IMPLICATION OF UNEMPLOYMENTON ECONOMIC GROWTH IN NIGERIA (1970-2013)

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CERTIFICATTION

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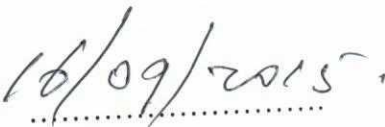
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DEDICATION

This research work is dedicated to Almighty GOD for His grace, mercy and protection in my academic life. Also to my lovely parents Mr and Mrs IKUPOLUYI, blessed memories, my brothers, sisters, friends and well-wishers for their unquantifiable encouragement and support. I love you all.

ACKNOWLEDGEMENT

ABSTRACT

This study was carried out to investigate the implication of unemployment on economic growth in Nigeria. The objective of this study is to ascertain the short-run and long-run relationship of unemployment on economic growth. That is, toverify if unemployment and economic growth co-integrate and to check the speed of adjustment. The researcher adopted the methodology of the Ordinary Least Square (OLS)techniques, unit root test serial correlation, and the error correction mechanism (ECM) using the Quadratic Hill Climbing Approach. The result revealed that the relationship between unemployment and economic growth is negative, the short-run impact shows that a percentage increase in unemployment rate will reduce GDP at constant price by 27274.45, holding other variables constant, there is uni-directional causality between unemployment and economic growth, atleast six variables co-move in the long-run.A percentage increase in unemployment reduces economic growth by 1.13%. Again, the study showed that the speed of adjustment from short-run disequilibrium to the long-run equilibrium is approximately 6years. The study therefore recommends that the government should invest more on entrepreneurial programs to reduce unemployment and stimulate economic growth, proper diversification of the economy, the monetary policy committee of the Central Bank should make policy instrument favourable to stimulate investment in real sector, comprehensive economic planning, policy on discrimination based on disabilities and population control to reduce the unemployment rate in Nigeria.

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INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Unemployment is generally seen as a macro-economic problem as well as socio-economic problem universally. Unemployment is as a result of insufficient and non-availability of jobs to correspond with the growing population, even those who are employed sometimes lives with the fear of being unemployed due to job insecurity and retrenchment of workers. There is employment of factors of production if they are engaged in production. The term unemployment could be used in relation to any of the factors of production which is idle and not being utilized properly for the purpose of production. However, with reference to labour, there is unemployment if it is not possible to find jobs for all those who are eligible,capable and able to work. Labour is said to be under-employed if it is working below capacity or not fully utilized in production (R.A.I Anyawuocha 1993) Unemployment can be classified into two which are voluntary or involuntary. Voluntary unemployment a situation whereby one chooses not to work because he or she has means of support other than employment. Example is an idle rich man. On the other hand, involuntary unemployment exist when persons who are eligible and willing to work at the prevailing rate of pay are unable to find work. (Anyanwa 1995)

According to the central bank of Nigeria (2004), unemployment rose to 30% during 2004 statistics on unemployment rate. Unemployment has been seen as a world-wide economic problem and has been categorised as one of the serious impediments to social progress .Apart from representing a huge waste of a country's manpower resources, it generates welfare loss in terms of lower output thereby causing decrease in income and well being of the citizenry

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(Akinboyo, 1987, and Raheem 1993). Unemployment is a very vital issue in Africa (Vandemortele, 1991, and Rama 1998), expecially in Nigeria (Oladeyi, 1994 and Umo, 1996). The need to curb the negative implications of unemployment has made the tackling of unemployment problems to feature very prominently in the development objectives of many developing countries.

In the study of unemployment in Africa Okonkwo (2005) identified three (3) cause of unemployment which are:

- ❖ The educational system
- ❖ The choice of technology which can either be labour intensive or capital intensive.
- ❖ And inadequate attention to agriculture.

The use of machines to replace work done by labour and computerization has contributed to these social problems in the sense that what for example forty (40) men can do manually a machine will only need like five (5) men. Therefore, the remaining thirty five (35) are unemployed. More so, lack of enough education and skill to have access to credit and capital.

One particular feature of unemployment in Nigeria is that it was more endemic in the early 1980's than any other period. According to Udabah (1999:62), the major factor contributing to low standard of living in underdeveloped countries in their relative inadequate or inefficient utilization of labour in compares with advanced nations. Unemployment rate is measured by the proportion of the labour force that is unemployed divided by the total number of the labour force. The total labour force was projected at 61,249,485 in 2007 indicating an increase of 3.9%. Total employment in 2007 stood at 52,326,923 compared with 50,886,836 in 2006. This represents an annual increase of 2.8%. The labour force consists of the number of people ageing 18 and over

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who are employed (that is, those who currently have jobs) and unemployed (those who do not have jobs but who are actively looking for work). Individuals who do not fall into either of these group such as retired people and discouraged workers are not included in the calculation of the labour force. The international labour force organization (ILO) defines unemployment as the proportion of the labour force which was available for but did not work for at least one hour in the week proceeding the survey period. National Bureau of statistics (N.B.S). Nigeria defines unemployment as the proportion of the labour force that is available for work but did not work for at least thirty nine (39) hours in the week preceding survey period.

Unemployment according to Lipsey (1963:456) brings about economic waste and cause human suffering. According to Fadayomi, 1992, Osinubi, 2006, unemployment is as a result of the inability to develop and utilize the nations manpower resources effectively especially in the rural sector. The socio-economic effect of unemployment includes:

❖ Fall in national output,

❖ Increase in rural-urban migration, waste of human resources,

❖ High rate of dependency ratio, poverty,

❖ Depression,

❖ Frustration,

All sorts of immoral acts and criminal behaviourse.g prostitution, armed robbery e.t.c. The social effect of unemployment brings to light the need to proffer possible solution to salvage our nation Nigeria.

1.2 STATEMENT OF THE PROBLEM.

Nigeria is the largest Black African country. The country is equally rich in human and material resources. Unfortunately, it has the largest population of people that are unemployed in the world. Unemployment in Nigeria after 54 years of political independence is said to have the highest unemployment rate in the world (Daily Trust 5/7/2004), this has made life difficult especially among the youth with enormous consequences. This fact has been acknowledged by President Goodluck Jonathan when he said "The population of our young people is high. If we are unable to provide jobs for these young people, the country could face serious problems" (Daily Trust, 4/10/2013). This clearly shows how disastrous unemployment is in the country because it has been on the increase since 2006. According to National Bureau of statistics as quoted by Olaiya, (2013:28), "unemployment rates were 12.3% in 2006, 12.7% in 2007, 14.9% in 2008, 19.7% in 2009, 21.1% in 2010 and 23.9 in 2011". There is no doubt that some of the social problems we are having in Nigeria today cannot be unconnected with the high level of unemployment. Such problems are conflict, kidnappings, armed robbery, prostitution, drug addiction, and drunkenness to mention but a few. These problems have negative impact on the sustainable development of Nigeria directly or indirectly. Conflicts have resulted to destruction of lives and public properties. This has been worsened by the rapid population growth of Nigeria of 3.2% annually as observed by National Bureau of statistics.

Further analysis showed that the distribution of unemployment ranged from 14.1% for the age group of 25-44 to 23.5% for the age group of 65-70.

Many people are frustrated by lack of unemployment's opportunities they include these without work and those who have jobs but want to work longer hours or more intensively. A

considerable size of utilized and underutilized labour abounds in Nigeria and which ought to be brought into the circle. These shows that Nigeria's employment problem has become chronic and should be a matter of utmost national concern.

1.3 OBJECTIVE OF THE STUDY

The major objective of this study is to examine the implications of unemployment on the economic growth of Nigeria.

Other specific objectives are, to:

1   To ascertain the short-run and long-run impact on economic growth in Nigeria.

2   To verify whether or not unemployment and economic growth co-integrate in the long-run.

3   To determine the direction of causality between unemployment and economic growth.

4   To compute the speed of adjustment (Error Correction Mechanism).

1.4.1 RESEARCH HYPOTHESIS

The hypothesis that would guide this work is as follows;

1. H0: Unemployment has no significant implication on economic growth in Nigeria.

2. H1: Unemployment has no significant impact on the economic growth in Nigeria.

1.4.2 RESEARCH QUESTIONS.

From the above discussions the research questions are:

1. Is there any relationship between unemployment and economic growth?

2. Does unemployment have any significant implication on economic growth?

1.5 SIGNIFICANCE OF THE STUDY

This work will be relevant to students, Lecturers, Researchers and academics.

The recommendation that will be output of research will be useful to the policy makers and government on the evil of unemployment.

More so, this work is a comtempary issue in Nigeria and in the world at large, this work will also treat more issues in the problem of unemployment. My work tends to provide literature and data on these two variables helping researchers.

1.6 JUSTIFICATION FOR THE STUDY

This study covers implication of unemployment on economic growth in the past 43years (1970-2013). Past research shows it impact has been negative but this research shows it impact is negative and proved that unemployment leads economic growth to fall by 1.13% and the speed of adjustment from the short-run dis-equilibrium to the long-run equilibrium is approximately 6years.

After the research the researcher determined both short-run and long-run impact using least square and the error correction mechanism was calculated using the Quadratic Hill Climbing Approach.

1.7 SCOPE AND LIMITATIONS OF THE STUDY

The scope of this study covers the period of 1970 to 2013. The focus and aim of this study is attesting the implications of unemployment on economic growth in Nigeria.

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CHAPTER TWO

2.0 LITERATURE REVIEW

Keynesian Economist see unemployment as a situation in which the number of people able and are willing to work at prevailing wage exceeds the number of job available and at the same time, firms are unable to sell all the goods they would like to sell(bannock et al 1998). When carefully analysed, the Keynesian unemployment largely applies to situations in Nigeria (Bello 2003) Here, unemployment can result to a scenario when many Nigeria consumers including the government prefers foreign goods than domestic goods, thereby causing the domestic producers to face with drastic decrease of low demand that naturally forces them to lower output and of cause reduces work force. This experience continues in some firm especially the small scale ones till they are pushed out of the market resulting in the loss of more jobs, the long- term unemployment remains in the market for too long and thereby reducing his cause of job finding. Virtually, all countries exhibit negative direction dependence that is if one takes two unemployed people at random, one would expect that one with shorter unemployment duration to leave unemployment more quickly (Machine and manning 1998). According to Olueye (2006) classical economist argued that unemployment exist when unions maintain wages above their equilibrium level. When this happens, we have a situation of involuntary unemployment. Keynesian unemployment is the part of total unemployment could help mop up by using fiscal and monetary policy to boost aggregate demand (Olueye 2006).

Cyclical unemployment differs from structure and frictional (Lindbeeket al1999). It is an unemployment result from lack of aggregate demand in a down swing in the business cycle (Bannock et al 1998) For instance in Nigeria, since the collapse of oil boom in the late seventies,

the economic has generally remained in a passive state even though some other period of oil price surge were later experienced (Bello 2003). What sound like cyclical unemployment in the most sub- Saharan Africa economist is the seasonal unemployment that is inherent in the agricultural sector then it may be best described as the very long Kondratieff cycle which lasts for over a period of fifty years (Bello 2003). This implies that to solve unemployment problem, it is simply to remove the artificial critical ceiling placed by the union. In case of Keynesian unemployment it is demand that is deficient "such involuntary unemployment, is coursed by sluggish labour market adjustment beyond the control of individual workers or union" (Begg 1994). The demand deficit or cyclical unemployment is the disequilibrium level of involuntary unemployment caused by the combination of low aggregate demand and sluggish wage adjustment. The classical case of unemployment is premised on the inflexibility of wages. Unemployment result because labour, due to organize activities do not allow wage to decline for the accommodation of excess labour when there is incidence of unemployment. Given-wage-price flexibility, there are automatic forces in the economic system that tends to draw the economy into equilibrium state. (Jhingan 2000). Unemployment incidence from classical perspective cannot really be situated in most sub- Sahara Africa economics. Although, price flexibility is not actually feasible due to trade union activities, but its existence wouldn"t have efficiently addressed the problem of unemployment. This is because for instance, in Nigeria, most sector if not all especially the public sector enterprise have the problem of labour redundancy due to over staffing (Bello 2003). Macro-economic model of structural employment assume that unemployed workers are not able or willing to get jobs by underbidding the prevailing wages of incumbent workers. The most obvious microeconomic explanation of the absence of wage underbidding is perhaps the minimum wage laws. But there seems to rather

general agreement among labour market economist that minimum wages have not been high enough in recent decades in developed countries to explain much of aggregate structure unemployment (Lindbect 1999). So the problem is not that of wage price inflexibility or wage under binding declination but that of poor economic growth that is unable to sustain the population and labour supply growth rates. Thirlwall (1983) referred to the concept of disguised unemployment which he defined as the Gap between the actual numbers of workers available for employment and the level of employment at which the marginal product is below the institutional or subsistence wage. He was of the opinion that since there are many reasons, particularly in developing countries, why labour may be fulfilling its potentials and why small changes may release substantial quantities of labour, we should be concerned with dynamic rather than static surplus. Unemployment rate according to Begg (1994)is the percentage of the labour force without a job. According to him, labour force means those people of working age who in principle would like to work if a suitable job were available.

