they were all in agreement that unemployment was a problem that depressed the economy and needed to be resolved.

Models were developed based on these theoretical developments. These models range from the traditional cointegration models and ARDL models. A wide range of studies have employed these models and applied them empirically. The results helped to identify the various determinants of unemployment. Many of the reviewed studies have managed to analyse the different determinants of unemployment and some have perceived FDI, external debt and population growth amongst other variables as determinants of unemployment. This study, instead, incorporates government spending and the global financial crisis of 2007-2009 as determinants of unemployment.

## **Chapter 4**

### **Methodology**

#### **4.1. Introduction**

Chapter three reviewed the literature on the various theories of unemployment in an attempt to formulate a relevant analytical framework for Swaziland. This was coupled with the brief description of the relationship between the various determinants of unemployment. This chapter builds on that background to set the analytical framework used in this study.

The chapter centres on the collection, approaches, analysis and interpretation of data in order to draw a fair and meaningful conclusion regarding the determinants of unemployment in Swaziland. It further presents the research design and methodology that underpins the study. Firstly, a rationale for conducting research on this particular topic from a quantitative perspective has been provided. Secondly, the methods and techniques used in the research process are delineated.

#### **4.2. Quantitative Research**

Quantitative research involves the enumeration of associations among variables. Variables are things like weight, performance, time and treatment. The variables are measured on a sample of subjects, which can be tissues, cells, animals or human. In this case it is about unemployment and its determinants. The relationship between the variables is expressed using effective statistics, such as correlations, relative frequencies or differences between means (Hopkins, 2000).

The general focus of quantitative research is typically the evaluation of social truth. Quantitative research and/or questions are employed in investigating the magnitudes of something and are utilised to determine research systematically. Quantitative researchers see the world as truth that can be empirically established therefore rigid models in the practice of data collection and analysis are vital (Sukamolson, 1997).

### 4.3. Model Specification

The study adopts a linear regression model with logarithmic transformations. In this study, unemployment is the main variable under scrutiny with the potential gross domestic product, inflation (indicated by the consumer price index (CPI), DUM94 and DUMCRISIS as explanatory variables.

The study incorporates government spending into the model which has been overlooked by previous researchers as a determinant of unemployment. The variables are transformed into logarithms in order to reduce their variability.

$$LUNEMP = \alpha + \beta_1 LACTGDPPOT + \beta_2 LCPI + \beta_3 LGSP + \beta_4 DUM94 + DUMCRISIS + \varepsilon_i \quad (4.1)$$

LUNEMP are the absolute unemployment values obtained by using the unemployment rate and the labour force data. The total labour force was obtained from the World Bank from the year 1991-2009. An autoregressive process was then applied to the data to estimate the total labour force for the next three years until 2012 and the formula for determining the unemployment rate was applied in order to attain the absolute values of unemployment. LACTGDPPOT is the potential gross domestic product. LCPI is the inflation rate as indicated by the consumer price index, LGSP is government spending as a percentage of GDP, DUM94 is a dummy variable capturing the impact on unemployment by the democratisation of South Africa, DUMCRISIS is a dummy variable capturing the effect for the global financial crisis of 2007-2011 that plunged Swaziland into a fiscal crisis,  $\alpha$  is the intercept/ constant and  $\varepsilon_i$  is the error term.

#### 4.3.1. Data Sources and Definition of Variables

This study employs annual data over the period 1991- 2012. The study thus has a total of 22 observations. Sodipe and Ogunrinola (2011) validate that a meaningful conclusion can be drawn from less than 30 observations. The data is obtained from the electronic database of the World Bank and the International Monetary Fund. However, some publications from the Central Bank of Swaziland and the International Labour Organisation will complement the data. As is the norm, the series are transformed into logarithms in order to induce stationarity. The study uses secondary

data for analysis and all the empirical estimations in this study are carried out using the time series econometric package Eviews 8.

#### 4.3.1.2. Definition of Variables

**Unemployment (LUNEMP)** – Unemployed persons are defined as those who report that they are without work, that they are available for work and that they have taken steps to find work. The unemployment rate on the other hand is the number of unemployed persons as a percentage of the labour force. The unemployment rate is calculated as thus:

$$\text{Unemployment Rate} = \frac{\text{Number of Unemployed}}{\text{Labour Force}} \times 100\% \quad (4.2)$$

**Potential Gross Domestic Product (LACTGDPPOT)** – potential GDP is a country's measured output at any interval. It is obtained by estimating potential GDP and constructing the measures of the trend that smooth out the business cycle fluctuations.

**Inflation (LCPI)** - inflation is a sustained increase in the general level of prices for goods and services. It is measured in annual percentage increases. This study uses CPI as an indicator of inflation.

**Government Spending (LGSP)** – government spending is all government consumption and investment but excludes transfer payments made by the state.

#### 4.4. Research Techniques

This study follows the Engle-Granger (1987) Cointegration approach. The technique establishes the existence of a long-run relationship between the variables. The first task is to ensure that the data is integrated of the same order. This is done by using unit root tests to examine the stationarity of the data series. Therefore, the variables are subjected to the Augmented Dickey Fuller (ADF) and Phillips-Perron unit root tests.

#### 4.5.1. The Engle-Granger Cointegration Approach

Engle and Granger (1987) proposed testing for the long-run relationship between economic variables and modelling their short-run relationship through an Error Correction Model two step procedure in their seminal paper. The first step is to test for a cointegration relationship between the variables.

According to Seddighi *et al.* (2000) the order of integration of both variables has to be found ( $x_t$  and  $y_t$  for instance) using the unit root tests. There are three cases: i) If the order of integration of the two variables is the same, which is a requirement for the concept of cointegration, we continue to the next step. ii) If the order of cointegration of the two variables is different, the conclusion may be that the variables are not cointegrated. iii) If the two variables are stationary, the testing process then becomes unnecessary because the standard regression techniques for stationary variables can be used. If the two variables are integrated of the same order, I (1) for instance, the OLS long-run equilibrium equation is estimated.

$$Y_t = \beta_0 + \beta_1 X_t + \varepsilon_t \quad (4.3)$$

In this case, this is called the “cointegration regression.” For the two variables to be cointegrated, the equilibrium errors must be stationary. There are various methods for testing for stationarity such as the Augmented Dickey-Fuller unit root test and the Phillips-Perron unit root test. Once the test has been completed, a conclusion about the cointegration of the two variables is drawn according to the following hypothesis:

$H_0 : \delta = 0$ , for non-stationarity, that is, for non-cointegration

$H_1 : \delta < 0$ , for stationarity, that is, for cointegration

After confirming the presence of a cointegration relationship between the variables, the second step is to estimate the Error Correction Model (ECM):

According to De Boef (2000) the changes in  $y$  are regressed on changes in  $x$  and the previous period's equilibrium error, meaning that, the residuals from the cointegrating regression to estimate the equilibrium rate,  $\hat{y}$  and short-run dynamics,  $\lambda_2$ :

$$\Delta y_t = \lambda_1 + \lambda_2 \Delta x_t - y_{t-1} + \eta_t \quad (4.4)$$

Extra or alternate lags (and deterministic terms) may also be incorporated. It is generally known that the approximations derived from the long-run relationship and conclusions obtained from these estimations by means of the Engle–Granger two-step estimator perform well only under limited conditions permanent memory, or unit roots, and a cointegrating regression with serially correlated errors and without simultaneity. Short memory or stationary processes will result in a cointegrating regression that is slightly inconsistent and a non-decreasing bias as the sample size increases because of contemporaneously correlated errors in the static regression (Stock, 1987).

