NEAR EAST UNIVERSITY

GRADUATE SCHOOL OF SOCIAL SCIENCES

ECONOMICS MASTER'S PROGRAMME

MASTER'S THESIS

THE IMPACT OF CHANGING OIL PRICES ON ECONOMIC GROWTH (THE CASE OF LIBYA)

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ABSTRACT

This study empirically investigates the relationship between Libya's economic growth, changing oil prices, volume of oil export as well as oil price over the period between 1980 and 2013 for both long and short-run. In the light of the exogenous modelling framework, the growth regression model has been implemented according to the changing oil price, the volume of export and at the same time the oil price stimulates the process of economic growth. The Ordinary Least Square (OLS) technique is applied to test the validity of the model and the relative importance of different variables, which may have an impact on the Libyan economy. Based on the empirical results estimated, the explanatory power supports the view that oil market in Libya can be a good promoter of domestic economy in both long and short run. Additionally, inflation has negative influences on the Libyan output and suggests that volatility in stock prices may reflect to the economic ambiguity. Volume of oil export indicator was also found to be very effective in the short-run period.

Keywords: Economic growth, OLS Analysis, Oil prices, volume oil export, Libyan Economy

1.1 Introduction

The developing countries in the world supply more than 50% of crude oil. These countries are members of the Oil Producing and Exporting Countries (OPEC) organization, including the countries Algeria, Ecuador, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, Unit Arab Emirates and Venezuela. It has been a while that Libya is a country in this oil export business, in which it has a share of around 6% (OPEC). Therefore, it is important to find out the place of exportation of oil for the Libyan progress.

The economic conditions of developing countries have to show the performance of various economic activities which are unable to attain the desired objective of achieving the economic standard (Unctad 2014).

This deficit is due to errors in the economic policies of the developing countries, including Libya, by a large margin which depends on oil revenues, making their economy depend on the oil market. Since 2008, the underdeveloped countries have been facing global financial crisis, impacted negatively by the income from oil that support the financial structure. There is no doubt that trade of crude oil represents the highest rates of world trade to become associated with any level of volatility in the price level of economic performance (economic progress) for every country protrudes through the improvement of the gross domestic crude level(El jehamy 2010).

The world oil market has been characterized by greater freedom and has become a global demand and supply important role in determining oil price, oil reserves strategy for the maximum possible period and weaken the reserves and other areas).

Since the 1970s, Libya has relied on great oil revenues and control functions on all other economic functions, creating difficulty in decoding the growth strategy for oil revenues (Ghanem 1985).

It proved to be difficult with the beginning of the eightiesthat the oil market fluctuations and disturbances were still raising the list (Mokhlefe 2013).

1.1.2 Background study

As a developing country, Libya possesses two natural resources, oil and gas in its large territory with a low population. The foreign economic derivation is primarily based on only one commodity that can be exported, which is crude oil. In order for people to continue their standard quality life and for the local market to cover its requirements, intermediate input imports are of great importance as the economy is still developing and the endogenous resources except oil and gas are limited. Consequently, the economy of the country underwent changes in the structure by developing socioeconomic growth plans. The GDP for production rose from 5 % to 15.1 % and the GDP for agriculture increased 6% to 9% between (1970-2005) . The national GDP rose significantly $4380 million to $44820 million between 1970-2005 (CBL).It has been found out that the instability of the prices of oil affected the

national economy. These results are predicted to differ for the import and export of oil. In other terms, a rise in the price of oil has positive consequences for countries that export oil while a decrease in oil prices has negative impacts for countries that import oil. The opposite is valid for the times when a fall in oil prices takes place. Supplying and demanding are the two parts of transmission channels which have different effects for the economy. The negative consequences for supplying is because increase in the oil prices, as the primary production input, leads to decrease in the earning of companies. The fluctuations in oil prices affect the demand in terms of consumption and investment. Consumption has indirect relations due to the link to the disposable income. This effect is more powerful and the shock that it will create has long term effects. The effect of oil price increase is inversely proportional to the investment to be made by companies. However, it is important to consider the effect of foreign exchange markets and inflation on the fluctuations in oil prices in addition to the previously mentioned effects of supply and demand on the oil prices .An urgent demand for economic stability sought by the states through leading to the economic growth contributes to the diversification of the national economy, based on the comparative advantage enjoyed by Libya in order to support the competitiveness of the economic sector.