He added that, those who are of working age but have no intension of work, should not be counted as unemployed. This view seems to be general consensus among economist. A person is defined as being unemployed, if he or she does not have a job but is available to take a job. Parkin (1998) he added that unemployment rate is the percentage of the people in the labour force who are employed. According to him, the unemployment rate is the best available measure of under those who do not have a job, are available for work and are willing to work but do not have the efforts to find work and measure unemployed people rather than unemployed labour hours as a result excluding part time workers who want full time jobs. He however noted that unemployment is a persistent feature of economic life. Begg (1994) classified unemployment into frictional, structural demand deficient (Keynesian) and (classical). He saw frictional

unemployment in a dynamic society which includes people whose physical or mental handicaps make them almost unemployable and those who are temporally unemployed as a result of changing jobs. Structural unemployment arises because there is a mismatch of skills and job opportunities when the pattern of demand failing and wage is deliberately maintained above the level at which the labour demand schedule intersect. Begg (1994) however held that behavioural implication of types of unemployment and the consequences for government policy have necessitated different classification modern analysis of unemployment. A worker is involuntary employed if he or she would accept job offer at the going wage rate. Employment and unemployment in developing countries have been the concern in recent years to the extent that international labour force has sponsored missions to several countries to undertake detailed analysis as part of world employment programmed (Olueye 2006).

For the purpose of achieving the objectives of this study, it is necessary to review some earlier work in this subject that would provide us with adequate theoretical and empirical background for assessing the revelence and contributions of this research study.

This study tries to ascertain the relationship or linkage that exist between unemployment and growth making use of analytical and econometric research tools.

2.1 CONCEPTUAL ISSUES

Unemployment There seems to be a consensus on the definition and usage of the concept, unemployment. According to Udu and Agu (2005), unemployment is "a situation in which persons capable and willing to work are unable to find suitable paid employment". As defined by International Labour Organisation (2007), unemployed workers are those who are currently not working but are willing and able to work for pay, currently available to work and have actively

search for work. Hornby (2010) defines unemployment as "the facts of a number of people not having a job; the number of people without a job; the state of not having a job". In the same vein, an operational definition of unemployment for this work will include the underemployed, hence unemployment occurs when people who are able and willing to work are without jobs, or cannot find work that is effective and productive to do. It also occurs when people undertake jobs that are contrary or lower than their academic qualifications or areas of specialization. For instance, a first or second degree holder that enrols as a recruit into any of the armed forces or paramilitary or a degree holder working as a clerk in an office is greatly underutilized and as such could be termed as unemployed even when such person is on a job.

Underemployment is unemployment in disguise. Harold (2009) described underemployment as when people are employed only on part time or at work that is ineffective or unproductive, with a correspondingly low income that is insufficient to meet their needs. This implies that the underemployed are individuals who are working outside their areas of specialisation due to lack of jobs and so, could not be paid commensurately to their qualifications or expertise. If the factors of production are not being used to the full capacity, there is underemployment (Anyanwuocha, 2010).

Types of unemployment in Nigeria Economists have distinguished between the various overlapping types (or causes) of unemployment. Some types of unemployment in Nigeria are explained below:

1. **Seasonal Unemployment:** According to Udu and Agu (2005) seasonal unemployment occurs mostly in industrial sector, and in the enterprise that are seasonal in nature. Such activities engage labour temporarily during peak periods. For example, during the rainy season, many men

who are engaged in fishing and building may go out of work during bad weather. Fishing, for instance is not usually done during the rainy season in many parts of Nigeria. More so, during Christmas season, shop owners and companies employ extra hands for the seasonal sales. These extra hands are usually relieved of their jobs when demand for products decreased.

2.Structural Unemployment: This occurs when a labour market is unable to provide jobs for everyone who wants one; because there is a mismatch between the skill of the unemployed workers and the skill needed for the available jobs (Wikipedia Encyclopedia, 2011). Structural unemployment could also results from persistent cyclical unemployment, that is, if the economy suffers from long-term low aggregate demand and in the techniques of the industry, unemployment could occur (Udu and Agu, 2005; Wikipedia Encyclopedia, 2011; and Harold, 2009). For example, as time goes by, there may be permanent fall in the demand for certain products which may be due to a change in taste. The brick industry in Nigeria, is suffering permanent fall in demand now because people prefer to use cement blocks to build their houses instead, this has caused sharp unemployment in that industry. More so, long lasting low demand could make the unemployed disheartened while their skills become rusty and obsolete, and as a result they many not fit the job vacancies that would be created when the economy recovers. Some technological unemployment which occurs due to the replacement of workers by machines might be counted as structural unemployment.

3.Frictional Unemployment: There seems to be divergence on the meaning and causes of frictional unemployment. For example, Udu and Agu (2005) asserted that, there is frictional unemployment when certain occupations have surplus workers in one part of the country, while vacancies for similar jobs occur and are not filled in other parts of the country. To them, immobility of labour and imperfect knowledge of the existence of opportunities elsewhere is the

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main cause of frictional unemployment. In contrast, Harold (2009), Anyanwuocha (2010), and Wikipedia Encyclopedia (2011) agreed that frictional unemployment is the time period between jobs, when a worker is searching for job or transitioning from one job to another. It occurs because workers seeking jobs do not find them immediately. Friction here refers to the incongruity between the demand for and supply of labour (Harold, 2009). For example, frictional Unemployment could occur between the time a student completes his studies and the time he is able to find a job (Anyanwuocha, 2010). This type of unemployment is always present in an economy and is more common with specialised labour.

4.Transitional Unemployment: Udu and Agu (2005) refer to this as normal unemployment, because it is short duration. It does not harm the economy. In construction industries or contract jobs which rely heavily on manual labour, workers are temporarily laid off at the end of major assignments. Such workers are re-engaged when other jobs becomes available. Others may drift to other on-going projects.

5.Classical Unemployment: This occurs when real wages for a job are set above the market – clearing level, causing the number of job-seekers to exceed the number of vacancies. Most economists have argued that increased government intervention in the economy leads to increase in the rate of employment of a nation. For instance, the minimum wage as stipulated by Labour Law has also raise the cost of unskilled or low skilled labour above the market equilibrium. This led to a drastic reduction in the employment of these categories of labour. Many in these categories of labour force who even wish to work at the formal wage rate could not be employed due to this Law, consequently, adding to the high number of the unemployed in the country. Furthermore, laws restricting lay-offs made businesses less likely to hire in the first place, as hiring becomes more risky, leaving many young people unemployed and unable to find work. 6.

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Hidden Unemployment Hidden unemployment is the unemployment of potential workers that does not usually reflects on official unemployment statistics, due to the way the statistics are collected. In many countries only those who have no work but are actively looking for work (and/or qualified for social security benefits) are counted as unemployed. Those who have given are not officially counted even though they are unemployed. The same applied to those who have taken early retirement to avoid being laid off, but would prefer to be working. The statistics also do not count those with part time or seasonal job who would rather have full time jobs as unemployed. In addition, those who are of working age but are currently in full-time education are usually not considered unemployed in government statistics. Because of hidden unemployment, official statistics often underestimate unemployment rate. However, a critical examination of the various types of unemployment shows that unemployment can be voluntary or involuntary. Though, there have been several definitions of voluntary and involuntary unemployment in the economic literatures, a simple distinction is applied. Voluntary unemployment is attributed to individual's decision which includes workers who reject low wage jobs. Whereas, involuntary unemployment exists because of the socio-economic variables (such as the market structure, government policies, etc.) which permeate the environment in which one operates. It includes workers fired due to an economic crisis, industrial decline, company bankruptcy or organisational restructuring. Hence, structural unemployment, and classical unemployment are largely involuntary in nature. In addition, most cases of unemployment in Nigeria are usually involuntary.

Nigeria Economic Growth is a middle income, mixed economy and emerging market, with expanding financial, service, communications, and entertainment sectors. It is ranked 30th in the world in terms of GDP as of 2011, emergent, though currently underperforming manufacturing

sector is the thirdlargest on the continent, producing a large proportion of goods and services for the West African region. Previously hindered by years of mismanagement, economic reforms of the past decade have put Nigeria back on track towards achieving its full economic potential. Nigerian GDP at purchasing power parity more than doubled from $170.7 billion in 2005 to $413.4 billion in 2011, although estimates of the size of the informal Nigeria is a middle income, mixed economy and emerging market, with expanding financial, service, communications, and entertainment sectors. It is ranked 30th in the world in terms of GDP as of 2011, emergent, though currently underperforming manufacturing sector is the third producing a large proportion of goods and services for the West African region. Previously hindered by years of mismanagement, economic reforms economic potential. Nigerian GDP at purchasing power parity more than doubled from $170.7 billion in 2005 to $413.4 billion in 2011, although estimates of the size of the informal figures) put the actual numbers closer to $520 billion. Correspondingly, the GDP per capita doubled from $1200 per person in 2005 to an estimated $2,600 per person in 2011 (again, with the inclusion of the informa is estimated that GDP per capita hovers around $3,500 per person). It is the largest economy in the West Africa Region, 3rd largest economy in Africa (behind South Africa and Egypt), and on track to becoming one of the 20 Nigeria is a middle income, mixed economy and emerging market, with expanding financial, service, communications, and entertainment sectors. It is ranked 30th in the world in terms of GDP as of 2011, and its largest on the continent, producing a large proportion of goods and services for the West African region. Previously hindered by years of of the past decade have put Nigeria back on track towards achieving its full economic potential. Nigerian GDP at purchasing power parity more than doubled from $170.7 billion in 2005 to sector (which is not included in official figures) put the actual numbers closer to $520 billion. Correspondingly, the

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retail trade and telecommunications sectors, which accounted for 28.0%, 28.8% and 21.4% of real GDP growth respectively d Government revenue, propelled by positive price developments for crude oil in the international oil market, 6,362.56 billion in 2010 to N my was mixed in 2011. Real GDP growth slowed to 7.4% in 2011 from 8.0% in 2010, driven predominantly by crop production, wholesale and retail trade and telecommunications sectors, which accounted for 28.0%, 28.8% and 21.4% of real GDP growth respectively during the year. Government revenue propelled by positive price developments for crude oil in the international oil market 9,987.63 billion in 2011. Overall, developments in the external sector favourable in 2011, compared with 2010. However, the relatively high poverty incidence 8.0% in 2010, driven predominantly by crop production, wholesale and retail trade and telecommunications sectors, which accounted for 28.0%, 28.8% and 21.4% of real GDP growth respectively d Government revenue, propelled by positive price developments for crude oil in the international oil market, surged from N 6,362.56 billion in 2010 to of the economy were 9,987.63 billion in 2011. Overall, developments in the external sector favourable in 2011, compared with 2010. However, the relatively high poverty incidence favourable in 2011, compared with 2010. However, the relatively high poverty incidence and unemployment still persist.

Economic growth: Increase in a country's productive capacity, as measured by comparing gross national product (GNP) in a year with the GNP in the previous year.

Increase in the capital stock, advances in technology, and improvement in the quality and level of literacy are considered to be the principal causes of economic growth. In recent years, the idea of sustainable development has brought in additional factors such as environmentally sound processes that must be taken into account in growing an economy

2.2 THEORETICAL FRAMEWORK

UNEMPLOYMENT AND ECONOMIC GROWTH

The theoretical framework seeks to establish the relationship between unemployment and economic growth. Does the rate of economic growth create or destroy job and does it affects jobs in the short or long-run? The motivation for study is the real aspect of growth which increase in growth comes from accumulation of knowledge embodied in innovation through the use of machine to do the work that was previously done by the people, which result to unemployment.

Arthur Okun (1962) was the first economist who studied the empirical relationship between unemployment and economic growth. He postulated that a 1% increase in the growth rate above the trend rate of growth would lead only to 0.3% in the reduction of unemployment. Reversing the causality a 1% increase in unemployment will mean roughly more than 3% loss in GDP growth.

This relationship implies that the rate of GDP growth must be equal to its potential growth just to keep the unemployment rate constant. To reduce unemployment, therefore, the rate of GDP growth must be above the growth rate of potential output (Tatom, 1978).

Generally, economic theory that can be used in explaining the relationship between growth and unemployment is Okun's law. Okun's law is an empirical observation on the relationship between unemployment rate and economic growth. There would also be other factors that might affect the coefficient, e.g. labour market regulation, labor union, etc. For instance, in Japan, unemployment rates tend to vary less for a given gross domestic product (GDP), due to the strong social job protection. Okun coefficients can change over time because the relationship of unemployment to output growth depends on the following:

- ❖ Laws,

- ❖ Technology,

- ❖ Preferences,

- ❖ Social customs,

- ❖ And demographics.