The Engle-Granger Cointegration approach has an advantage because it is intuitive and easy to perform (Sjö, 2008). Stock (1987) suggested that the estimations of the Engle-Granger static long-run ordinary least squares (OLS) regression parameters were both reliable and efficient. However, the Engle-Granger approach has not been spared from criticism. A noticeable characteristic of the Engle-Granger approach is the presence of in finite samples which are a result of enforcing hypothetically invalid common-factor restrictions (Banerjee *et al*, 1986). Furthermore, Banerjee *et al* stated that overlooking the lagged terms in small samples would possibly lead to biasness in the approximated parameters. Despite the objections by some economists, the Engle-Granger Cointegration approach continues to be a common technique for determining the presence of a cointegrating relationship between variables.

#### 4.5.2. Testing for Stationarity

Time series models generate reliable results when applied to stationary data, most economic data used to study different scenarios in the economy appear to be non-stationary and therefore, require transformations in order to achieve stationarity. Granger and Newbold (1974) indicated that non-stationary variables results in spurious regression. Granger and Newbold (1974) argued than non-stationary series were characterised by a high value of  $R^2$  coupled with a low value of  $d$  (Durbin-Watson statistic) which is an indication of a false relationship.

A time series is said to be stationary if all aspects of its behaviour are unchanged by shifts in time. The mathematical definition of stationarity is as follows: for every  $m$  and  $n$ , the distribution of  $Y_1, \dots, Y_n$  and  $Y_{1+m}, \dots, Y_{n+m}$  are the same meaning that the probability distribution of a sequence of



$n$  observations does not depend on their time origin. Stationarity is argued to be a strong assumption because it requires all aspects of behaviour to be constant in time (Ruppert, 2004). In econometrics, a series is said to be stationary when it is integrated of order I (d). The order of integration refers to the number of unit roots in the series, or the number of differencing operations it takes to make a variable stationary (Takaendesa, 2006).

### 4.5.3. The Dickey-Fuller and Augmented Dickey-Fuller Unit Root Test

The Augmented Dickey-Fuller unit root test is an extension of the Dickey-Fuller unit root test originally proposed by Dickey and Fuller (1979). Dickey and Fuller used the Monte-Carlo simulations as a foundation of their unit root test under the null hypothesis of the existence of a unit root in the process generating of time series and tabulated critical values for the  $t_\delta$  statistic which they called the tau statistics. These critical values have been extended by MacKinnon (1991) through Monte-Carlo simulations (Seddighi *et al.*, 2000). Dickey and Fuller (1979) augmented the original Dickey-Fuller equations with extra lagged differenced terms in order to eradicate possible autocorrelation in the disturbances (Seddighi *et al.*, 2000)

The general strategy is that lagged differences, such as  $\Delta Y_{t-1}, \Delta Y_{t-2}, \dots$  are included in the regression such that its error term corresponds to white noise. This results in what is known today as the Augmented Dickey-Fuller tests (ADF tests), for which the same asymptotic critical values hold (Verbeek, 2008).

We consider the AR (2) model:

$$Y_i = \delta + \theta_i + \phi_1 Y_{i-1} + \phi_2 Y_{i-2} + \varepsilon_i \quad (4.5)$$

This can be written in factorised form as:

$$(1 - \phi_1 L)(1 - \phi_2 L)(Y_i - \mu) = \varepsilon_i \quad (4.6)$$

The condition of stationarity requires that  $\phi_1$  and  $\phi_2$  are both less than one in absolute value, but, if  $\phi_1 = 1$  and  $|\phi_2| < 1$ , we have a single unit root,  $\phi_1 + \phi_2 = 1$  and  $\phi_2 = -\phi_1$ . Equation (4.5) can be used to test the unit root hypothesis by testing,  $\phi_1 + \phi_2 = 1$  given  $|\phi_2| < 1$ . The inclusion of the additional

lags in comparison with the standard Dickey-Fuller test is done to make the error term asymptotically a white noise process, which is required for the distributional results to be valid (Verbeek, 2008).

#### 4.5.4. The Phillips-Perron Unit Root Test

Phillips and Perron (1988) proposed another unit root test instead of the usual Augmented Dickey-Fuller test. They stuck to the initial Dickey-Fuller regression instead of adding additional lags in the regressions to obtain an error term that has no autocorrelation but altered the DF statistics to take into account the potential autocorrelation pattern in errors (Verbeek, 2008). The Phillips and Perron (1988) unit root tests have become popular in the analysis of time series and some instances it is used to affirm the results obtained from the Augmented Dickey-Fuller (ADF) unit root test. The Phillips-Perron (PP) unit root tests differ from the ADF tests mainly in how they deal with serial correlation and heteroskedasticity in the errors. Particularly, where the ADF tests utilises a parametric auto regression to approximate the Autoregressive Moving Average (ARMA) structure of the errors in the test regression, the PP test does not take into account any serial correlation in the test regression. The regression equation for the PP test is:

$$Y_t = \pi Y_{t-1} + (\text{constant, timetrend}) + u_t \quad (4.7)$$

The PP tests correct for any serial correlation and heteroskedasticity in the errors  $u_t$  of the test regression by directly modifying the Dickey-Fuller test statistics. Therefore, whichever assumption is used in the ADF test is used for the PP test.

Phillips and Perron suggested a transformation of the statistics  $T(\alpha - 1)$  and  $t_\alpha$  based on estimating the model,  $y_t = \alpha_{t-1} + \varepsilon_t$  in such a way that the influence of nuisance parameters was eliminated asymptotically. This was done in place of solving the nuisance parameter problem parametrically as in the augmented Dickey Fuller test. This can be done after consistent estimates of the nuisance parameters  $\omega^2$  and  $\sigma^2$  (Haldrup *et al*, 2013).

## 4.6. Diagnostic and Stability Tests

Residual testing is done to determine if the main assumptions made in the OLS are held. The residual tests or diagnostic tests involve testing the obtained residuals from the error correction model firstly, for stationary by using ADF tests in order to confirm the cointegrated characteristics of the variables in the model. Testing the residuals allows one to verify the statistical significance of the fitted regressed equation or model. Different residual tests have been used in this study and are discussed below.

### 3.5.1. Histograms of Residuals

A histogram of residuals is a simple graphical device that is used to learn something about the shape of the probability density function (PDF) of a random variable (Gujarati and Porter, 2010). On the horizontal axis, the values of interest (e.g. OLS residuals) are divided into suitable intervals and in each class interval; rectangles equal in height to the number of observations (e.g. frequency) are erected in that class interval.

### 4.6.1. Jarque-Bera Normality Test

The Jarque-Bera (JB) test has gained recently popularity as a test for normality. This is an asymptotic or large sample test and is based on OLS residuals (Gujarati and Porter, 2010). This test also measures the skewness and kurtosis of the residual series, comparing them with those of a normal distribution. The hypotheses are as follows:  $H_0$ : residuals are normally distributed and  $H_1$ : residuals are not normally distributed. According to Brooks (2014) normally distributed residuals should exhibit a bell-shape which will result in the Bera-Jarque statistic being insignificant.

### 4.6.2. Breusch-Godfrey LM Test

The Breusch-Godfrey test was developed by Breusch (1978) and Godfrey (1978) and it came to be known as the Breusch-Godfrey test for zero first order serial correlation. This test is also known as a Lagrange Multiplier test and it amounts to running the regression of the OLS residuals  $e_t$  on  $e_{t-1}$   $(1-\phi_1L)(1-\phi_2L)(Y_t - \mu) = \varepsilon_t$ . Its distribution under the null is  $\chi_1^2$ . In this case, the regressors

are a constant  $\chi_t$  and the tests check whether the coefficient of  $e_{t-1}$  is significant. The advantage of this test is that; i) it is the same test for first order serial correlation, whether the disturbances are Moving Average of order one MA (1) or AR (1). ii) This test is easily generalizable to higher autoregressive or Moving Average schemes. For second order serial correlation, like MA (2) or AR (2) one includes two lags of the residuals on the right hand side, that is, both  $e_{t-1}$  and  $e_{t-2}$ . iii) This test is still valid even when lagged values of the dependent variable are present among the regressors (Baltagi, 2011).