After the revolution (17/2/2011), the request of the Libyan authorities for advice from the International Monetary Fund, which sent the IMF report and the salient features of the report of the International Monetary Fund, needed to diversify the economy to be the foundation for the preparation of a new growth strategy report. This urged the need to diversify the Libyan economy to include tourism and trade in the light of Libya's richest archaeological sites, the Mediterranean climate, and proximity to European markets.

The Libyan economy critically depends on agriculture, as well as on the external sectors. The reason for this is that the main component of the exports of crude oil in Libya provides a financial surplus, which is considered necessary to finance the economic and social development plans.

Specifically after the October War in 1973 until the end of the seventies, which saw the Iran-Iraq war, attributed these financial abundance achieved during this period that the oil prices have risen to four times what it was in mid-1973 also rose to four times during the years (1979- 1980) than it was before the Iran-Iraq war and the continued oil price volatility as the average Libyan oil prices in 2010 (79.2) dollars a barrel compared to (28.8) dollars a barrel in 2003, an increase of (175%). This high percentage is due to the boom in oil prices in 2008 that has the effect of a positive balance of trade, which saw a surplus of $ (30.7) billion in 2010 compared to (9554) million in 2003. This surplus is due to the increase in oil exports, which account for around (95.3).It is not new that the Libyan economic structure is pivoted about oil production and export the following table shows the GDP structure by economic sector fixed prices as it shows the extent of the dependence of the Libyan economy's on oil and its projects. The second backward comprises the rest of the economy, which depends both dependencies on oil and its

Taple1.1: Gross Domestic Product by Economic Sectors at Constant Prices

Million L.D (At Constant Prices 2003)

Economic sectors	2004	2005	2006	2007	2008	2009
Agriculture hunting and forestry	1,395.4	1,502.1	1,649.8	1,715.0	1,757.0	1,801.0
Mining quarrying and other related	21,346.5	23,348.3	24,256.4	24,473.9	24,362.7	22,487.7
Mining And quarrying (including oil and gas)	85.2	100.1	107.7	134.2	154.1	169.5
Manufacturing industries	2,118.0	2,252.5	2,358.4	2,538.4	2,496.6	2,584.7
Electricity (gas+oil)	787.2	924.2	1,001.7	1,140.7	1,254.7	1,342.5
Building and construction	1,948.8	2,290.7	2,534.6	2,980.5	3,338.2	3,638.6
Wholesales, retailer and repairing (p+ h +h)	1,889.1	2,329.8	2,786.6	2,823.6	3,049.5	3,247.7
Hotels and restaurants	128.2	130.3	132.1	137.2	150.3	160.8
Transport and telecommunication	1,994.1	2,475.8	2,786.6	3,130.1	3,411.8	3,650.6
Financial intermediary	608.1	676.7	748.6	843.5	902.5	961.2
Real-estate and renting and business activities	4,003.8	4,153.9	4,310.8	4,668.6	5,042.1	5,420.3
Government defense and mandatory social insurance	3,502.1	3,978.1	4,288.0	4,373.8	4,378.2	4,465.7
Education	70.8	73.4	78.7	84.3	86.8	91.2
Health care and social activities	111.1	115.1	123.4	132.2	138.8	147.2
Other services	43.8	44.2	47.1	50.1	54.1	58.7
Financial services indirectly computed	-363.3	-308.1	-304.6	-328.9	-345	-373.1
GDP	39,678.8	44,087.2	46,583.6	48,898.0	50,228.7	49,854.3
Mining, quarrying and other related activities	21,346.5	23,348.3	24,256.4	24,473.9	24,362.7	22,487.7
Other economic activities	18,332.3	20,739.0	22,739.0	24,424.1	25,866.0	27366.6

Source: General People's committee for Planning and finance. .
(p + h + h) = personal and house-hold good.

1.1.3 Objectives of the study

This study empirically investigates the relationship between Libya's economic growth and changing oil price, volume of export as well as oil price over the period between 1980 and 2013 by conducting Ordinary Least Square (OLS) techniques in both long and short-run.

1.1.4 Research Hypothesis

High oil prices help to get out of financial constraints and support development plans. However, the dependence on oil prices in the financing of the national economy, the lack of price stability and its relation to a number of factors beyond its scope in most circumstances serve as a threat for the strategic decisions of States.

The hypotheses to be tested in the course of this research are:

H_0 : Changing oil prices do not have significant impact on the economic growth in Libya.

H_1 : Changing oil prices have significant impact on the economic growth in Libya.

1.1.5 Scope of the study

The study focused on the impact of fluctuations on the oil prices on the economic growth rates in Libya, covering the period (1980-2013). In light of fluctuations in international oil prices, which have not seen steadily in the short term, an analysis of its impact has been performed on the economic performance as a whole.