Two methods were postulated in measuring Okun's coefficient; Okun's Law can be expressed in this form: The initial form of the Okun's law can be written as the Gap method:

$$Ut-U*t \qquad \text{-------- (1)}$$

Where:

yt = The real output product(GDP)

y*t=potential output

Ut = The natural level of unemployment

U*t= the potential unemployment

b = The Okun's coefficient

This is saying that the change in unemployment (unemployment in year t minus unemployment in year (t-1) is equal to a negative parameter, which is less than one, which shows the responsiveness of unemployment to output, multiplied by the difference between output growth in year t and the normal growth rate of output. The parameter is negative because it is saying when output growth goes above the normal growth rate, then unemployment will fall. When output growth is below the normal growth rate, unemployment will rise. That means when output

growth is on the normal growth rate then unemployment will be stable. The second method is the use of Okun's first-difference method:

This method helps to indicate the sensitivity of output to unemployment changes.

Given: Δ Then, Δ Δ/ ---------(2)

This paper focuses on the well-known difference version which highlights that the change in unemployment rates is driven by the growth rate in real GDP. This is based on the assumption that an increase in output will need more factor input leading to a lower unemployment rate. The difference version, written as a linear regression model, is given by:α β εt. Where ut represents the unemployment rate in t,

Yt symbolizes the level of real GDP and εt is the error term which satisfy the usual properties. The parameter β is called the Okun's coefficient and is expected to have a negative sign. Thus β estimate gives a negative coefficient between output growth and unemployment rates indicates changes in real output caused by changes in unemployment rate.

2.2.0 THEORIES OF UNEMPLOYMENT

2.2.1 CLASSICAL THEORY OF UNEMPLOYMENT

The classical theory, as analysed by Pigou (1933) and Solow (1981), argues that the labour market consists of demand and supply of labour. Demand for labour is a derived demand, obtained from the declining portion of the marginal product of labour. The demand curve is a negative function of real wage in that if wages increase the quantity demand for labour will decline and the opposite is correct. The supply of labour is derived from worker's choice whether to spend part of time working or not working (leisure). Supply of hours worked is a positive

function of the real wage, because if the real wage rises, workers supply more hours of work. In equilibrium, demand and supply of labour are intersected at a clearing point that determines the equilibrium real wage rate and full employment. Unemployment, Sweezy (1940: 807) explaining Pigou's Theory of Unemployment, "apart from frictional obstructions…would be non-existent if it were not for the fact that wage-earners habitually stipulate for a rate of wages higher than the 'equilibrium' level." Full employment does not mean that there is no unemployment. Still frictional unemployment does exist at the going real wage rate. For example, if a worker thinks that the disutility of work is greater than the benefit of work or the utility of the real wage, this worker will decide not to work. This type of unemployment is called voluntary unemployment. Frictional unemployment arises because of the dynamic nature of the labour markets, the availability of information, the search for better jobs, and random fluctuations in demand for labour such as closing of a plant and of opening of a new plant. Duration of frictional unemployment is determined by the unemployment insurance benefits and the speed of the information. Wicksell thinks that if wages are sufficiently flexible downward, then this decline can maintain full employment (Jonung 1989: 28-35). Cheaper credit to businessmen is the most effective measure to fight unemployment. He even thought that the government should support private investment in housing and soils. Government can support the introduction of various inventions as well. Government support should be financed by taxation. Wicksellanalyses technical unemployment due to technological change as well. The introduction of machinery would cause unemployment but the unemployed will search for new jobs, a search that will push wages downward. Hence, full employment is restored again. For the normal (frictional) unemployment, Wicksell thinks that advertisements and employment agencies can reduce the normal rate of unemployment. The cyclical unemployment, as another type of unemployment, is

due to the lack of effective demand. He though it would be a good idea to raise wages in order for workers to buy more. But this action may cause workers to lose their jobs as a result of higher wages. Essentially, for Wicksell the cyclical unemployment was due to the wrong investment of capital. Capital was invested in areas where rates of return were low. He concluded that public works is the best measure to fight cyclical unemployment. After World War I, Wicksell thinks the boom and the rise in prices induced by the war would come to an end. Thus, unemployment would rise. Workers would have to accept lower wages. He also thought that government should provide financial support to the unemployed who could not find jobs. After 1921, Wicksell turns to Malthus. He thought that the causes of the unemployment are the surplus people, shortage of capital brought about by the war, and the disorganized state of the monetary system. For the third cause, after the war prices were falling and producers decided to produce lower amounts of production because they knew they would receive lower prices for their products. Thus, they let their money set idle in banks and workers became unemployed. These causes suggest that emigration became one of the important policies for solving the unemployment problem. Wage reduction is not a competent policy to increase employment. The increase in wages is most likely due to increased labour productivity and wage reduction will reduce work intensity and productivity. Wage reduction will not force some capital intensive firms to switch to labour intensive techniques in the short run. Higher wages should stimulate the substitution effect by employing more machines for labour. And this substitution will increase labour productivity and employment in the long-run. Hayek (Nishhiyama and Leube 1984:7) contends that unemployment is due "to a discrepancy between the distribution of labour...between industries...and the distribution of demand among their producers. This discrepancy is caused by a distortion of the system of relative prices and wages." In other words, the unemployment is

caused by "a deviation from the equilibrium prices and wages which would establish themselves with a free market and stable money." This is actually a mismatch between demand and supply of labour, which is usually caused by expansionary monetary and fiscal policies and powerful trade unions. These policies create economic dislocation and structural changes in an economy which misdirect labour and other economic resources to other alternatives. Unions are also able to set higher wages compared to market wages, which generate unemployment, particularly in industries that become less profitable. In short, for Hayek the unemployment problem is caused by resources being in the wrong places at the wrong time and can be corrected if wages and prices are determined by the equilibrium of supply and demand. In line with Hayek theory of unemployment, Trehan (2001) provides an important explanation of the search theory of unemployment. Firms search for the productive workers and workers search for highpaying jobs. So, both agents continue searching until matches are reached. At that point a worker will leave the unemployment pool. But if a worker realizes later on that her productivity is worth higher wages and firms are paying high wages on the average, then the worker's reservation wage will increase. Consequently, the unemployment rate will start rising gradually, indicating a mismatch has again.

2.2.2 KEYNESIAN THEORY OF UNEMPLOYMENT

The ideas of the British economist, John Maynard Keynes in 1930"s revolutionized thinking in several areas of macro-economics including unemployment, money supply, and inflation which is seen in his publication of 1936 as the general theory of unemployment interest and money". Cyclical or Keynesian unemployment also known as demand deficient unemployment occurs when there is no aggregate demand in the economy. It gets its name because it varies with the business cycle, though can also be persistent as during the great depression of the 1930"s.

Cyclical unemployment rises during economic down turns and falls when the economy improves. Keynes argues that this type of unemployment exist due to inadequate effective demand. Demand for most goods and services falls, less production is needed, wages do not fall to meet the equilibrium level and mass unemployment results. The Keynesian framework, as examined by Thirlwal(1979), Grill and Zanalda(1995) and Hussian and Nadol(1997),postulate that increase in employment, capital stock and technological change are largely endogenous. Thus the growth of employment is demand determined and that the fundamental determinants of long term growth of output also influence the growth of employment. In the Keynesain theory, employment depends upon effective demand which results in increased output, output creates income and income provides employment. He regards employment as a function of income. Effective demand is determined by aggregate supply and demand functions. The aggregate supply function depends on physical or technical conditions which do not change in the short run, thus it remains stable. Keynes concentrated on aggregate demand function to fight depression and unemployment. Thus employment depends on aggregate demands which in turn is determined by consumption demand and investment demand. According to Keynes, employment can be increased by increasing consumption and or investment. Consumption depends on income C(y) and when income rises, savings rises. Consumption can be increased by raising the propensity to consume in order to increase income and employment but the psychology of the people (taste, habit etc) which are also constant in the short run. Therefore the propensity to consume is stable. Employment thus depends on investment.

2.2.3 UNEMPLOYMENT IN THE THEORY OF EFFECTIVE DEMAND

Veblen points out that the volume of output is set to attain a satisfactory profit and is a manifestation of the predatory instinct of the vested interests which aim at domestic and

international dominance. But how is this volume of production determined to achieve reasonable profits? Veblen gives a lucid answer. He accurately realizes, and before Lord Keynes reaches a similar conclusion, that vested interests determine the volume of output after taking into consideration the aggregate demand. As Veblen (1904: 195) explains: In part by actual increase of demand and in part through a lively anticipation of an advanced demand, aggressive business enterprise extends its venture". And the 'venture', of course, means extending production and operations, assuming the existence of a reasonable level of profits. The level of aggregate demand will provide the necessary increases in total revenues. On the other side, the cost of production has to decline. If revenue rises and cost declines, then the reasonable level of profits can be found. There are various forces in Veblen's work that reduce the cost of production. Technology increases production and reduce the cost of inputs used in the production process, and enterprises cut wages and increase productivity in order to cut cost per unit of output. Better technology can reduce the prices of capital goods, and government can cut taxes. Banks can reduce the interest rates as well. Administrative and insurance cost can be declined in order to stimulate business enterprises. The decline in costs, given rising revenues, will increase the profit level for Veblen. Consequently, higher profits will force the business enterprises to expand and employ more workers. Thus, employment will increase and the rate of unemployment will decline. Keynes (1936) considers unemployment as an involuntary phenomenon. He thinks that employment is cyclical, generated by the deficiency of aggregate demand (Mouhammed 2010). Capitalists hire workers and invest to produce output when the expectations about the economy and profits are favorable. If expectations about the future are supported by reality, investments and employment continue rising until equilibrium is reached. This equilibrium is attained by the intersection of the aggregate demand and supply--the point of the effective demand—which may

be less than the full employment equilibrium. If expectations about the future of the economy are not favourable, capitalists invest less and employ less number of workers. Hence, the equilibrium is achieved where cyclical unemployment exists. This unemployment is due to the deficiency of the aggregate demand, particularly investment expenditures. Consistent with Keynes's teaching, Davidson (1998), a representative of Post Keynesian economics, argues that involuntary unemployment is explained by insufficiency of effective demand, instability of exchange rates, and international mobility of finances which create uncertainty that weakens entrepreneurial confidence to make investments to reduce unemployment. Similarly, other Keynesians argue that the unemployment is due to the contractionary nature of the U.S. monetary policy which creates deficiency in aggregate demand. Other Keynesians think that the unexpected increase in price level, or a higher rate of inflation, will reduce the real wage and increase demand for labour. That is, the rate of unemployment will decline. This idea reminds one with the old proposition of Phillips curve suggesting there is a trade-off between the rate of unemployment and the rate of inflation.

2.2.4 UNEMPLOYMENT IN THE REAL BUSINESS CYCLE THEORY

It is argued in this theory (Chatterjee 1995 and 1999) that the growth of productivity of input which revolutionizes technology is the main source of employment and unemployment. If the growth of output increases more than the growth of inputs, then total factor productivity or the residual, has increased. If total factor productivity is not growing, then firms and the economy become inefficient. It follows that reallocation of labor and capital cannot be achieved and labor and capital will be used in less profitable opportunities. There are various causes for the slowdown in total factor productivity. Technology is not improving in the production of goods and services and workers' skills are not being enhanced. New products are not invented and when the prices of imported materials are increasing. Once total factor productivity is stagnating, the co-movements in other important variables will slowdown. For example, consumption

expenditures will not increase above the trend, nor will investment spending. GDP and total hours worked will not be above the trend either. When consumption, investment, GDP, and hours of work decline, the Solow's residual, which represents the growth in labour productivity and is measured by the difference between actual and predicted productivity growth (or shocks), will decline. That is, there is no improvement in technology and productivity under this condition. Therefore, unemployment will increase. Technology shocks are brought about by scientific and engineering development, by R&D, management techniques, and by industrial organizations that make inputs more productive. In Schumpeter's terminology innovations are being introduced and are very effective in making the economy grow. Innovations and favourable technological shocks also reduce inputs and increase total factor productivity. In short, if shocks to productivity brought about by technological shocks do not exit, the unemployment will rise. Gali and Rabanal (2004) contend that demand and monetary shocks affect the variables of the business cycle, including employment, by about 75%, where the technological shocks affect those variables by about 25%. Gali (1999) finds that the positive shocks in technology generate a decline in hours of labour and negative impact between technology shocks and productivity. For him, non-technology shocks generated positive comovement between hours and productivity. His results were not consistent with the real business cycle theory.