According to Seddighi *et al.* (2000), the steps in the Breusch-Godfrey LM Test are as follows:

**Step 1:** Define the model properly. The model could be defined as:

$$Y_t = \alpha + \beta_1 X_{1t} + \beta_2 X_{2t} + \dots + \beta_p X_{pt} + \gamma_1 Y_{t-1} + \gamma_2 Y_{t-2} + \dots + \gamma_q Y_{t-q} + u_t \quad (4.8)$$

**Step 2:** Apply OLS to equation and obtain the corresponding residuals  $u_t$

**Step 3:** Regress  $u_t$  against all the regressors of the model, that is, against the constant,  $X_{1t}, \dots, X_{pt}, Y_{t-1}, \dots, Y_{t-q}$ , plus all the lagged residuals till order m, that is,  $u_{t-1}, \dots, u_{t-m}$ , and obtain the corresponding  $R^2$ .

**Step 4:** Calculate the static BG as:

$$BG = (n - q) R^2 \quad (4.9)$$

This statistic follows the  $\chi^2$  distribution with m degrees of freedom, that is, it is  $BG = (n - q)$

$$R^2 \approx \chi^2(m)$$

**Step 5:** Apply the following test of the hypotheses:

$$H_0 : \text{all } \rho_i = 0, \text{ accept if } BG < \text{critical value of } \chi^2(m)$$

$$H_a : \text{not all } \rho_i = 0, \text{ accept if } BG > \text{critical value of } \chi^2(m)$$

### 4.6.3. Whites Heteroskedasticity Test

Heteroskedasticity refers to the case of unequal variance (Gujarati and Porter, 2010). Symbolically, heteroskedasticity is expressed as:

$$E(u^2) = \sigma_i^2 \quad (4.10)$$

This test is known as the general test for model specification. This test is applicable on residuals from a least squares regression. It is based on the augmented regression and provides a test of the hypothesis that the coefficients of the variables in the augmented regression are all zero.

For example: Suppose we have the following model;

$$Y_i = \beta_1 + \beta_2 X_{2i} + \beta_3 X_{3i} + u_i \quad (4.11)$$

Whites Test proceeds as follows:

1. The first step is to estimate the regression by OLS, obtaining the residuals,  $e_i$
2. The second step is to run the auxiliary regression, the residuals obtained in equation (4.4) are squared and regressed on all the original variables, their squared values and their cross-products

$$e_i^2 = A_1 + A_2 X_{2i} + A_3 X_{3i} + A_4 X_{2i}^2 + A_5 X_{3i}^2 + A_6 X_{2i} X_{3i} + v_i \quad (4.12)$$

3. In the third step, we obtain the  $R^2$  value from the auxiliary regression (4.12). Under the null hypothesis of no heteroskedasticity, White showed that the  $R^2$  value obtained from the regression (4.12) times the sample size,  $n$ , followed the  $\chi^2$  distribution with degrees of freedom equal to the number of explanatory variables in regression (4.12) excluding the intercept term:

$$n.R^2 \sim \chi_{k-1}^2 \quad (4.13)$$

4. If the chi-square value obtained in equation (4.13) exceeds the critical chi-square value at the chosen level of significance, or if the  $p$  value of the computed chi-square is reasonably low (1% or 5%), the null hypothesis of no heteroskedasticity can be rejected. On another note, if the  $p$  value of the computed chi-square value is reasonably large (5% or 10%), the null hypothesis cannot be rejected (Gujarati and Porter, 2010).

#### 4.6.5. CUSUM Stability Test

A null limiting distribution of the CUSUM test based on OLS residuals when the regressors are polynomial trends was developed by MacNeil (1978). The CUSUM and CUSUM of squares test are based on recursive residuals and contain distributions that are independent of the data generating procedure of the regressors. According to Brooks (2008), the CUSUM statistic is centered on a normalised (scaled) version of the cumulative sum of residuals. The null hypothesis of perfect parameter stability hypothesises that the CUSUM statistics is zero but numerous residuals are incorporated in the sum (since the expected value of a disturbance is always zero). Commonly, a set of  $\pm 2$  standard error is plotted around zero and any statistic found outside the bands is understood to be an indication of parameter instability. The study also employs the CUSUM of squares test in order to confirm the results of the CUSUM test. An advantage of the CUSUM of squares test is that it is powerful as it rejects the false null on all occasions regardless of the stationarity or cointegration condition (Caporale and Pittis, 2004).

#### 4.6.6. Granger Causality Test

This test is performed to determine if one variable is causally related to another thus allowing determining the capacity of one variable to cause the other variable. The test uses the probability values to explore whether lagged values of  $x$  contribute significantly to the explanation of  $Y_t$  once lagged values have been incorporated. If they do not,  $X$  does “Granger cause”  $Y$ . The same test is done to determine if  $Y$  “Granger causes  $X$ ”. The null hypothesis is  $H_0$ : No Granger causality. The statement “ $X$  Granger causes  $Y$ ” does not imply that  $Y$  is the effect of  $X$ . This does not imply a cause effect relationship but is based on predictability. Granger causality measures precedence and information content but does not indicate the causality in the common use of the term. If a cointegration vector exists there is causality amongst the variables at least in one direction (Sarapriya, 2012).

#### **4.6.7. Model Simulation**

Following the work of Musila (2001), this study conducts a simulation experiment in order to assess the prognostic accurateness of the model. According to Barreto and Howland (2006), the word simulation means the construction of an artificial model of a real system to study and understand the system.

Mishkin (1979) stated that there are two classes of simulation experiments which are used to describe the characteristics of a macro model. The reduced form experiment was dubbed to be the most popular; this type of model simulation involves the studying of the reduced form of a macro model by simulating the response of the endogenous variables in the model to a change in one of the exogenous variables. Mishkin gave an example of a reduced-form when he stated that an experiment might ask what the effect of changes in government expenditures is on real GNP.

According to Brenner and Werker (2007) simulation models are characterised by approximately two factors which are implications and assumptions. The assumptions factor encompasses the premises, definitions and the boundaries for the model for example, the country setting or the time period. Frequently, simulations provide the tool to derive implications from assumptions in an analytical and logical way regardless of the adopted approach. The running of simulations results in the attainment of knowledge about the implications of these assumptions, similar to the analysis of mathematical equations.

#### **4.7. Conclusion**

The chapter presented the procedures involved in the Engle-Granger (1987) approach. The cointegration technique has been chosen as the preferred parameter estimation technique for the determinants of unemployment in Swaziland model. This is because of its several advantages over alternative techniques, that is, in the case for Swaziland. Based on the cointegration approach, the error correction model, which contains information on both the long run and short run relationship between variables is estimated. The estimated model has to pass all the diagnostic checks which involve autocorrelation LM test, white heteroskedasticity test and residual normality test. Having accustomed ourselves with the estimation techniques, we now apply these techniques to Swaziland data in order to achieve the objectives of this study as set out in Chapter one.

## **Chapter 5**

### **Empirical Results**

#### **5.1. Introduction**

The aim of this section is to examine the relationship between unemployment and its determinants using the Engle-Granger cointegration approach. The model regresses unemployment (LUNEMP) against the potential gross domestic product (LACTGDPPOT), inflation (indicated by LCPI) and government expenditure (LGSP) over the period 1991-2012.

#### **5.2. Stationarity Tests**

Before examining the relationship between unemployment and its determinants, the Augmented Dickey-Fuller test and the Phillips-Perron unit root test are applied to inspect the stationarity properties of the variables. The null hypotheses of both the ADF and PP test are that the series has a unit root whereas the alternative hypothesis states that the series does not contain a unit root. The PP test is used to affirm the results of the ADF in this case. The methodology section highlighted specified the estimation equation to be used when performing the unit root tests. All the series were transformed into logarithms in order to reduce their variability.