1.1.6 Aim/Significance

The importance of this study is that the production volumes and the prices in general, particularly the oil prices, have the greatest power on the economic, political, financial and monetary activities of many countries in general and Libya in particular. This is because Libya is mainly dependent on the production and the export of oil; and therefore this research aims to study the relationship between the oil prices and the value of real GDP in Libya.

1.2.1 Methodology

The Ordinary Least Square (OLS) technique shall be employed in obtaining the numerical estimates of the coefficients in different equations. The OLS method was chosen because it possesses some optimal properties; for example, its computational procedure is fairly simple and it is also an essential component of most of the other estimation techniques. The estimation period covers the period between 1980 and 2013.

In demonstrating the application of Ordinary Least Square method, the multiple linear regression analysis will be used with the Gross Domestic Product (GDP), inflation rate and balance of payment as the dependent variables while liquidity ratio, cash ratio, and money supply will be used as the explanatory variables. The method would be applied with the use of Econometrics analysis techniques (E-views).

The data for this study will be obtained mainly from secondary sources, particularly from the publications of the Central Bank of Libya. This study makes use of the econometric approach in estimating the relationship between changes in price and major growth components.

1.2.2 Model Specification

In order to achieve the main objectives on this research work, the following model would be used to get a better analysis of the empirical findings.

GDP = F (CP, INF, EXP)

Econometrically, it is denoted as follows:

$GDP = \beta_0 + \beta_1 Cp + \beta_2 Inf + \beta_3 Exp + \varepsilon$

Where,

GDP = Gross Domestic Product

CP = Changing Price

INF = Inflation Rate

EXP = Export of oil

While β_0 is the intercept, $\beta_1 ... \beta_3$ are the parameters of the model and ε is said to be the stochastic error term.

1.2.3 Description of Variables

Gross Domestic Product (GDP)

The GDP can be defined as the broadest quantitative measure of a nation's total economic activity. More specifically, GDP represents the monetary value of all goods and services produced within a nation's geographic borders over a specified period of time.

Changing Price (CP)

Price levels provide a snapshot of prices at a given time, making it possible to review the changes in the broad price level over time. As prices rise (inflation), or fall (deflation), the consumer demand for goods is also affected, which leads to broad production measures like higher or lower gross domestic product (GDP).

Inflation Rate (IFNRATE)

Inflation is the percentage change in the value of the Wholesale Price Index (WPI) on a year-on year basis. It effectively measures the change in the prices of a basket of goods and services in a year.

Export of Oil (EXP)

It is a function of international trade whereby goods produced in one country are shipped to another country for future sale or trade. The sale of such goods adds to the production of a nation's gross output. If used for trade, exports are exchanged for other products or services. Exports are one of the oldest forms of economic transfer and they occur on a large scale between nations that have fewer restrictions on trade, such as tariffs or subsidies.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In the view of the dominancy of oil in international trade and development, it would be apparent that the archival and current literature is available to inform the inquiring mind about this commodity's evolution, extraction processes, economic use, strategic relevance and market value. Therefore, this chapter is intended to explore various scholastic contributions to the fluctuations of oil prices and their impact across the global village in general, with Libya as a reference case.

2.2 Oil exploitation costs

Any meaningful discussion of oil price fluctuations needs to take into account the varied costs entailed from prospecting, extraction and delivery to the importer. Thus, the sections below are an attempt to cite the relevant literature on the cost of the petroleum enterprise.

2.2.1 Direct Costs

According to Kyepa (2014), falling under direct costs are related to the main equipment, such as the infrastructural arrangements, columns, separators and rotator drives which are pertinent in the processing plants and attendant utilities. One also needs to factor in the cost of bulk equipment, consisting of pipes, valves and fittings, electric cables, cladding and instrumentation. Other direct costs consist of the construction costs for onshore and offshore platforms, as well as on-site construction costs.

2.2.2 Indirect Costs

(Kyepa, 2014) Indirect costs include the cost of transporting equipment, materials, as well as various structures and stationary and mobile offshore equipment. General expenses, referred to as EMS (Engineering, Management and Supervision), cover:

- Basic and detailed engineering, audits, and certification
- Commissioning of structures
- Management of teams and projects

- Insurance of structures during construction and installation, and costs such as custom duties

2.2.3 EPC Costs

(Kyepa) EPC Costs or engineering, procurement and construction costs consist of contracting and construction costs of production facilities. EPC costs often vary and can be broken down into basic engineering, surveys, management, project management and insurance costs.