2.2.5 EFFICIENCY WAGE THEORY

This is a macro-economic approach of explaining unemployment. The rationale behind the theory is as follow; Assume that worker differ in quality, not just abilities but in the probability to shrink, in other words, some people are more lazy than others and are therefore less likely to work harder. The effort is a function of costly monitoring i.e if you are being closely monitored than if you not. An employer cares about the cost of labour(the wage rate). However, the cost is dependent upon the productivity of the workers. So, the objective is one to minimize the wage divided by productivity (wage per unit produced). To do this, there are at least two options: Firstly you can increase productivity by increasing wages. The reason for this is that as wages

increases, the cost shrinking becomes higher because if you are caught, you are fired and lose your wages and the higher the wage is the more you loose by being fired. A higher wage thus means that you work even harder since it is more important for you not to be fired. Hence, there is a connection between quality of workers and the wage rate. The higher the wage the more costly it is to be fired and the less likely is it that the workers will shrink. Another arguement using the same reason is that turn over itself is costly(firing, hiring and training) and consequently the employer would want to pay higher wages to prevent high quality workers from leaving. This theory explains unemployment in the sense so far it has been established that is profitable for an individual factory to differ higher wages than the market equilibrium. However, the factory is not alone in making this discovery advantage of higher relative wages for the firm is going to disappear; the solution to this problem lies in the creation of a permanent group of unemployment. The high real wage level creates an excess supply of labour. The excess supply does not result in a decrease in the wage level because the firms know they need some unemployment to provide on incentives for the employed workers not to shrink. The incentive is produced by making the cost of being unemployed high which is what a high unemployment rate reflects. Here, wage performs two functions, one as payment for the use of a resource and another as an incentive not to shrink. As a result of the second role of wage, unemployment becomes a permanent equilibrium phenomenon.

2.2.6 THE SEARCH THEORY

The search theory of unemployment argues that unemployment is a result of employers quitting their job to search for a new and better-paid job. This involves a certain optimum time spent searching in order to find the best paid job while searching, the worker is employed. This seems

to be a theoretical explanation of unemployment since only less than 10% of the unemployed actually quitted their own job.

2.2.7 THE INSIDER- OUTSIDER THEORY

The alternative micro-economic theory of unemployment is the insider – outsider theory. The focus in this theory is the turn over costs of labour. This means that there are significant costs involved in firing, hiring, and training workers. Not only are there exogenously determined costs but the insider can increase the costs of turn over by refusing to cooperate with hired outsider i.e those who already have a job gain market power over wages as a result of these costs, the employers are willing to give the workers higher wages because this is more profitable than the costly process of turnover.

2.3 EMPIRICAL REVIEW

TabeuinaDaveriand (2000) found empirical support by raising a hypothesis that unemployment has a negative effect on economic growth while Layard and Nickell (1999) cannot find the labour market institution that increase unemployment also lower economic growth. It is quite possible that some institutions that affect unemployment also affect economic growth and the level of output in Nigeria. Lindbeek(1999) found that structural unemployment by not disappearing in cyclical booms. Using the (PSv suds model as the analytical framework for the paper). The model are also related to search model for labour market in which unemployment equilibrium is defined as a situation where the number of individual finding jobs equals to the number of individual who are separated from jobs. It points various factors that influence the level of structural employment which is different in time and place. Olson (1984) argues that democratic societies tend gradually to become more organized in strong pressure groups that

income distribution reasons have an interest in blocking the changes necessary for high growth. Downes (1998) investigated the necessary condition for reducing the unemployment rate in Trinidad and Tobago. From the period 1971-1996. Using the error correction model estimated by OLS (ordinary least square) instrumental variables, he found that in both long and short runs changes in Real Gross Domestic product (RGDP) and Real Average Earning (RAE) have a statistically impact on changes in the unemployment rate. While increase in GDP reduces the unemployment rate in both short and long terms but lower it in the short-run. Increase in real average earning increase the unemployment rate on the long-run. Levin and Wright (2000) find that it is important but difficult to distinguish between desirable effects of unemployment insurance that are observation equivalent when designing optimal unemployment insurance cause permanent higher involuntary unemployment by raising the reservation wage. The paper avoids the problem by regarding the trade-off between the unemployment insurance replacement rate and unemployment as an intermediate relationship that matters only as far as it impacts economic growth. Using annual panel data finds that unemployment insurance replacement rate is associated with higher unemployment. However they find no significant relationship between unemployment insurance, related on employment and the real growth rate of domestic product.

Osinubi (2006) find it worthwhile to address the following questions using time series data for 41 years; 1970-2010.

- ❖ What is the number of relationship between poverty, unemployment and economic growth in Nigeria?

- ❖ What step should be taken to ensure that economic growth is such that brings about decrease in unemployment and poverty in Nigeria?

Nigeria is a nation that is blessed with multifarious and multitudinous natural resources both human and material. But due to gross mismanagement, access spending adverse policies of various government of Nigeria, these resources have not been optimally utilized; these resources have been adequately channelled to profitable investments to bring about maximum economic benefits. As a result of these Nigeria has been bedevilled with poverty and unemployment. Economic growth which is supposed to be a solution to the problem of unemployment appears not to be so in Nigeria. Nigeria's official statistics shows that economic growth has not always been accompanied by declines in unemployment and poverty. Simbowale (2003) has study empirically evaluates macroeconomics policies vis-à-vis pro-poor economic growth in Nigeria using secondary data covering the period of 1960-2000. The study found among others that growth was actually weakly pro-poor. Also, those that are far below the poverty line have not reallybeen enjoying the benefits of economic growth. In fact, the benefit getting to them has been decreasing or reducing at an increasing rate. And that economic growth in rural area will be slightly more pro-poor than in urban areas. Overall, economic growth in Nigeria is not necessarily always pro-poor. Ajekomobi and Ayanwale (2005) investigate the education student enrolment and linkage with unemployment and economic growth in Nigeria using annual data from (1970-2005)which comes from several issues of central bank of Nigeria annual reports and statement of account federal ministry of education and national university commission (NUC). The result shows that government findings is unstable and unpredictable capital and recurrent findings since 1970are only very small fraction of the nation's budget, total enrolment to a level of unemployment because government could not limit enrolment to a level find made available could adequately later for the proportion of GDP that goes to education still low . Bello (2003) investigates the phenomenon of unemployment in the sub-Saharan Africa with special reference

to the Nigerian experience. Having diagnosed the nature of this episode in this Sub-Saharan region, the study unfolds a number of factors that account for this phenomenon and of course the great threat it poses the economic involved Assessment of past and the present anti unemployment policy measures in Nigeria was made and the result shows that a number of economic factors inhibit their performance.

The specification of a model is based on the available information relevant to the study in question. That is to say, the information of an economic model is dependent on the available information on the study as embedded.

In standard error theory and other major empirical work or else, the model will be non-theoretical.

Koutsoyannis (1977) opined that it always pays to incorporate only what is known from the subject matter into the model building process based on this our model specified as follows:

G.D.P= F(UNEMP, GEHT, GEED, RIR)

Where G.D.P= Gross domestic product

UNEMP =Unemployment

GEHT = Government expenditure on health

GEED = Government expenditure on education

RIR = Real interest rate

Mathematically the model is expressed as:

$$GDP=B_o + B_1 \, UNEMP + B_2 \, GEHT + B_3 \, GEED + B_4 \, RIR + UT$$

Where B_o = the intercept or the constant

B_1-B_4 = the co-efficient of the explanatory variables

U_t = stochastic error term

Gujarati (2003) defines utas a random variables that has well defined probabilistic properties. The stochastic error term represent other determinants of economic growth not explicitly taken into account by the above model.

3.2.1 ECONOMIC THEORITICAL TEST

This criterion is statistically concerned with determining the consistency of our parameter estimate with the signs and magnitude defined by the Okunslaw. As such it is our expectation that the parameter estimate of our study by consistent with this signs and magnitude. Theoretically the relationship between GDPGRT and UNEMP is expected to be negative, while the interpretation is expected to be positive.

The aprior (expected) signs of the variables

VARIABLE EXPECTED SIGN INTERCEPT >0 (POSITIVE)

UNEMP <0 (NEGATIVE

The Statistical Criteria

Statistical tests are done to evaluate the reliability of the estimated parameter in accordance with statistical theory and expectation.

The statistical test carried out includes;

(A) The t-test, this is used to test the significance of the individual parameters of the regression model. The decision to accept null hypothesis is based on the value of the test statistics obtained from the data at hand.

(B) The f-test, this would be carried out to ascertain whether;

i. An individual regression co-efficient is statistically significant

ii. All partial slope co-efficient are zero.

Iii. Two or more co-efficient are statistically equal.

Iv. There is structural stability of the regression model.

v. Co-efficient satisfies some linear restrictions. Co-efficient of determination (R2);

The goodness of fit test is done using the square of the correlation coefficient. It shows or explains the percentage in the total variation of the endogenous variable being explained by the change in the explanatory variables. It measures the extent to which the explanatory variables are responsible for judging the explanatory power of the regression.

(C) The co-efficient of the determination (R2) the goodness of fit test is done using the square of the correlation co-efficient. It shows or explains the percentage in the total variation of the endogenius variable been explained by the change in the explanatory variables. It helps to measure the extent to which the explanatory variables are responsible for judging the explanatory power of the regression.

3.3 ESTIMATION TECHNIQUES.

The estimation procedure here would be that of OLS. The emphasis would be to note whether the variables are well behaved or not. We aim to ascertain their level of statistical significant or otherwise. The result of the model will be evaluated on the basis of these criteria namely;

Econometric apriori expectation, statistical test of significance, Johansen co-integration, Quadratic Hill Climbing Approach and econometric test.

CHAPTER FOUR

Data presentation and Analysis of empirical results and findings

4.0 Introduction:

Here, the researcher analyzed data set in Nigeria from 1970-2013. The results of the analysis were interpreted. Also, some statistical diagnostics were carried out. They include the unit roots test as computed by Augmented Dickey-Fuller (ADF), Serial Correlation test as computed by Durbin-Watson (DW). After the above, the researcher determined both short-run and long-run impact using a least square method. More so, the co-integrated test was carried out using Johansen co-integration test. The error correction mechanism was calculated using the Quadratic Hill Climbing Approach.

4.0.1 Data presentation

4.0.2 Table of Variables

YEAR	DRGDP	RAT UNMt	GOVT EXPT	NAT SAV	NET XPT	INFLATION	OIL REV
1970		4.8	997.20	411.8	46.60	1.75	166.60
1971	21.3	5.3	1,463.60	464.2	117.40	1.65	510.10
1972	5.5	2	1,529.20	566.6	57.20	9.41	764.30
1973	6.4	3.2	2,740.60	721.1	197.50	4.61	1,016.00
1974	11.7	6.2	5,942.60	1,137.1	3,102.20	13.53	3,724.00
1975	-3	4.8	7,856.70	1,815.2	157.50	33.93	4,271.50

Year							
1976	11.1	4.3	8,823.80	2,255.3	-339.00	21.10	5,365.2
1977	8.2	2.1	8,000.00	2,592.8	-527.20	21.48	6,080.6
1978	-7.4	8.2	7,406.70	3,009.7	1,293.60	13.30	4,555.8
1979	2.4	10.4	14,968.50	4,161.8	1,868.90	11.65	8,880.8
1980	5.5	7.8	11,413.70	5,769.9	2,402.20	10.00	12,353.3
1981	26.8	6.5	11,923.20	6,562.6	-3,020.80	21.42	8,564.40
1982	0.3	4.2	9,636.50	7,514.4	-1,398.30	7.16	7,814.90
1983	-5.4	3.4	9,927.60	9,443.9	301.30	23.22	7,253.00
1984	-5.1	7.3	13,041.10	10,988.1	354.90	40.71	8,269.20
1985	9.4	8.2	16,223.70	12,521.8	349.10	4.67	10,923.7
1986	3.1	5.3	22,018.70	13,934.1	-784.30	5.39	8,107.30
1987	0.5	7.1	27,749.50	18,676.3	159.20	10.18	19,027.0
1988	10	5.1	41,028.30	23,249.0	2,294.10	56.04	19,831.7
1989	7.4	4.1	60,268.20	23,801.3	8,727.80	50.47	39,130.5
1990	8.2	6.8	66,584.40	29,651.2	18,498.20	7.50	71,887.1
1991	4.7	4.1	92,797.40	37,738.2	5,959.60	12.70	82,666.4
1992	3	3.2	191,228.90	55,116.8	-65,271.80	44.81	164,078.1
1993	2.7	5.4	160,893.20	85,027.9	13,615.90	57.17	162,102.4
1994	1.3	2.2	248,768.10	108,460.5	-7,194.90	57.03	160,192.4
1995	2.2	1.8	337,217.60	108,490.3	15,325.10	72.81	324,547.6
1996	3.4	3.8	428,215.20	134,503.2	-183,952.60	29.29	408,783.0
1997	3.2	3.6	428,215.20	177,648.7	-251,593.10	10.67	416,811.1

Year							
1998	2.4	3.2	487,113.40	200,065.1	36,961.00	7.86	324,311
1999	2.7	3	947,690.00	277,667.5	152,361.00	6.62	724,422.
2000	6.7	28	701,059.40	385,190.9	453,399.70	6.94	1,591,675
2001	4.2	28	1,018,025.60	488,045.4	-56,552.10	18.87	1,707,562
2002	3.3	0.28	1,018,155.80	592,094.0	329,698.70	12.89	1,230,851.
2003	5.1	28	1,225,965.90	655,739.7	27,503.30	14.03	2,074,280.
2004	6.5	11.8	1,426,200.00	797,517.2	-	15.01	3,354,800.
					1,261,802.90		
2005	4.5	11.9	1,822,100.00	1,316,957.4	-179,361.50	17.85	4,762,400.
2006	6	24	1,938,002.50	1,739,636.9	-248,091.50	8.24	5,287,566.
2007	6.4	5.3	2,450,896.70	2,693,554.3	-721,096.60	15.06	4,462,910.
2008	6	5.8	3,240,820.00	4,118,172.8	-509,103.70	11.60	6,530,630.
2009	7	11.8	3,452,990.80	5,763,511.2	-133,336.86	12.47	3,191,937.9
2010	7.67	19.7	4,194,217.88	5,954,260.5	-78,737.58	11.80	5,396,091.
2011	4.9	23.9	4,726,169.00	16,434,800.6	-70,536,830	10.8	
2012	4.3	23	4,963,970.00	24,189,300.3	102,922,960	12.2	8,879,432.
2013	5.4	29.5	6,141,320.0			8.5	

unemployment rate (LN UNM RAT) and net export (NET XPT) are integrated of order one. Inflation, Logarithm of inflation and oil revenue are integrated of order zero; While government expenditure is integrated of order 2. The Unit Root Test result is significant at 1% level, except for LNNAT SAVT which is at 10% level of significance.