**Table 5.1: Results of Unit Root and Stationarity Tests**

Variables	ADF		PP	
	Levels	1 <sup>st</sup> Difference	Levels	1 <sup>st</sup> Difference
<b>LUNEMP: Trend and Intercept</b>	-2.172190	-5.870124***	-1.412472	-2.290761
Intercept	-1.223359	-2.295290	-0.780624	-2.341268
None	2.034796	-0.875850	7.434405	-0.779199
<b>LACTGDPPOT: Trend and Intercept</b>	-4.317634**	-3.483283*	-2.051130	-3.483283*
Intercept	-4.388056***	-3.514786**	-2.023579	-3.510316**
None	-4.494844***	-3.605729***	-2.075266**	-3.605729***
<b>LCPI: Trend and Intercept</b>	-3.592521*	-4.889078***	-3.458145**	-8.182366***
Intercept	-3.341988**	-4.588392***	-3.361726**	-8.378648***
None	-0.496383	-4.668669***	-0.224822	-8.761441***
<b>LGSP: Trend and Intercept</b>	-2.655671	-5.279288***	-2.655671	-5.709267***
Intercept	-1.929937	-5.494540***	-1.917452	-5.992567***
None	1.001768	-5.472536***	1.608013	-5.665958***

\* Statistically significant at 10% level  
 \*\* Statistically significant at 5% level  
 \*\*\* Statistically significant at 1% level

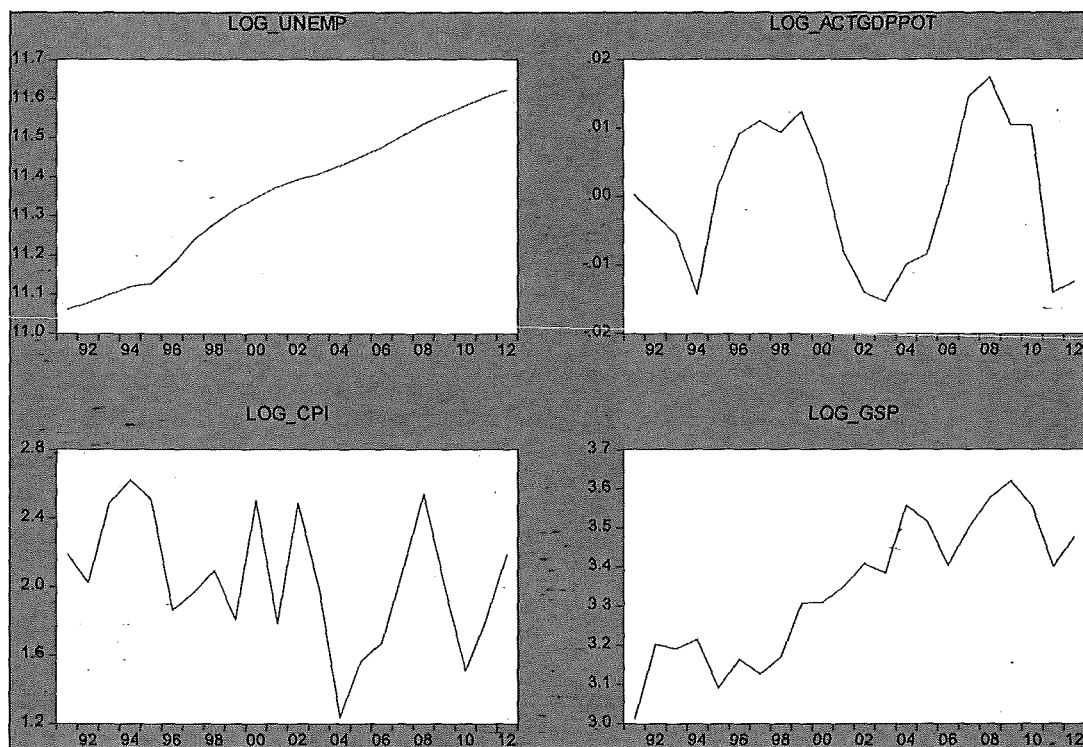
In terms of the ADF test, for the level series, one cannot reject the null hypothesis of a unit root process for the series' LUNEMP and LGSP because these series exhibit the presence of a unit root at levels. But for series LCPI and LACTGDPPOT, the null hypothesis of a unit root is rejected at 10%, 5% and 1% levels of significance, therefore series' LCPI and LACTGDPPOT are integrated of order 0, that is, I(0). However, under first difference form, the series LUNEMP and LGSP appear to be stationary, therefore the series' is said to be integrated of order 1, that is, I(1) as presented in Table 1.

Secondly, an analysis of the PP unit root test is made. The PP test confirms the results obtained via the ADF unit root test for all series hence the null hypothesis of the presence of a unit root can be rejected in favour of the alternative hypothesis which states that the series does not exhibit a unit root.

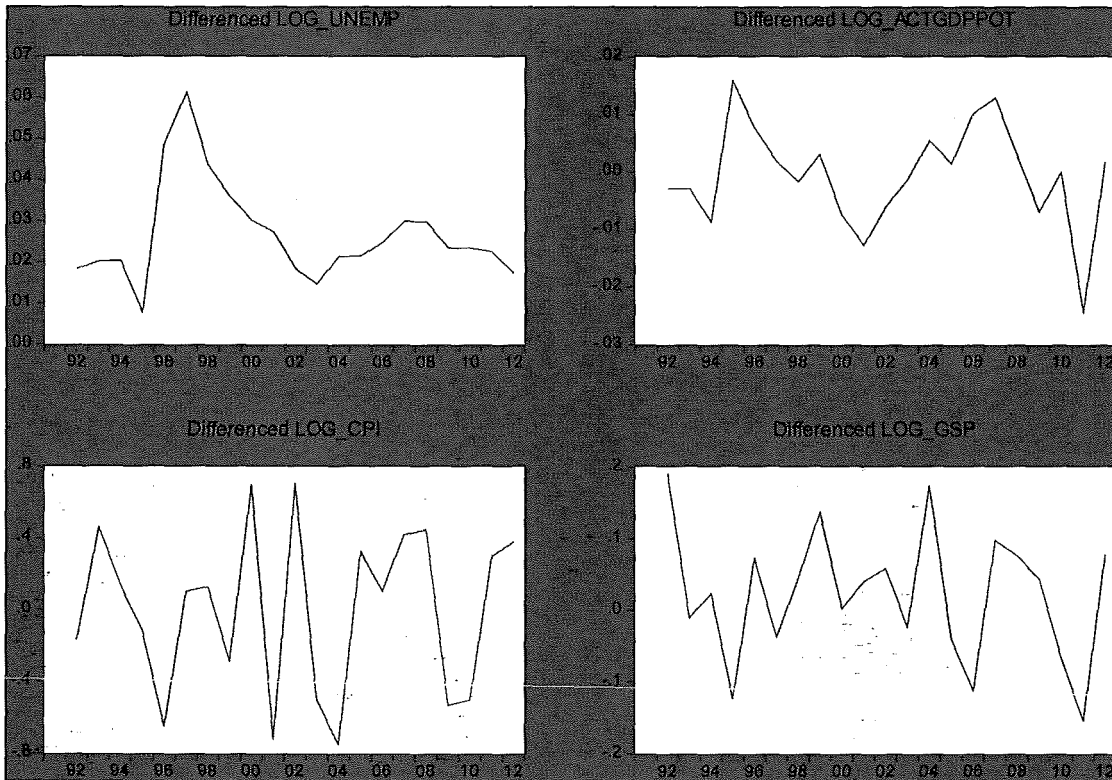
The graphical analysis serves a yardstick for the formal unit root tests. The graphs in Figure 10 Part (A) show that the some of the series are non-stationary at levels. Part (B) of figure 10 shows that all series are stationary. This is indicated by the fluctuations around a mean of zero which is a condition of stationarity. The disadvantage with the visual inspection method is that it is very subjective.