The short-run impact of the explanatory variables on the explained variable is captured in table 4.2

TABLE 4.2: SHORT RUN IMPACT REGRESSION RESULT

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GOVT_EXPT	-0.456655	0.158665	-2.878112	0.0451
INFLATIONT	-1272.751	932.3092	-1.365159	0.2439
NAT_SAVT	-0.115367	0.481609	-0.239546	0.8225
NET_XPTT	-0.303473	0.295338	-1.027546	0.3622
OIL_REV	0.563801	0.238178	2.367147	0.0771
RAT_UNMT	-27274.45	11827.58	-2.306005	0.0824
LNDRGDPT	7685.169	23335.13	0.329339	0.7584
LNGDP_AT_CONSTANT_PRICES	-42177.14	16065.86	-2.625265	0.0585
LNGOVT_EXPT	-24494.88	66060.34	-0.370796	0.7296
LNINFLATIONT	8682.045	21875.85	0.396878	0.7117
LNNAT_SAVT	111421.9	67458.66	1.651706	0.1739
LNNET_XPTT	7382.710	30247.27	0.244079	0.8192
LNOIL_REV	-29722.60	56475.08	-0.526296	0.6265
LNRAT_UNMT	79071.07	61324.94	1.289379	0.2668
C	-355074.4	227583.3	-1.560195	0.1937

R-squared	0.994055	Mean dependent var	205631.0
ADJUSTED R-SQUARED	0.973250	S.D. dependent var	149164.7
S.E. OF REGRESSION	24396.75	Akaike info criterion	23.06309
SUM SQUARED RESID	2.38E+09	Schwarz criterion	23.80870
LOG LIKELIHOOD	-204.0994	Hannan-Quinn criter.	23.18928
F-STATISTIC	47.77749	Durbin-Watson stat	2.174582
PROB (F-STATISTIC)	0.000966		

Source: Author.

It can be seen that unemployment rate has a negative impact on GDP at constant price (Proxy for economic growth). This result supports the apriori expectation. Here, a percentage increase in unemployment rate reduces GDP by 27274.45 Dollars holding other variables constant.

This result is significant at 10% level. The statistic shows that the R^2 – Adjusted is 90%, meaning that only less than 10% of the variation in the dependent variable that is explained by the error term. The model is of good-fit since the prob(F-statistic) (0.0010) is less than 1%, 5% and 10% levels. The second order econometrics problem is taken care; these includes the First order serial correlation; since the Durbin-Watson (DW) is at 2.17.

TABLE 4.3: CAUSALITY TEST RESULT

RAT_UNMT does not Granger Cause GDP_AT_CONSTANT_PRICES	39	2.78671	0.0757
GDP_AT_CONSTANT_PRICES does not Granger Cause RAT_UNMT	1.22089	0.3076	

Source: Author.

Having established an empirical positive impact of unemployment on economic growth using data set between 1970-2013, It is important to verify the direction of Causality. The Pairwise Goanger Causality test shows a uni-directional causality between unemployment and economic growth. The transmission mechanism runs from unemployment to economic growth. This is exhibited in table 4.3.

TABLE 4.4: JOHANSEN COINTEGRATION TEST

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
NONE *	0.910422	235.7519	95.75366	0.0000
AT MOST 1 *	0.785928	144.0716	69.81889	0.0000
AT MOST 2 *	0.612662	85.49682	47.85613	0.0000
AT MOST 3 *	0.498917	49.45548	29.79707	0.0001
AT MOST 4 *	0.375983	23.19809	15.49471	0.0028
AT MOST 5 *	0.129683	5.278113	3.841466	0.0216

Trace test indicates 6 co-integrating eqn(s) at the 0.05 level

Source: Author

Table 4.4

Shows that unemployment and economic growth co-move in the long-run . This can be seen in the trace test and Maximum-eigen value test as generated from the Johansen Co-integration test. This result shows that at least six variables co-integrate in the long-run, the researcher computed the long-run impact and speed of adjustment (Error Correction Mechanism), Using the

"Quadratic Hill Climbing Approach". The result shows that unemployment has a negative impact on economic growth even in the long-run. A percentage increase in unemployment leads economic growth to fall by 1.13%. Notice that the co-efficient of one year lagged residue is negative and significant.

Table 4.5: result of long-run regression analysis

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DNAT_SAVT1	0.038563	0.019826	1.945073	0.0518
DNET_XPTT	-0.033849	0.026850	-1.260685	0.2074
DRAT_UNMT	-1126.470	967.0379	-1.164866	0.2441
DRAT_UNMT1	-1291.586	1147.194	-1.125865	0.2602
LRESID01	-0.173548	0.089909	-1.930254	0.0536
C	15386.47	7480.023	2.057009	0.0397

Source: Author

Mean dependent variable	19764.36	S.D. dependent var		44546.52
SUM SQUARED RESID	6.17E+10	Log likelihood		-468.6419
AKAIKE INFO CRITERION	24.34061	Schwarz criterion		24.59654
HANNAN-QUINN CRITER.	24.43244	Deviance		6.17E+10

DEVIANCE STATISTIC	1.87E+09	Restr. Deviance	7.54E+10
LR STATISTIC	7.337314	Prob(LR statistic)	0.196738
PEARSON SSR	6.17E+10	Pearson statistic	1.87E+09
DISPERSION	1.87E+09		

Source: Author

Shows that it will take approximately 6years for the short-run dis-equilibrium to be cleared.

Findings:

❖ In the short-run, a percentage increase in unemployment rate will reduce GDP at constant price by 27274.45 holding other variables constant.

❖ There is Uni-directional causality between unemployment and economic growth running from unemployment to economic growth.

❖ At least six variables co-move in the long-run.

❖ The long-run impact of unemployment on economic growth is also negative; that a percentage increase in unemployment reduces economic growth by 1.13%.

❖ The speed of adjustment from the short-run disequilibrium to the long-run equilibrium is approximately 6 years.

CHAPTER FIVE

5.1 Summary of the findings

In chapter one researcher affirms unemployment is generally seen as a macro-econmic problem. Referring unemployment to be a situation whereby there insufficient and lack of jobs/works to match up with the increasing population, even those employed have the fear of being unemployed. Unemployment is sabotaging her economy to the extent that even those capable and willing to work are unable to be employed.

This chapter also pinpoint causes of unemployment which are:

- ❖ Poor educational system

- ❖ Choice technology employed

- ❖ Lack of diversification.

It also stated the problem to be despite Nigeria's rich human and natural resources it still has a high rate unemployment.

Having vital objectives of discussing the types of unemployment in Nigeria, and it causes, examining the implication of unemployment on economic growth in Nigeria.

The summary of findings on chapter examined various literature review on this research work, the different meaning and definitions ascribe to unemployment such as Keynesians Economist see unemployment as a situation in which the number of people able and willing to work at

prevailing wage exceeds the number of jobs available. Also is defined as being unemployed, if he/she does not have a job but is available to take a job. Parkin (1998). This chapter looked at conceptual issues like the types of unemployment which are:

- ❖ Seasonal unemployment
- ❖ Structural unemployment
- ❖ Frictional unemployment
- ❖ Transitional unemployment
- ❖ Classical unemployment

Generally this chapter depicts the relationship between unemployment and economic growth and also the theories of unemployment such as

- ❖ Classical theory of unemployment
- ❖ Keynesian theory of unemployment
- ❖ Unemployment in the theory of effective demand
- ❖ Unemployment in the real business cycle theory
- ❖ Efficiency wage theory
- ❖ The search theory
- ❖ The insider-outsider theory.

In this research work the chapter three captures the methodology employing econometric methodology of multiple regression analysis and the use of econometric tools to analyse and present data. Stating the sauce of data collection like the Central Bank of Nigeria (CBN).

Also using model specification such as GDP, government expenditure on health, real interest rate etc. using the estimation technique of OLS.

In chapter four more model specification were employed such as

- ❖ Real gross domestic product (RGDP)
- ❖ Logarithm of real gross domestic product (LRGDP)
- ❖ Logarithm of government expenditure (LGEXPT)
- ❖ Net export (NET XPT)
- ❖ Oil revenue (Oil REV) ETC

Where the researcher analysed data set in Nigeria from 1970-2013. And the results were interpreted using the following:

- ❖ The unit root test
- ❖ Johansen co-integration test
- ❖ Least square method
- ❖ Quadratic Hill Climbing Approach

All these techniques were adopted and tested it all affirmed from the result that unemployment has a negative impact on economic growth in Nigeria both in short-run and long-run.

It also affirms that there is a uni-directional causality between unemployment and economic growth.

And that six variables co-move in the long-run.

Finally that a percentage increase in unemployment reduces economic growth by 1.13%.

5.2 Conclusion

Conclusively, the relationship between unemployment and economic growth has been researched extensively over the years by macro Economists. In this work the researcher re-

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APPENDIX

Null Hypothesis: DRGDPT has a unit root
Exogenous: Constant
Lag Length: 6 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.758599	0.0074
Test critical values:	1% level	-3.639407	
	5% level	-2.951125	
	10% level	-2.614300	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(DRGDPT)
Method: Least Squares
Date: 10/08/13   Time: 12:13
Sample (adjusted): 1978 2011
Included observations: 34 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DRGDPT(-1)	-2.582698	0.687144	-3.758599	0.0009
D(DRGDPT(-1))	1.497242	0.599790	2.496277	0.0192
D(DRGDPT(-2))	1.184995	0.547095	2.165978	0.0397
D(DRGDPT(-3))	0.695400	0.434213	1.601518	0.1213
D(DRGDPT(-4))	0.589495	0.328255	1.795848	0.0842
D(DRGDPT(-5))	0.452638	0.238033	1.901578	0.0684
D(DRGDPT(-6))	0.060184	0.146871	0.409772	0.6853
C	11.53945	3.211786	3.592844	0.0013
R-squared	0.662522	Mean dependent var		-0.015000

Adjusted R-squared	0.571663	S.D. dependent var	7.683831
S.E. of regression	5.028872	Akaike info criterion	6.270593
Sum squared resid	657.5283	Schwarz criterion	6.629736
Log likelihood	-98.60007	Hannan-Quinn criter.	6.393071
F-statistic	7.291738	Durbin-Watson stat	1.382655
Prob(F-statistic)	0.000072		

Null Hypothesis: D(GDP_AT_CONSTANT_PRICES) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.066409	0.0000
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GDP_AT_CONSTANT_PRICES,2)
Method: Least Squares
Date: 10/08/13   Time: 12:18
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP_AT_CONSTANT_PRICES(-1))	-1.155882	0.163574	-7.066409	0.0000
C	22621.23	7745.464	2.920578	0.0059

R-squared	0.574390	Mean dependent var	1437.227
Adjusted R-squared	0.562887	S.D. dependent var	67459.42
S.E. of regression	44600.45	Akaike info criterion	24.29880
Sum squared resid	7.36E+10	Schwarz criterion	24.38411
Log likelihood	-471.8265	Hannan-Quinn criter.	24.32940
F-statistic	49.93414	Durbin-Watson stat	1.994641
Prob(F-statistic)	0.000000		

Null Hypothesis: D(GOVT_EXPT,2) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-8.905753	0.0000
Test critical values:	1% level	-3.615588	
	5% level	-2.941145	
	10% level	-2.609066	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GOVT_EXPT,3)
Method: Least Squares
Date: 10/08/13   Time: 12:20
Sample (adjusted): 1974 2011
Included observations: 38 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GOVT_EXPT(-1),2)	-2.668212	0.299605	-8.905753	0.0000
D(GOVT_EXPT(-1),3)	0.486553	0.166141	2.928554	0.0060
C	28487.66	25106.15	1.134689	0.2642

R-squared	0.900711	Mean dependent var		-16774.62
Adjusted R-squared	0.895037	S.D. dependent var		472298.3
S.E. of regression	153015.2	Akaike info criterion		26.79012
Sum squared resid	8.19E+11	Schwarz criterion		26.91940
Log likelihood	-506.0123	Hannan-Quinn criter.		26.83612
F-statistic	158.7525	Durbin-Watson stat		1.996692
Prob(F-statistic)	0.000000			

Null Hypothesis: INFLATIONT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.447422	0.0148
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INFLATIONT)
Method: Least Squares
Date: 10/08/13   Time: 12:24
Sample (adjusted): 1971 2011
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLATIONT(-1)	-0.457298	0.132649	-3.447422	0.0014
C	9.275198	3.495969	2.653112	0.0115

R-squared	0.233562	Mean dependent var		0.208537
Adjusted R-squared	0.213909	S.D. dependent var		16.63405
S.E. of regression	14.74804	Akaike info criterion		8.267648
Sum squared resid	8482.681	Schwarz criterion		8.351237
Log likelihood	-167.4868	Hannan-Quinn criter.		8.298086
F-statistic	11.88472	Durbin-Watson stat		1.741085
Prob(F-statistic)	0.001371			

Method: Least Squares
Date: 10/08/13   Time: 12:26
Sample (adjusted): 1972 2010
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGDP_AT_CONSTANT_PRICES(-1))	-1.063074	0.164111	-6.477784	0.0000
C	0.139148	0.066172	2.102815	0.0423

R-squared	0.531418	Mean dependent var		-0.000911
Adjusted R-squared	0.518754	S.D. dependent var		0.563000
S.E. of regression	0.390564	Akaike info criterion		1.007469
Sum squared resid	5.643980	Schwarz criterion		1.092780
Log likelihood	-17.64565	Hannan-Quinn criter.		1.038078
F-statistic	41.96168	Durbin-Watson stat		2.010652
Prob(F-statistic)	0.000000			

Null Hypothesis: D(LNGOVT_EXPT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.378006	0.0000
Test critical values:	1% level	-3.605593	
	5% level	-2.936942	
	10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNGOVT_EXPT,2)
Method: Least Squares
Date: 10/08/13   Time: 12:27
Sample (adjusted): 1972 2011
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGOVT_EXPT(-1))	-1.177788	0.159635	-7.378006	0.0000
C	0.236720	0.052824	4.481284	0.0001

R-squared	0.588900	Mean dependent var		-0.008975
Adjusted R-squared	0.578082	S.D. dependent var		0.399260
S.E. of regression	0.259340	Akaike info criterion		0.187353
Sum squared resid	2.555775	Schwarz criterion		0.271797
Log likelihood	-1.747063	Hannan-Quinn criter.		0.217885
F-statistic	54.43498	Durbin-Watson stat		1.946804
Prob(F-statistic)	0.000000			

Null Hypothesis: LNINFLATIONT has a unit root

Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.104179	0.0026
Test critical values:	1% level	-3.600987	
	5% level	-2.935001	
	10% level	-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNINFLATIONT)
Method: Least Squares
Date: 10/08/13   Time: 12:30
Sample (adjusted): 1971 2011
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNINFLATIONT(-1)	-0.521177	0.126987	-4.104179	0.0002
C	1.418112	0.352355	4.024666	0.0003
R-squared	0.301630	Mean dependent var		0.043232
Adjusted R-squared	0.283723	S.D. dependent var		0.826450
S.E. of regression	0.699451	Akaike info criterion		2.170509
Sum squared resid	19.08004	Schwarz criterion		2.254097
Log likelihood	-42.49543	Hannan-Quinn criter.		2.200947
F-statistic	16.84428	Durbin-Watson stat		1.940807
Prob(F-statistic)	0.000200			

Null Hypothesis: D(LNNAT_SAVT) has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.879574	0.0569
Test critical values:	1% level	-3.610453	
	5% level	-2.938987	
	10% level	-2.607932	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNNAT_SAVT,2)
Method: Least Squares
Date: 10/08/13   Time: 12:31
Sample (adjusted): 1973 2011
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.

D(LNNAT_SAVT(-1))	-0.825135	0.286548	-2.879574	0.0067
D(LNNAT_SAVT(-1),2)	0.578520	0.241468	2.395846	0.0219
C	0.177769	0.075343	2.359452	0.0238

R-squared	0.198692	Mean dependent var	-0.023659
Adjusted R-squared	0.154175	S.D. dependent var	0.192040
S.E. of regression	0.176617	Akaike info criterion	-0.555867
Sum squared resid	1.122964	Schwarz criterion	-0.427901
Log likelihood	13.83940	Hannan-Quinn criter.	-0.509954
F-statistic	4.463270	Durbin-Watson stat	1.612713
Prob(F-statistic)	0.018552		

Null Hypothesis: D(LNOIL_REV) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.131893	0.0000
Test critical values:	1% level	-3.605593	
	5% level	-2.936942	
	10% level	-2.606857	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNOIL_REV,2)
Method: Least Squares
Date: 10/08/13   Time: 12:32
Sample (adjusted): 1972 2011
Included observations: 40 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNOIL_REV(-1))	-1.094315	0.153440	-7.131893	0.0000
C	0.268517	0.076269	3.520669	0.0011

R-squared	0.572380	Mean dependent var	-0.015611
Adjusted R-squared	0.561127	S.D. dependent var	0.620896
S.E. of regression	0.411328	Akaike info criterion	1.109857
Sum squared resid	6.429259	Schwarz criterion	1.194301
Log likelihood	-20.19714	Hannan-Quinn criter.	1.140389
F-statistic	50.86389	Durbin-Watson stat	2.064818
Prob(F-statistic)	0.000000		

Null Hypothesis: LNRAT_UNMT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic			-6.055023	0.0000
Test critical values:	1% level		-3.600987	
	5% level		-2.935001	
	10% level		-2.605836	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNRAT_UNMT)
Method: Least Squares
Date: 10/08/13   Time: 12:33
Sample (adjusted): 1971 2011
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRAT_UNMT(-1)	-1.006667	0.166253	-6.055023	0.0000
C	1.734785	0.311343	5.571949	0.0000

R-squared	0.484559	Mean dependent var		0.039153
Adjusted R-squared	0.471342	S.D. dependent var		1.198248
S.E. of regression	0.871232	Akaike info criterion		2.609735
Sum squared resid	29.60279	Schwarz criterion		2.693323
Log likelihood	-51.49956	Hannan-Quinn criter.		2.640173
F-statistic	36.66330	Durbin-Watson stat		1.929900
Prob(F-statistic)	0.000000			

Null Hypothesis: D(NAT_SAVT,2) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 9 (Automatic - based on SIC, maxlag=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.422819	0.0672
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(NAT_SAVT,3)
Method: Least Squares
Date: 10/08/13   Time: 12:35
Sample (adjusted): 1982 2011
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NAT_SAVT(-1),2)	-44.03833	12.86610	-3.422819	0.0030
D(NAT_SAVT(-1),3)	45.13550	13.08166	3.450288	0.0029
D(NAT_SAVT(-2),3)	46.93873	13.67469	3.432527	0.0030
D(NAT_SAVT(-3),3)	45.77731	13.74754	3.329855	0.0037

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.907788	0.0015
Test critical values:	1% level	-4.198503	
	5% level	-3.523623	
	10% level	-3.192902	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RAT_UNMT)
Method: Least Squares
Date: 10/08/13   Time: 12:38
Sample (adjusted): 1971 2013
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RAT_UNMT(-1)	-0.813072	0.165670	-4.907788	0.0000
C	1.768378	2.157346	0.819701	0.4175
@TREND(1970)	0.224089	0.094421	2.373302	0.0228

R-squared	0.390919	Mean dependent var	0.465854
Adjusted R-squared	0.358862	S.D. dependent var	8.264304
S.E. of regression	6.617319	Akaike info criterion	6.687613
Sum squared resid	1663.979	Schwarz criterion	6.812997
Log likelihood	-134.0961	Hannan-Quinn criter.	6.733271
F-statistic	12.19453	Durbin-Watson stat	1.964111
Prob(F-statistic)	0.000081		

TABLE 4.2: SHORT RUN IMPACT REGRESSION RESULT
Dependent Variable: GDP_AT_CONSTANT_PRICES
Method: Least Squares
Date: 10/08/13   Time: 13:31
Sample (adjusted): 1971 2013
Included observations: 19 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GOVT_EXPT	-0.456655	0.158665	-2.878112	0.0451
INFLATIONT	-1272.751	932.3092	-1.365159	0.2439
NAT_SAVT	-0.115367	0.481609	-0.239546	0.8225
NET_XPTT	-0.303473	0.295338	-1.027546	0.3622
OIL_REV	0.563801	0.238178	2.367147	0.0771
RAT_UNMT	-27274.45	11827.58	-2.306005	0.0824
LNDRGDPT	7685.169	23335.13	0.329339	0.7584
LNGDP_AT_CONSTANT_PRICES	-42177.14	16065.86	-2.625265	0.0585
LNGOVT_EXPT	-24494.88	66060.34	-0.370796	0.7296
LNINFLATIONT	8682.045	21875.85	0.396878	0.7117
LNNAT_SAVT	111421.9	67458.66	1.651706	0.1739
LNNET_XPTT	7382.710	30247.27	0.244079	0.8192
LNOIL_REV	-29722.60	56475.08	-0.526296	0.6265
LNRAT_UNMT	79071.07	61324.94	1.289379	0.2668
C	-355074.4	227583.3	-1.560195	0.1937

R-squared	0.994055	Mean dependent var	205631.0
Adjusted R-squared	0.973250	S.D. dependent var	149164.7
S.E. of regression	24396.75	Akaike info criterion	23.06309
Sum squared resid	2.38E+09	Schwarz criterion	23.80870
Log likelihood	-204.0994	Hannan-Quinn criter.	23.18928
F-statistic	47.77749	Durbin-Watson stat	2.174582
Prob(F-statistic)	0.000966		

TABLE 4.3: CAUSALITY TEST RESULT
Pairwise Granger Causality Tests
Date: 10/08/13   Time: 14:17
Sample: 1970 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
GOVT_EXPT does not Granger Cause GDP_AT_CONSTANT_PRICES	39	1.68770	0.2001
GDP_AT_CONSTANT_PRICES does not Granger Cause GOVT_EXPT		1.25057	0.2992
NET_XPTT does not Granger Cause GDP_AT_CONSTANT_PRICES	39	0.12785	0.8804
GDP_AT_CONSTANT_PRICES does not Granger Cause NET_XPTT		2.72895	0.0796
NAT_SAVT does not Granger Cause GDP_AT_CONSTANT_PRICES	39	0.79650	0.4591
GDP_AT_CONSTANT_PRICES does not Granger Cause NAT_SAVT		5.76314	0.0070
RAT_UNMT does not Granger Cause GDP_AT_CONSTANT_PRICES	39	2.78671	0.0757
GDP_AT_CONSTANT_PRICES does not Granger Cause RAT_UNMT		1.22089	0.3076
INFLATIONT does not Granger Cause GDP_AT_CONSTANT_PRICES	39	0.08896	0.9151
GDP_AT_CONSTANT_PRICES does not Granger Cause INFLATIONT		1.32806	0.2784
OIL_REV does not Granger Cause GDP_AT_CONSTANT_PRICES	39	1.34582	0.2738
GDP_AT_CONSTANT_PRICES does not Granger Cause OIL_REV		1.49563	0.2385
NET_XPTT does not Granger Cause GOVT_EXPT	39	4.14998	0.0244
GOVT_EXPT does not Granger Cause NET_XPTT		2.91426	0.0679
NAT_SAVT does not Granger Cause GOVT_EXPT	40	8.41778	0.0010
GOVT_EXPT does not Granger Cause NAT_SAVT		15.2749	2.E-05
RAT_UNMT does not Granger Cause GOVT_EXPT	40	0.81090	0.4526
GOVT_EXPT does not Granger Cause RAT_UNMT		4.84227	0.0139
INFLATIONT does not Granger Cause GOVT_EXPT	40	0.10899	0.8970
GOVT_EXPT does not Granger Cause INFLATIONT		0.78205	0.4653