**Figure 5.1: Unit Root Test-Graphical Analysis**

(A) Unit root test: levels



(B) Unit root test: 1<sup>st</sup> Difference



### 5.3. Cointegration Results

The Engle-Granger method was employed in order to determine the presence of a cointegrating relationship between the variables. The OLS regression equation was estimated, residuals were obtained and tested for stationarity using the ADF test. The estimated equation is as follows;

$$LUNEMP = \alpha + \beta_1 LACTGDPPOT + \beta_2 LCPI + \beta_3 LGSP + \beta_4 DUM94 + DUMCRISIS + \varepsilon_t \quad (4.1)$$

**Table 5.2: Long-run Econometric Equation Results**

Variable	Coefficient	Standard Error	t-statistic	p-value
LACTGDPPOT	-0.710818	1.397211	-0.508740	0.6179
LCPI	-0.052542	0.043607	-1.204901	0.2458
LGSP	0.551303	0.125599	4.389391	0.0005
DUM94	0.139055	0.048780	2.850653	0.0116
DUMCRISIS	0.138236	0.044241	3.124637	0.0065
Constant	9.466845	0.441291	21.45259	0.0000

Note: L denotes transformation of variables into logarithms R = 0.89 F-statistic= 27.18 DW statistic=1.45

The results of the long-run econometric equation are presented in Table 5.2. The coefficients of the explanatory variables appear to be in agreement with the econometric theory except for government spending which has a positive sign, contrary to economic theory. There is a negative relationship between potential GDP and unemployment, an increase in potential GDP results in a decrease in unemployment. The relationship between inflation and unemployment is also in agreement with economic theory, an increase in inflation leads to a decrease in unemployment.

Economic theory suggests that government spending will reduce unemployment however the results appear to be contradictory. This may be attributed to the expenditure pattern of the government of Swaziland, government funds may not be properly channelled towards unemployment reduction measures. The dummy variables, DUM94 and DUMCRISIS offer a logical economic explanation about the effect they have on unemployment. The democratisation of South Africa in 1994 increased the unemployment levels in Swaziland and the global financial crisis of 2007 destabilised an already weak economy thereby intensifying the problem of unemployment in the country.

The regression coefficients are also illustrated in Table 5.2. The regression coefficients reveal that results further reveal that potential GDP and inflation are statistically insignificant while government spending and the dummy variables DUM94 and DUMCRISIS are statistically significant, that is, they have a significant and long-run effect on unemployment.

Table 5.3. indicates the existence of a cointegration relationship between the dependent and independent variables because the residuals were found to be stationary at 10% level of significance.

**Table 5.3:** Unit Root test for residuals/Cointegration test

ADF t-statistic	Critical Value
-2.937915	-2.650413 – 10%

### 5.3.1. Error Correction Model

The presence of a cointegration relationship between the variables requires the estimation of the ECM in order to cater for the dynamic short-run and long-run relationship of the variables and to measure the speed at which prior deviations from equilibrium are corrected. The ECM is formulated by regressing the dependent variable at first difference ( $\Delta LUNEMP$ ) onto the first differenced explanatory variables plus the lagged value of the Error Correction term ( $ECT_{t-1}$ ). The variables LGSP and LFDI are also included in the model in order to completely describe the dynamics of the determinants of unemployment. The ECM model is as follows:

$$\Delta LUNEMP = \alpha + \beta_1 \Delta LACTGDPPOT + \beta_2 \Delta LGSP + \beta_3 \Delta LFDI + ECT_{t-1} + \varepsilon_t \quad (5.1)$$

The results (Table 5.4) show that the ECM for the model is negative; this implies therefore that it is statistically significant. The ECM corrects the deviation from equilibrium at 7% adjustment speed. The explanatory variables in the model remain statistically significant whilst except LACTGDPPOT which is not consistent with economic theory. The R-squared of more than 50% shows that the regressions are a good fit, more than 50% of the variations in the dependent variables are explained by the explanatory variables.

**Table 5.4:** Error Correction Model

Variable	Coefficient	Standard Error	t-statistic	p-value
$\Delta$ LUNEMP	0.688051	0.139276	4.940202	0.0003
$\Delta$ LACTGDPPOT	0.776470	0.172421	4.503345	0.0007
$\Delta$ LGSP	-0.052062	0.018889	-2.756276	0.0174
$\Delta$ LFDI	-0.003139	0.001513	-2.074768	0.0602
Constant	0.008590	0.004153	2.068351	0.0609
$ECT_{t-1}$	-0.069948	0.037958	-1.842794	0.0902

Note:  $\Delta$  first difference operator  $R^2=82$  F-statistic= 7.61 DW statistic= 2.21 L denotes transformation of variables into logarithms

#### 5.4. Diagnostic and Stability Tests

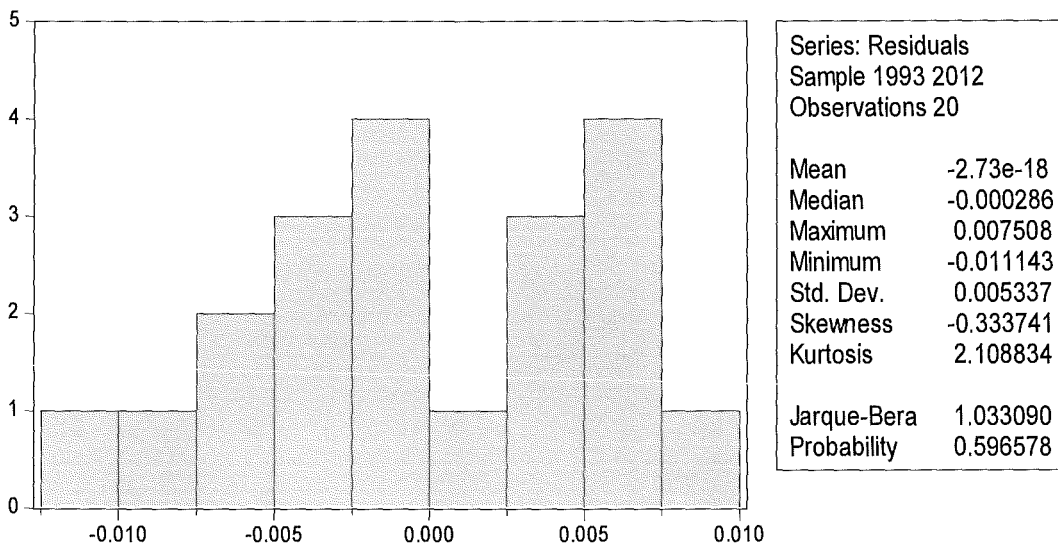
The study conducts diagnostic and stability tests on the model. The study applied the Breusch-Godfrey to test for autocorrelation, White's Heteroskedasticity test for the presence of an unequal variance in the model and the Jarque-Bera normality test for the normal distribution of residuals in the model.

**Table 5.5:** Diagnostic and Stability Tests

Test	p-value	Conclusion
Breusch-Godfrey LM test	0.2833	Failure to reject $H_0$
White's Heteroskedasticity test	0.2704	Failure to reject $H_0$
Jarque-Bera normality test	0.5966	Failure to reject $H_0$

The results of the diagnostic tests reveal that there is no serial correlation, there is no evidence of heteroskedasticity and the residuals are normally distributed as the p-value of the normality test is above 0.05 % (Figure 5.2).