Null Hypothesis:	Obs	F-Statistic	Prob.
OIL_REV does not Granger Cause GOVT_EXPT	40	13.1060	6.E-05
GOVT_EXPT does not Granger Cause OIL_REV		9.08706	0.0007
NAT_SAVT does not Granger Cause NET_XPTT	39	2.09460	0.1387
NET_XPTT does not Granger Cause NAT_SAVT		8.59889	0.0010
RAT_UNMT does not Granger Cause NET_XPTT	39	4.79046	0.0147
NET_XPTT does not Granger Cause RAT_UNMT		1.68199	0.2011
INFLATIONT does not Granger Cause NET_XPTT	39	0.07836	0.9248
NET_XPTT does not Granger Cause INFLATIONT		0.35730	0.7022
OIL_REV does not Granger Cause NET_XPTT	39	5.17853	0.0109
NET_XPTT does not Granger Cause OIL_REV		1.31383	0.2821
RAT_UNMT does not Granger Cause NAT_SAVT	40	1.67466	0.2020
NAT_SAVT does not Granger Cause RAT_UNMT		3.48646	0.0416
INFLATIONT does not Granger Cause NAT_SAVT	40	0.19343	0.8250
NAT_SAVT does not Granger Cause INFLATIONT		0.45785	0.6364
OIL_REV does not Granger Cause NAT_SAVT	40	31.2735	2.E-08
NAT_SAVT does not Granger Cause OIL_REV		25.0184	2.E-07
INFLATIONT does not Granger Cause RAT_UNMT	40	0.86451	0.4301
RAT_UNMT does not Granger Cause INFLATIONT		0.33320	0.7189
OIL_REV does not Granger Cause RAT_UNMT	40	1.21070	0.3102
RAT_UNMT does not Granger Cause OIL_REV		1.73153	0.1918
OIL_REV does not Granger Cause INFLATIONT	40	0.63954	0.5336
INFLATIONT does not Granger Cause OIL_REV		0.09580	0.9089

TABLE 4.4: JOHANSEN COINTEGRATION TEST
Date: 10/09/13   Time: 06:02
Sample (adjusted): 1973 2013
Included observations: 38 after adjustments
Trend assumption: Linear deterministic trend
Series: DGDP_AT_CONSTANT_PRICES DGOVT_EXPT DINFLATIONT DNAT_SAVT DNET_XPTT DRAT_UNMT
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.910422	235.7519	95.75366	0.0000
At most 1 *	0.785928	144.0716	69.81889	0.0000
At most 2 *	0.612662	85.49682	47.85613	0.0000
At most 3 *	0.498917	49.45548	29.79707	0.0001
At most 4 *	0.375983	23.19809	15.49471	0.0028
At most 5 *	0.129683	5.278113	3.841466	0.0216

Trace test indicates 6 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.910422	91.68035	40.07757	0.0000
At most 1 *	0.785928	58.57476	33.87687	0.0000
At most 2 *	0.612662	36.04134	27.58434	0.0032
At most 3 *	0.498917	26.25739	21.13162	0.0087
At most 4 *	0.375983	17.91998	14.26460	0.0126
At most 5 *	0.129683	5.278113	3.841466	0.0216

Max-eigenvalue test indicates 6 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT
-4.44E-06	5.85E-06	-0.004956	-3.89E-06	3.09E-06	-0.209585
-1.38E-05	4.27E-06	-0.004184	-4.29E-06	-3.57E-06	-0.009331
1.67E-05	-5.31E-06	-0.065595	1.75E-07	5.27E-07	-0.025687
-3.31E-05	-2.61E-06	-0.048799	4.31E-06	-2.53E-06	-0.051605
-5.60E-06	-1.29E-05	0.024047	6.06E-06	-4.23E-06	-0.169468
3.57E-06	8.22E-06	-0.007362	2.01E-06	-6.48E-06	-0.057370

Unrestricted Adjustment Coefficients (alpha):

D(DGDP_AT_CONSTANT_PRICES)					
983.4192	7503.901	-23972.44	25514.15	-3890.947	-9496.615
-470.1798	6730.071	45247.09	-15526.10	54242.66	-29753.41
1.377713	1.050114	12.93850	8.065680	-5.739700	0.081741
104921.3	122738.8	25508.53	-77678.17	-47726.92	-26392.40
-138888.4	156316.6	19139.04	5147.678	30192.24	37723.26
8.240330	0.173806	-0.692114	1.286845	1.155970	1.410525

Row labels (left column, top to bottom): D(DGDP_AT_CONSTANT_PRICES), D(DGOVT_EXPT), D(DINFLATIONT), D(DNAT_SAVT), D(DNET_XPTT), D(DRAT_UNMT)

1 Cointegrating Equation(s):   Log likelihood   -2285.751

Normalized cointegrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT
1.000000	-1.317642	1116.561	0.876050	-0.697138	47214.89
	(0.23090)	(1097.59)	(0.12100)	(0.11441)	(3497.84)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)   -0.004365
                             (0.04476)
D(DGOVT_EXP   0.002087

	T)				
	(0.11033)				
D(DINFLATIONT)	-6.12E-06				
	(1.8E-05)				
D(DNAT_SAVT)	-0.465742				
	(0.17161)				
D(DNET_XPTT)	0.616521				
	(0.17577)				
D(DRAT_UNMT)	-3.66E-05				
	(4.4E-06)				

2 Cointegrating Equation(s):		Log likelihood	-2256.463		

Normalized cointegrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT
1.000000	0.000000	53.01322	0.136458	0.549941	-13561.07
		(834.250)	(0.06755)	(0.08694)	(2633.61)
0.000000	1.000000	-807.1603	-0.561300	0.946448	-46124.80
		(1231.96)	(0.09976)	(0.12839)	(3889.13)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-0.108294	0.037826
	(0.14529)	(0.07237)
D(DGOVT_EXPT)	-0.091124	0.026016
	(0.36106)	(0.17984)
D(DINFLATIONT)	-2.07E-05	1.25E-05
	(5.9E-05)	(2.9E-05)
D(DNAT_SAVT)	-2.165663	1.138302
	(0.45817)	(0.22821)
D(DNET_XPTT)	-1.548449	-0.144212
	(0.39921)	(0.19884)
D(DRAT_UNMT)	-3.90E-05	4.89E-05
	(1.4E-05)	(7.2E-06)

3 Cointegrating Equation(s):		Log likelihood	-2238.442		

Normalized cointegrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT
1.000000	0.000000	0.000000	0.132654	0.547240	-13594.59
			(0.06702)	(0.08626)	(2611.96)
0.000000	1.000000	0.000000	-0.503382	0.987581	-45614.33
			(0.10471)	(0.13478)	(4080.96)
0.000000	0.000000	1.000000	7.18E-05	5.10E-05	0.632427
			(1.8E-05)	(2.3E-05)	(0.69846)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-0.507534	0.165115	1536.210

	(0.19855)	(0.08066)	(591.921)
D(DGOVT_EXPT)	0.662427	-0.214237	-2993.832
	(0.51763)	(0.21027)	(1543.12)
D(DINFLATIONT)	0.000195	-5.62E-05	-0.859929
	(7.3E-05)	(3.0E-05)	(0.21675)
D(DNAT_SAVT)	-1.740841	1.002857	-2706.844
	(0.68889)	(0.27984)	(2053.68)
D(DNET_XPTT)	-1.229705	-0.245836	-1221.120
	(0.60197)	(0.24453)	(1794.55)
D(DRAT_UNMT)	-5.05E-05	5.26E-05	0.003830
	(2.2E-05)	(8.9E-06)	(0.06504)

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4 Cointegrating Equation(s):   Log likelihood   -2225.314

Normalized cointegrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT
1.000000	0.000000	0.000000	0.000000	0.295548	-6406.339
				(0.03707)	(1402.61)
0.000000	1.000000	0.000000	0.000000	1.942673	-72891.56
				(0.24687)	(9340.40)
0.000000	0.000000	1.000000	0.000000	-8.52E-05	4.520641
				(1.7E-05)	(0.63276)
0.000000	0.000000	0.000000	1.000000	1.897348	-54187.89
				(0.30863)	(11677.4)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-1.353263	0.098466	291.1488	0.069855
	(0.30591)	(0.07181)	(629.644)	(0.05545)
D(DGOVT_EXPT)	1.177078	-0.173679	-2236.176	-0.086083
	(0.92594)	(0.21737)	(1905.86)	(0.16783)
D(DINFLATIONT)	-7.25E-05	-7.72E-05	-1.253525	2.72E-05
	(0.00012)	(2.8E-05)	(0.24113)	(2.1E-05)
D(DNAT_SAVT)	0.833994	1.205770	1083.762	-1.265082
	(1.10536)	(0.25949)	(2275.16)	(0.20035)
D(DNET_XPTT)	-1.400338	-0.259283	-1472.320	-0.104790
	(1.08414)	(0.25451)	(2231.48)	(0.19651)
D(DRAT_UNMT)	-9.32E-05	4.93E-05	-0.058966	-2.74E-05
	(3.8E-05)	(9.0E-06)	(0.07859)	(6.9E-06)

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5 Cointegrating Equation(s):   Log likelihood   -2216.354

Normalized cointegrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT
1.000000	0.000000	0.000000	0.000000	0.000000	14646.40
					(1783.51)
0.000000	1.000000	0.000000	0.000000	0.000000	65490.44
					(10155.8)
0.000000	0.000000	1.000000	0.000000	0.000000	-1.547124

0.000000	0.000000	0.000000	1.000000	0.000000	(0.60670)
0.000000	0.000000	0.000000	0.000000	1.000000	80965.46 (11508.8) -71232.79 (7297.09)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-1.331469 (0.30759)	0.148509 (0.12157)	197.5815 (653.338)	0.046262 (0.07209)	-0.084480 (0.05234)
D(DGOVT_EXPT)	0.873257 (0.84588)	-0.871316 (0.33433)	-931.7777 (1796.72)	0.242822 (0.19825)	-0.191672 (0.14393)
D(DINFLATIONT)	-4.04E-05 (0.00011)	-3.40E-06 (4.4E-05)	-1.391550 (0.23478)	-7.60E-06 (2.6E-05)	1.12E-05 (1.9E-05)
D(DNAT_SAVT)	1.101319 (1.05974)	1.819605 (0.41885)	-63.94916 (2250.95)	-1.554478 (0.24836)	0.298046 (0.18032)
D(DNET_XPTT)	-1.569449 (1.07210)	-0.647597 (0.42374)	-746.2739 (2277.20)	0.078284 (0.25126)	-1.118612 (0.18243)
D(DRAT_UNMT)	-9.96E-05 (3.8E-05)	3.44E-05 (1.5E-05)	-0.031168 (0.07989)	-2.04E-05 (8.8E-06)	1.64E-05 (6.4E-06)

Date: 10/09/13   Time: 06:15
Sample (adjusted): 1973 2013
Included observations: 38 after adjustments
Trend assumption: Linear deterministic trend
Series: DGDP_AT_CONSTANT_PRICES DGOVT_EXPT DINFLATIONT DNAT_SAVT DNET_XPTT DRAT_UNMT DOIL_REV
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.971983	398.6810	125.6154	0.0000
At most 1 *	0.949786	262.8327	95.75366	0.0000
At most 2 *	0.849968	149.1574	69.81889	0.0000
At most 3 *	0.595829	77.07491	47.85613	0.0000
At most 4 *	0.566331	42.65005	29.79707	0.0010
At most 5	0.244819	10.90207	15.49471	0.2176
At most 6	0.006081	0.231769	3.841466	0.6302

Trace test indicates 5 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.971983	135.8483	46.23142	0.0000
At most 1 *	0.949786	113.6754	40.07757	0.0000

At most 2 *	0.849968	72.08245	33.87687	0.0000
At most 3 *	0.595829	34.42486	27.58434	0.0057
At most 4 *	0.566331	31.74797	21.13162	0.0011
At most 5	0.244819	10.67030	14.26460	0.1715
At most 6	0.006081	0.231769	3.841466	0.6302

Max-eigenvalue test indicates 5 co-integrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integrating Coefficients (normalized by b'*S11*b=I):

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
4.04E-06	-3.73E-06	0.007311	1.49E-06	-4.15E-06	0.184787	3.71E-07
-2.39E-09	-7.07E-06	-0.001690	8.24E-06	4.22E-07	0.062574	3.87E-08
-1.41E-06	1.40E-05	0.016867	-3.03E-06	-4.49E-06	0.031567	3.87E-08
-2.65E-05	1.39E-06	0.051523	-2.06E-09	-3.69E-07	-0.001844	9.21E-07
3.11E-05	4.25E-06	0.064000	-3.16E-06	2.70E-06	0.053218	-4.02E-07
-8.38E-06	-1.97E-05	0.015854	9.40E-06	-3.81E-06	-0.210544	1.21E-06
-4.39E-06	5.29E-06	-0.008806	1.75E-06	-5.69E-06	-0.104084	2.02E-06

Unrestricted Adjustment Coefficients (alpha):

D(DGDP_AT_CONSTANT_PRICES)	-2491.616	2920.022	1343.800	31087.45	-20431.63	-4288.442	-18
D(DGOVT_EXPT)	16460.26	-48588.21	-31722.09	-24715.95	688.7874	45392.66	-42
D(DINFLATIONT)	-1.910919	0.297755	-4.016482	-10.39679	-11.43796	-3.595171	-0.
D(DNAT_SAVT)	-57724.24	-97396.49	-88682.05	-1221.881	11226.60	22843.74	-14
D(DNET_XPTT)	178632.6	-62898.06	70481.14	-4414.325	-53176.62	19602.46	91
D(DRAT_UNMT)	-8.028060	-2.571034	4.321806	-0.155261	-0.345379	0.007625	0.
D(DOIL_REV)	50895.65	-465612.4	408272.5	-105358.1	-26857.29	27142.97	-11