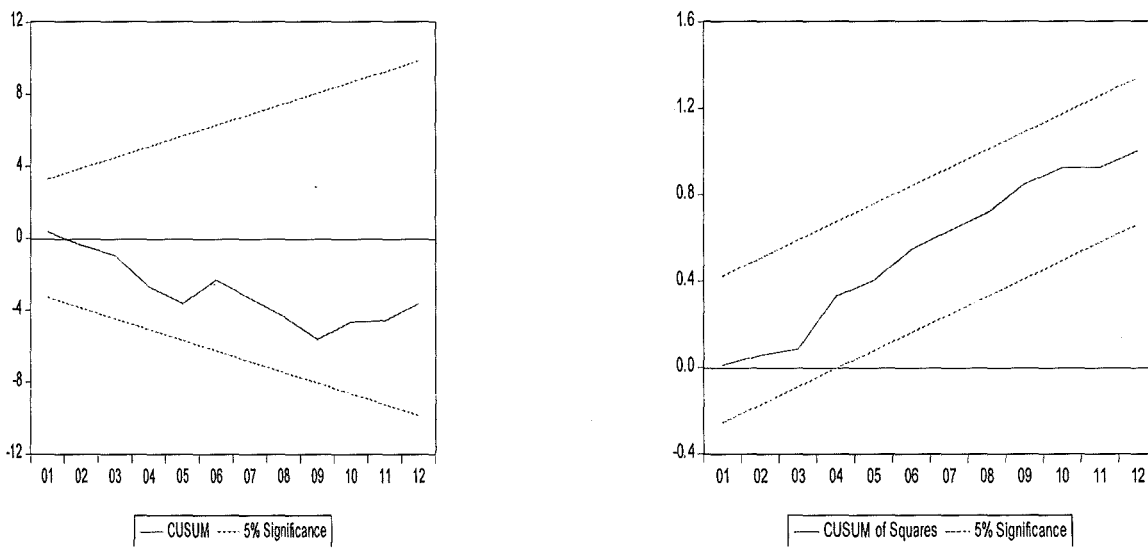
**Figure 5.2:** Histogram of Residuals



#### 5.4.1. CUSUM Test and CUSUM of Squares

The study also conducts the CUSUM Test and CUSUM Test of squares as a measure of the stability of the model. The Cusum test and Cusum test of squares give similar results as movement is maintained within the critical lines of 5% of significance in both tests. The conclusion drawn therefore is that the model is stable. The Cusum test and Cusum test of squares charts are shown in Figure 5.3.

**Figure 5.3: CUSUM Test and CUSUM Test of Squares**



### 5.5. Granger Causality Results

This study estimated the existence of a causal relationship between unemployment and its determinants (LACTGDPPOT, LCPI, and LGSP) Table 5.6 presents the Granger Causality results. The results show that causality exists amongst LCPI and LUNEMP, LGSP and LUNEMP, LGSP and LACTGDPPOT, LGSP and LACTGDPPOT, LCPI and LACTGDPPOT and LGSP and LCPI, therefore the null hypothesis of no causality is rejected for the mentioned variables.



**Table 5.6: Granger Causality Results**

Hypothesis	Obs	F-Statistic	Probability
D(LOG_ACTGDPPOT) does not Granger Cause D(LOG_UNEMP)	18	2.93076	0.0810
D(LOG_UNEMP) does not Granger Cause D(LOG_ACTGDPPOT)		1.51154	0.2660
D(LOG_CPI) does not Granger Cause D(LOG_UNEMP)	18	0.09889	0.9590
D(LOG_UNEMP) does not Granger Cause D(LOG_CPI)		0.30635	0.8203
D(LOG_GSP) does not Granger Cause D(LOG_UNEMP)	18	1.36158	0.3053
D(LOG_UNEMP) does not Granger Cause D(LOG_GSP)		1.24000	0.3419
D(LOG_CPI) does not Granger Cause D(LOG_ACTGDPPOT)	18	1.46604	0.2773
D(LOG_ACTGDPPOT) does not Granger Cause D(LOG_CPI)		0.15672	0.9232
D(LOG_GSP) does not Granger Cause D(LOG_ACTGDPPOT)	18	0.72555	0.5577
D(LOG_ACTGDPPOT) does not Granger Cause D(LOG_GSP)		0.05726	0.9811
D(LOG_GSP) does not Granger Cause D(LOG_CPI)	18	1.14684	0.3732
D(LOG_CPI) does not Granger Cause D(LOG_GSP)		3.15729	0.0683

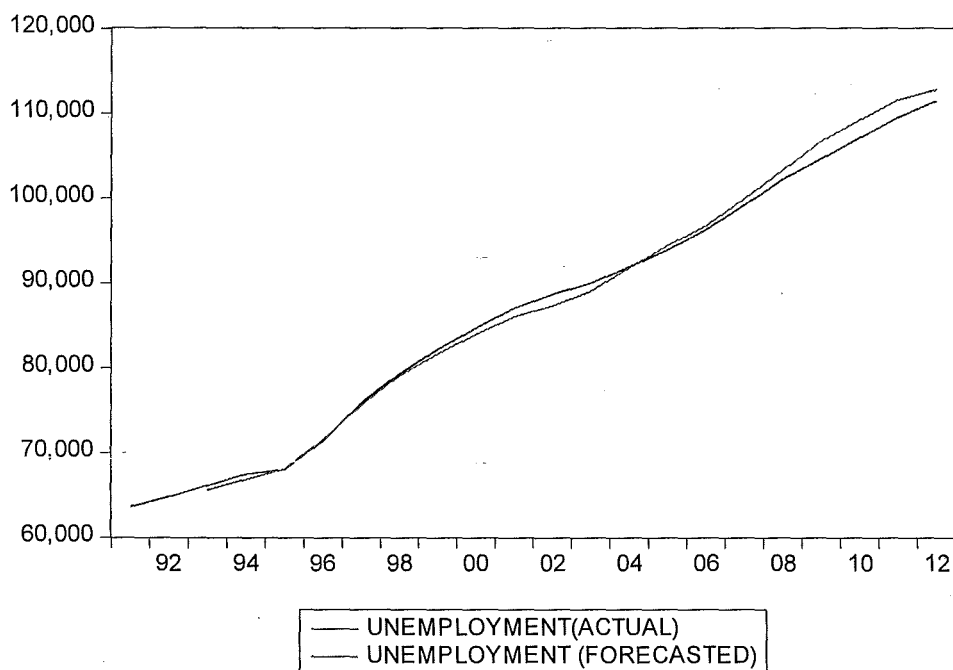
$\alpha = 0.10$

Decision rule = reject  $H_0$  if p-value < 0.10

### 5.6. Simulation Experiment Results

The simulation experiment was conducted for the period 1991-2012 using both the long-run and short run unemployment model. Figure 5.4 shows that the linear model is a good fit because the simulated (forecasted) unemployment tracks the actual values of unemployment.

**Figure 5.4:** Simulated Unemployment Model



### 5.7. Conclusion

This chapter aimed to investigate and analyse the relationship between unemployment and its determinants. The data underwent various tests in order to validate the appropriate analytical framework for Swaziland. Stationarity and cointegration tests were applied to the data; the data was further subjected to Error Correction Modelling in order to determine the long-run relationship between unemployment and its determinants. The model reveals results that are consistent with economic theory therefore highlighting the drivers of unemployment in Swaziland. Variables such LACTGDPPOT, LCPI and FDI reinforce the inverse relationship suggested by economic theory. Therefore, in order to reduce and possibly eradicate the unemployment level, means to draw up and implement policies that will create an enabling environment for economic flourishing are required.

## **Chapter 6**

### **Conclusion and Policy Recommendations**

#### **6.1. Introduction**

The study acknowledged that unemployment is a major problem and is one of the main hindrances to economic growth, development and prosperity in general. Chapter one of the study highlighted the aims and objectives of the study. These were addressed appropriately throughout the thesis and findings of the study will now be summarised and concluded. Finally, recommendations on policy implications in regards to curbing or possibly eradicating unemployment in Swaziland will be made.

#### **6.2. Summary of Findings**

The aim of this study was to determine and identify the drivers of unemployment in Swaziland. The first section of the study formulated a model of unemployment in the context of Swaziland. The variables earmarked as potential drivers of unemployment were included in the model and these were: the potential gross domestic product (LACTGDPPOT), inflation (indicated by CPI), government spending as a percentage of GDP (LGSP), DUM94, a dummy variable capturing the impact on unemployment by the democratisation of South Africa and DUMCRISIS, a dummy variable capturing the effect for the global financial crisis of 2007-2011 that plunged Swaziland into a fiscal crisis. The time series analysis ran for the period 1991- 2012 and annual data was employed.

In spite of its potential defects, the Engle-Granger Cointegration technique was employed in order to investigate and assess the short and long-run properties of the model. Due to the small sample size, it was thus advantageous to utilise this approach. The time series data was subjected to numerous tests. Firstly, formal and informal tests of stationarity were conducted on the data. The results of the formal stationarity tests revealed that the data is integrated of order 1  $I(1)$ , meaning

that, the series become stationary after being differenced once. The informal visual analysis of stationarity concedes to the results of the formal stationarity tests. The model exhibited the presence of a cointegrating relationship amongst the variables at 10% level of significance. The error correction term of the model was then obtained, the model was found to converge back to equilibrium at 7% convergence speed. The R-squared of more than 50% showed that the regressions are a good fit as more than 50% of the variations in the dependent variables are explained by the explanatory variables. The model passed all the diagnostic tests it underwent; no evidence of serial correlation, heteroskedasticity and model instability was found. Evidence of a causal relationship was also detected amongst the variables. Furthermore, model simulation experiments found that the forecasted model was a good fit because the estimated unemployment values tracked the actual unemployment values.

The findings of this study demonstrate the amount of work that policy makers and the relevant authorities in Swaziland need to do in order to reduce the gradually increasing unemployment level in the country.

### **6.3. Policy Implications and Recommendations**

The study has aided in identifying some of the determinants of unemployment in Swaziland. The results revealed by the study conform to economic theory therefore there are various policy implications that will concede with the outcomes.

The results of the study showed an inverse relationship between potential GDP and unemployment hence policies aimed at increasing the GDP of the country would be the best way to address this pandemic because this would translate to the creation of various employment opportunities. More employment opportunities would then enhance the economic stance of the country as these benefits would also trickle down to the marginalised. For instance, the government could embark on creating an attractive environment for foreign investment. Foreign direct investment has been seen to bring about substantial increases in the GDP of various countries due to the capital influx and tax revenues that transpire as a result of the investment.

In the past, government expenditure has been found to be excessively high yet there have not been any tangible economic benefits that have resulted from this spending. The estimation results of the study revealed that an increase in government spending also increases unemployment which is

defiant of economic theory. However, it may have a positive impact on economic growth prospects and employment if fiscal policy measures are channelled properly. Government should invest its monetary resources towards addressing macroeconomic problems such as unemployment. Addressing the unemployment problem would then set off a chain reaction because some of the socio-economic problems (e.g. crime) that emanate from unemployment would be eradicated.

Furthermore, the estimated econometric model revealed a negative relationship between unemployment and inflation, meaning that, an increase in inflation reduces unemployment. This finding is consistent with economic theory. A trade-off exists between unemployment and inflation therefore authorities should implement policies that lead to a reduction in unemployment while maintaining price stability.

The recommendations of the study are as follows: (1) the government should invest in activities (such as promotion of the private sector and economic diversification) that will increase the level of output because this will lead to the creation of various employment opportunities. (2) the government should adopt an expansionary fiscal policy provided that government expenditure is correctly channelled towards measures of reducing the unemployment level (investment in education, health services or capital projects) and improving human capital. This would promote sustained economic growth which would in turn translate to job creation in the country.

In addition, labour market competitiveness and flexibility should be improved so as to strengthen job creation attempts and reduce the level of unemployment. Labour market flexibility is advantageous because it reduces labour costs and leads to the creation of more employment opportunities.

#### **6.4. Conclusion**

In conclusion, the study has revealed the depth of the unemployment pandemic and the profound effects that it has on the economy in a developing country. Various macroeconomic factors have been identified as determinants of unemployment and their roles in the increment/decrease of unemployment have been investigated and assessed. Furthermore, numerous policy implications and recommendations to be taken into consideration by the relevant authorities have been mentioned. Ultimately, policies that will reduce and possibly eradicate unemployment in

Swaziland should be pursued in order to create a conducive environment for future economic growth and development.

### **6.5. Areas of Further Research**

There are numerous avenues that can be explored in regards to unemployment in Swaziland. Further research can study the case of unemployment duration and the consequences of long-term unemployment duration. Other studies can look into the issue of unemployment amongst graduates in the country as well as the social implications of unemployment.

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## Appendix

### Appendix 1:

#### Econometric Regression Equation

Dependent Variable: LOG\_UNEMP

Method: Least Squares

Date: 11/01/14 Time: 22:03

Sample: 1991 2012

Included observations: 22

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_ACTGDPPOT	-0.710818	1.397211	-0.508740	0.6179
LOG_CPI	-0.052542	0.043607	-1.204901	0.2458
LOG_GSP	0.551303	0.125599	4.389391	0.0005
DUM94	0.139055	0.048780	2.850653	0.0116
DUMCRISIS	0.138236	0.044241	3.124637	0.0065
C	9.466845	0.441291	21.45259	0.0000

R-squared	0.894659	Mean dependent var	11.35367
Adjusted R-squared	0.861740	S.D. dependent var	0.183220
S.E. of regression	0.068127	Akaike info criterion	-2.307880
Sum squared resid	0.074261	Schwarz criterion	-2.010323
Log likelihood	31.38668	Hannan-Quinn criter.	-2.237784
F-statistic	27.17755	Durbin-Watson stat	1.451763
Prob(F-statistic)	0.000000		



## Appendix 2

### Appendix 2A:

#### White's Heteroskedasticity Test

Heteroskedasticity Test: White

F-statistic	1.335783	Prob. F(7,12)	0.3144
Obs*R-squared	8.759036	Prob. Chi-Square(7)	0.2704
Scaled explained SS	1.748218	Prob. Chi-Square(7)	0.9725

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 11/01/14 Time: 22:06

Sample: 1993 2012

Included observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.37E-05	1.74E-05	0.783667	0.4484
D(LOG_UNEMP(-1))^2	-0.000455	0.007883	-0.057748	0.9549
D(LOG_ACTGDPPOT(-1))^2	-0.047762	0.051073	-0.935165	0.3681
D(LOG_GSP)^2	0.000788	0.001132	0.695714	0.4999
D(LOG_GSP(-1))^2	7.96E-05	0.000739	0.107733	0.9160
D(LOG_FDI)^2	1.56E-06	1.96E-06	0.797684	0.4406
D(LOG_FDI(-1))^2	-2.99E-06	2.51E-06	-1.192775	0.2560
ECT(-1)^2	0.004385	0.001655	2.649480	0.0212
R-squared	0.437952	Mean dependent var	2.71E-05	
Adjusted R-squared	0.110090	S.D. dependent var	2.92E-05	
S.E. of regression	2.76E-05	Akaike info criterion	-17.86998	
Sum squared resid	9.13E-09	Schwarz criterion	-17.47168	
Log likelihood	186.6998	Hannan-Quinn criter.	-17.79223	
F-statistic	1.335783	Durbin-Watson stat	2.176611	
Prob(F-statistic)	0.314401			

**Appendix 2B:**

**Breusch-Godfrey Serial Correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.671861	Prob. F(1,11)	0.4298
Obs*R-squared	1.151249	Prob. Chi-Square(1)	0.2833

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 11/01/14 Time: 22:08

Sample: 1993 2012

Included observations: 20

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG_UNEMP(-1))	0.073632	0.167370	0.439935	0.6685
D(LOG_ACTGDPPOT(-1))	-0.009933	0.175247	-0.056682	0.9558
D(LOG_GSP)	-0.010466	0.028460	-0.367754	0.7200
D(LOG_GSP(-1))	-0.001342	0.019222	-0.069841	0.9456
D(LOG_FDI)	-0.000304	0.001672	-0.181877	0.8590
D(LOG_FDI(-1))	-0.000236	0.001561	-0.151390	0.8824
ECT(-1)	0.014143	0.042178	0.335307	0.7437
C	-0.001853	0.004779	-0.387634	0.7057
RESID(-1)	-0.330696	0.403449	-0.819671	0.4298
R-squared	0.057562	Mean dependent var	-2.73E-18	
Adjusted R-squared	-0.627847	S.D. dependent var	0.005337	
S.E. of regression	0.006809	Akaike info criterion	-6.838906	
Sum squared resid	0.000510	Schwarz criterion	-6.390826	
Log likelihood	77.38906	Hannan-Quinn criter.	-6.751436	
F-statistic	0.083983	Durbin-Watson stat	2.009337	
Prob(F-statistic)	0.999156			