1 Co-integrating Equation(s):   Log likelihood   -2777.735

Normalized co-integrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
1.000000	-0.921592	1808.349	0.367879	-1.027532	45705.16	0.091655
	(0.20226)	(664.472)	(0.09972)	(0.07013)	(2273.50)	(0.03108)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-0.010074
	(0.04136)
D(DGOVT_EXPT)	0.066549
	(0.09524)
D(DINFLATIONT)	-7.73E-06
	(1.7E-05)
D(DNAT_SAVT)	-0.233380
	(0.11142)

D(DNET_XPTT)	0.722215					
	(0.13282)					
D(DRAT_UNMT)	-3.25E-05					
	(4.3E-06)					
D(DOIL_REV)	0.205772					
	(0.51362)					

2 Co-integrating Equation(s):	Log likelihood	-2720.897

Normalized co-integrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
1.000000	0.000000	2028.023	-0.705598	-1.082220	37536.02	0.086578
		(814.356)	(0.06818)	(0.08605)	(2622.05)	(0.03228)
0.000000	1.000000	238.3637	-1.164807	-0.059341	-8864.157	-0.005508
		(513.384)	(0.04298)	(0.05425)	(1652.99)	(0.02035)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-0.010081	-0.011359
	(0.04131)	(0.08164)
D(DGOVT_EXPT)	0.066665	0.282154
	(0.08797)	(0.17388)
D(DINFLATIONT)	-7.73E-06	5.02E-06
	(1.7E-05)	(3.3E-05)
D(DNAT_SAVT)	-0.233147	0.903607
	(0.08407)	(0.16616)
D(DNET_XPTT)	0.722365	-0.220942
	(0.12414)	(0.24536)
D(DRAT_UNMT)	-3.25E-05	4.81E-05
	(3.9E-06)	(7.6E-06)
D(DOIL_REV)	0.206885	3.101918
	(0.37630)	(0.74378)

3 Co-integrating Equation(s):	Log likelihood	-2684.856

Normalized co-integrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
1.000000	0.000000	0.000000	-2.230213	-0.440816	11674.78	0.465182
			(0.13541)	(0.17093)	(5206.14)	(0.06412)
0.000000	1.000000	0.000000	-1.344003	0.016047	-11903.76	0.038991
			(0.05158)	(0.06511)	(1983.21)	(0.02442)
0.000000	0.000000	1.000000	0.000752	-0.000316	12.75195	-0.000187
			(4.8E-05)	(6.0E-05)	(1.83847)	(2.3E-05)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-0.011977	0.007498	-0.485294
	(0.04374)	(0.16493)	(188.548)
D(DGOVT_EXPT)	0.111440	-0.162993	-332.6044

	(0.08970)	(0.33826)	(386.694)
D(DINFLATIONT)	-2.06E-06	-5.13E-05	-0.082220
	(1.7E-05)	(6.5E-05)	(0.07444)
D(DNAT_SAVT)	-0.107974	-0.340842	-1753.246
	(0.05436)	(0.20500)	(234.356)
D(DNET_XPTT)	0.622882	0.768099	2601.117
	(0.11894)	(0.44853)	(512.758)
D(DRAT_UNMT)	-3.86E-05	0.000109	0.018546
	(2.2E-06)	(8.4E-06)	(0.00956)
D(DOIL_REV)	-0.369384	8.831085	8045.305
	(0.23121)	(0.87189)	(996.746)

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4 Co-integrating Equation(s):	Log likelihood	-2667.643

Normalized co-integrating coefficients (standard error in parentheses)

DGDP_AT_CON STANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
1.000000	0.000000	0.000000	0.000000	-0.538519	19397.63	-0.064896
				(0.03973)	(1426.67)	(0.01759)
0.000000	1.000000	0.000000	0.000000	-0.042833	-7249.703	-0.280452
				(0.05163)	(1853.78)	(0.02286)
0.000000	0.000000	1.000000	0.000000	-0.000283	10.14868	-8.00E-06
				(1.7E-05)	(0.62537)	(7.7E-06)
0.000000	0.000000	0.000000	1.000000	-0.043809	3462.831	-0.237680
				(0.06585)	(2364.56)	(0.02916)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-0.836811	0.050616	1601.229	0.016205
	(0.22644)	(0.13656)	(461.126)	(0.07500)
D(DGOVT_EXPT)	0.767221	-0.197273	-1606.040	-0.279465
	(0.54928)	(0.33125)	(1118.56)	(0.18193)
D(DINFLATIONT)	0.000274	-6.58E-05	-0.617892	1.18E-05
	(9.5E-05)	(5.7E-05)	(0.19374)	(3.2E-05)
D(DNAT_SAVT)	-0.075554	-0.342537	-1816.200	-0.619144
	(0.34113)	(0.20572)	(694.673)	(0.11298)
D(DNET_XPTT)	0.740006	0.761976	2373.678	-0.466026
	(0.74616)	(0.44998)	(1519.49)	(0.24713)
D(DRAT_UNMT)	-3.44E-05	0.000109	0.010547	-4.62E-05
	(1.4E-05)	(8.4E-06)	(0.02830)	(4.6E-06)
D(DOIL_REV)	2.426046	8.684956	2616.958	-4.996730
	(1.35248)	(0.81563)	(2754.18)	(0.44795)

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5 Co-integrating Equation(s):	Log likelihood	-2651.770

Normalized co-integrating coefficients (standard error in parentheses)

DGDP_AT_CON STANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
1.000000	0.000000	0.000000	0.000000	0.000000	2829.702	-0.028134
					(1037.19)	(0.01286)
0.000000	1.000000	0.000000	0.000000	0.000000	-8567.483	-0.277528
					(1828.26)	(0.02267)

0.000000	0.000000	1.000000	0.000000	0.000000	1.431634	1.13E-05
					(0.52377)	(6.5E-06)
0.000000	0.000000	0.000000	1.000000	0.000000	2115.014	-0.234690
					(2343.85)	(0.02906)
0.000000	0.000000	0.000000	0.000000	1.000000	-30765.71	0.068265
					(2142.67)	(0.02656)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-1.471227	-0.036249	293.6039	0.080761	-0.061155
	(0.30894)	(0.12605)	(633.500)	(0.07106)	(0.05047)
D(DGOVT_EXPT)	0.788608	-0.194345	-1561.958	-0.281641	0.064441
	(0.83929)	(0.34245)	(1721.03)	(0.19304)	(0.13712)
D(DINFLATIONT)	-8.14E-05	-0.000114	-1.349922	4.79E-05	-9.92E-07
	(0.00012)	(4.7E-05)	(0.23848)	(2.7E-05)	(1.9E-05)
D(DNAT_SAVT)	0.273040	-0.294807	-1097.698	-0.654615	0.627426
	(0.51417)	(0.20979)	(1054.34)	(0.11826)	(0.08400)
D(DNET_XPTT)	-0.911166	0.535896	-1029.625	-0.298010	-1.227022
	(1.06559)	(0.43479)	(2185.07)	(0.24509)	(0.17409)
D(DRAT_UNMT)	-4.52E-05	0.000107	-0.011557	-4.51E-05	1.20E-05
	(2.1E-05)	(8.6E-06)	(0.04321)	(4.8E-06)	(3.4E-06)
D(DOIL_REV)	1.592108	8.570772	898.0917	-4.911872	-2.273650
	(2.05641)	(0.83907)	(4216.84)	(0.47299)	(0.33597)

6 Co-integrating Equation(s):   Log likelihood   -2646.434

Normalized co-integrating coefficients (standard error in parentheses)

DGDP_AT_CONSTANT_PRICES	DGOVT_EXPT	DINFLATIONT	DNAT_SAVT	DNET_XPTT	DRAT_UNMT	DOIL_REV
1.000000	0.000000	0.000000	0.000000	0.000000	0.000000	-0.040242
						(0.01511)
0.000000	1.000000	0.000000	0.000000	0.000000	0.000000	-0.240869
						(0.02556)
0.000000	0.000000	1.000000	0.000000	0.000000	0.000000	5.21E-06
						(6.7E-06)
0.000000	0.000000	0.000000	1.000000	0.000000	0.000000	-0.243740
						(0.02943)
0.000000	0.000000	0.000000	0.000000	1.000000	0.000000	0.199907
						(0.07187)
0.000000	0.000000	0.000000	0.000000	0.000000	1.000000	4.28E-06
						(2.2E-06)

Adjustment coefficients (standard error in parentheses)

D(DGDP_AT_CONSTANT_PRICES)	-1.435270	0.048119	225.6143	0.040455	-0.044820	-477.0445
	(0.31354)	(0.19331)	(641.008)	(0.09968)	(0.05771)	(2196.56)
D(DGOVT_EXPT)	0.408006	-1.087373	-842.2956	0.144987	-0.108458	-10474.99
	(0.78035)	(0.48113)	(1595.37)	(0.24808)	(0.14364)	(5466.90)
D(DINFLATIONT)	-5.12E-05	-4.37E-05	-1.406921	1.42E-05	1.27E-05	-0.293858
	(0.00012)	(7.1E-05)	(0.23583)	(3.7E-05)	(2.1E-05)	(0.80812)
D(DNAT_SAVT)	0.081503	-0.744221	-735.5292	-0.439915	0.540415	-23770.47

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Variable						
D(DNET_XPTT)	(0.49374) -1.075526	(0.30441) 0.150249	(1009.41) -718.8449	(0.15696) -0.113773	(0.09088) -1.301687	(3458.97) 24349.07
D(DRAT_UNMT)	(1.07681) -4.52E-05	(0.66391) 0.000107	(2201.47) -0.011436	(0.34233) -4.51E-05	(0.19821) 1.20E-05	(7543.85) -1.527630
D(DOIL_REV)	(2.2E-05) 1.364524 (2.08818)	(1.3E-05) 8.036778 (1.28747)	(0.04397) 1328.421 (4269.13)	(6.8E-06) -4.656765 (0.66386)	(4.0E-06) -2.377037 (0.38437)	(0.15067) -13792.02 (14629.2)

Dependent Variable: GDP_AT_CONSTANT_PRICES
Method: Least Squares
Date: 10/10/13   Time: 13:37
Sample (adjusted): 1970 2013
Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GOVT_EXPT	0.374531	0.086904	4.309705	0.0001
INFLATIONT	1736.329	806.0780	2.154046	0.0384
NAT_SAVT	-0.124346	0.041714	-2.980905	0.0053
NET_XPTT	-0.025114	0.064959	-0.386623	0.7014
OIL_REV	-0.017599	0.026151	-0.672990	0.5055
RAT_UNMT	-64.29176	2332.355	-0.027565	0.9782
C	93291.65	28417.26	3.282922	0.0024

R-squared	0.860968	Mean dependent var	271077.2
Adjusted R-squared	0.836433	S.D. dependent var	213965.5
S.E. of regression	86534.97	Akaike info criterion	25.72874
Sum squared resid	2.55E+11	Schwarz criterion	26.02130
Log likelihood	-520.4391	Hannan-Quinn criter.	25.83527
F-statistic	35.09135	Durbin-Watson stat	0.860015
Prob(F-statistic)	0.000000		

TABLE 4.5: LONG RUN IMPACT REGRESSION RESULT
Dependent Variable: DGDP_AT_CONSTANT_PRICES
Method: Generalized Linear Model (Quadratic Hill Climbing)
Date: 10/14/13   Time: 10:18
Sample (adjusted): 1972 2013
Included observations: 39 after adjustments
Family: Normal
Link: Identity
Dispersion computed using Pearson Chi-Square
Coefficient covariance computed using observed Hessian
Convergence achieved after 1 iteration

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DNAT_SAVT1	0.038563	0.019826	1.945073	0.0518
DNET_XPTT	-0.033849	0.026850	-1.260685	0.2074
DRAT_UNMT	-1126.470	967.0379	-1.164866	0.2441
DRAT_UNMT1	-1291.586	1147.194	-1.125865	0.2602
LRESID01	-0.173548	0.089909	-1.930254	0.0536
C	15386.47	7480.023	2.057009	0.0397

Mean dependent var	19764.36	S.D. dependent var	44546.52

Sum squared resid	6.17E+10	Log likelihood	-468.6419
Akaike info criterion	24.34061	Schwarz criterion	24.59654
Hannan-Quinn criter.	24.43244	Deviance	6.17E+10
Deviance statistic	1.87E+09	Restr. deviance	7.54E+10
LR statistic	7.337314	Prob(LR statistic)	0.196738
Pearson SSR	6.17E+10	Pearson statistic	1.87E+09
Dispersion	1.87E+09		