### Appendix 3:

#### Long-Run Econometric Regression Equation

Dependent Variable: D(LOG\_UNEMP)

Method: Least Squares

Date: 10/15/14 Time: 22:35

Sample (adjusted): 1993 2012

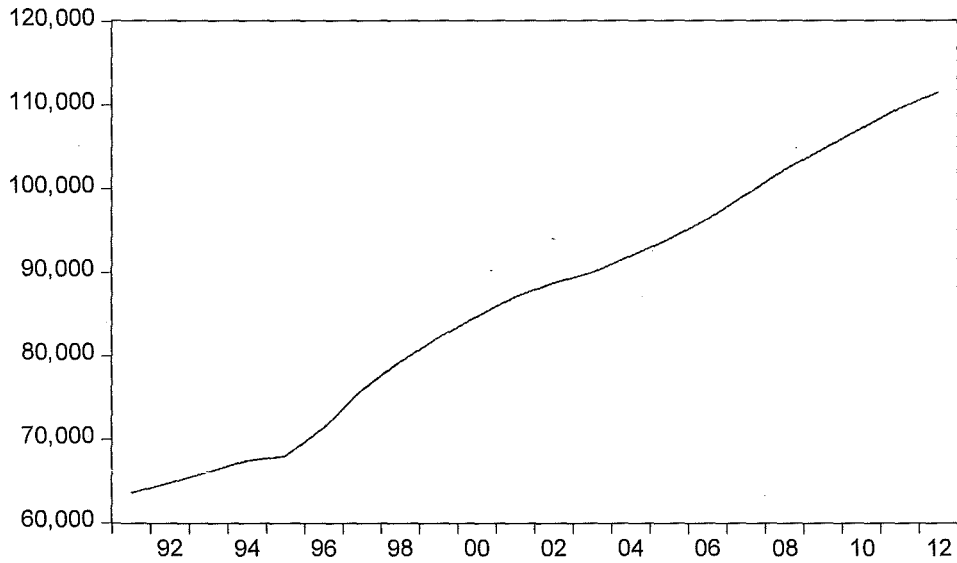
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOG_UNEMP(-1))	0.688051	0.139276	4.940202	0.0003
D(LOG_ACTGDPPOT(-1))	0.776470	0.172421	4.503345	0.0007
D(LOG_GSP)	0.051513	0.025085	2.053576	0.0625
D(LOG_GSP(-1))	-0.052062	0.018889	-2.756276	0.0174
D(LOG_FDI)	-0.003717	0.001608	-2.311744	0.0394
D(LOG_FDI(-1))	-0.003139	0.001513	-2.074768	0.0602
ECT(-1)	-0.069948	0.037958	-1.842794	0.0902
C	0.008590	0.004153	2.068351	0.0609
R-squared	0.816104	Mean dependent var		0.027174
Adjusted R-squared	0.708832	S.D. dependent var		0.012445
S.E. of regression	0.006716	Akaike info criterion		-6.879620
Sum squared resid	0.000541	Schwarz criterion		-6.481327
Log likelihood	76.79620	Hannan-Quinn criter.		-6.801869
F-statistic	7.607767	Durbin-Watson stat		2.211488
Prob(F-statistic)	0.001257			

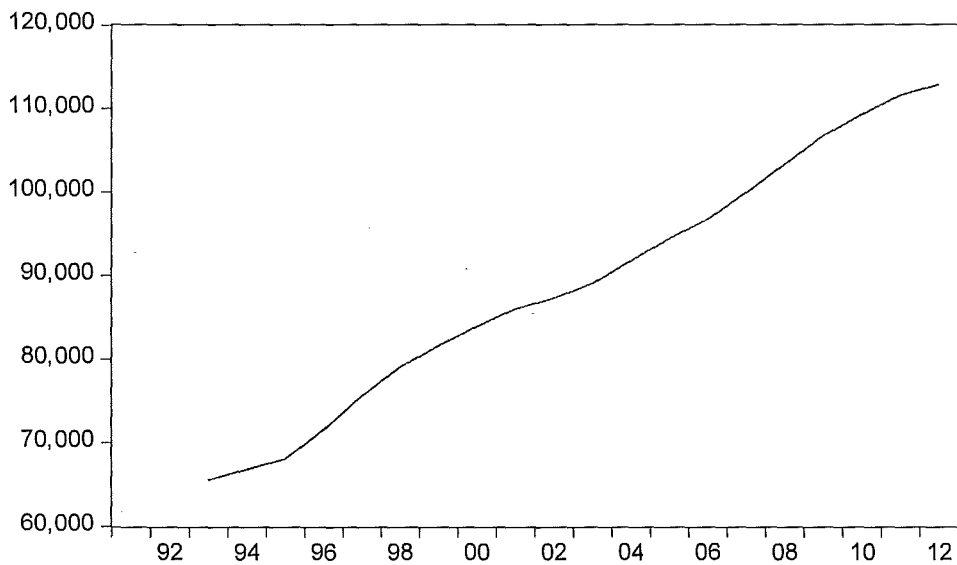
**Appendix 4:**

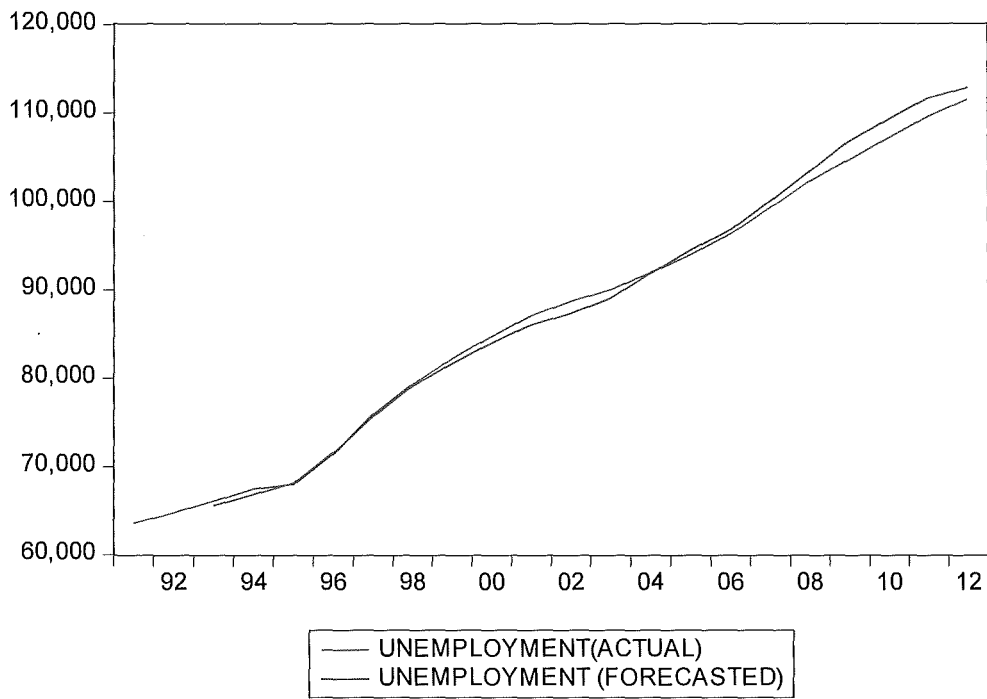
**Simulation Experiments- The Unemployment Model**

UNEMPLOYMENT(ACTUAL)



UNEMPLOYMENT (FORECASTED)





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