2.2.4 Operating Costs

(Kyepa) Operating costs are the total expenditures involved in operating a production facility. The distinction between capital and operating costs in oil and gas production is not always clearly defined. According to some studies, the share of the total operating cost is made up of four major items, general support (approximately 20% of total costs) well-surface operations (roughly 15%), with maintenance and logistics (each approximately 15%).[7]

The operating costs can be classified according to their function, (personnel, services and supplies) or according to their purpose (i.e., production, maintenance, security, and others). A further breakdown of this cost is listed in the following classification of operating costs summary:

- Personnel costs, accommodation, subsistence, transport
- Consumables (fuels, energy lubricants, chemicals, office supplies, technical equipment, such as piping, drill strings, joints, catalysts, cladding, molecular sieves, laboratory supplies, individual items of security equipment, spare parts, household supplies and food)
- Telecommunications costs, miscellaneous hire charges, service and maintenance

The production and development of oil and gas encompass an extremely sophisticated as well capital and labor-intensive process. The exploration and extraction of oil and gas are only the very beginning stages of producing the world's most important energy resource.

2.3 Historical evolution of oil prices

The context of oil prices is not fixed, since it is governed by the interests of the oil monopolies expressed as the target required by the interests of big business and the evolution in prices as follows (Lutz, 2009).

2.3.1 Evolution of oil prices before 1970

A few companies have dominated the oil industry since the discovery of oil. So the oil market characterized by oligopolistic tendencies where the oil cartel took upon itself the task of the division of markets and pricing, and it comes at the expense of the interests of the State Two points for the pricing of the world's oil has been adopted and a single point for pricing - based on unit pricing point - the Gulf Arabic points again for pricing (Fattouh, 2011).

2.3.2 Oil prices in the period 1970 to 2010

The world oil market has witnessed developments where OPEC resorted to cut production in 1982 in order to keep prices at a high level, and as a result of the continuing instability during 1984 decide to reduce prices as a last resort. Despite that move, instability has continued to impose a production ceiling so she specified that at the end of 1986 individual stakes committed by members of diameters were included and led to higher prices (Gold, 2014).

2.4 Types oil prices

The different types of oil prices are a result of different factors that determine such prices as the type and quality of oil. As outlined in the sections below, there are many price types for consideration by the academia.

2.4.1 Posted prices

Bentley, Minczeski and Juan (2014) agree with Fattouh (2011) that posted prices were announced for the first time on a global scale by Standard Oil of New Jersey Corporation of America in 1880 when the oil market was characterized by the presence of many of the American oil producers. This company imposed its control over the processes of refining crude oil and then announced its part prices for the extracted oil from wells directly without taking out extractor in the pricing process. It continued this price effect even when the US government was taking steps to curb the monopoly of Standard Oil in 1911 and enhance the emergence of the situation of competition between companies in determining the published

rates for the purchase of US crude oil. In other words, the US oil market has turned into a competitive market instead of its monopoly by Standard Oil of New Jersey and in the twenties of the last century.

2.4.2 Realized prices

Fattouh (2011) postulates that a realized price is one derived after meeting facilities or rebates variety agreed upon by the parties of the seller and the buyer as a percentage discount from the advertised price or payment facilities and the price realized conditions is actually an advertised price, fewer rebates or different facilities granted by the seller to the buyer and these facilities include the return of the parties or party buyer provides the seller in exchange for crude oil, non-oil commodity values of the prices achieved and actual came into being since the late fifties worked out national oil companies in oil-producing countries, whether in the Organization of Petroleum Exporting Countries, or OPEC or other foreign countries or other oil companies are monopolistic or Independent alike that the amount of or the level achieved prices influenced by the conditions of the oil market situation and the amount of the impact of these conditions on the petroleum Contracting Parties, For example, long-term oil contracts and limited quantities or small be few discounts and therefore the price achieved Besides oil market conditions in its impact on the realized prices there the impact of international economic relations on the realized prices, For example, improvement and development of economic relations between the Blunts and other non-oil opposite facilities granted to the parties lead to realized prices.

2.4.3 Reference prices

The reference is a crude oil price and the outcome of at least advertised, price increases for the price achieved meaning it is an average rate between the advertised price and the price achieved and calculating the reference price is based on the knowledge and determine the average or the rate declared and verified price for several years. This kind of price that appeared in the 1960s has been applied in different situations by Algeria and Venezuela in which agreement is made with the oil companies operating on its territory, the calculation of government revenues according to these prices and not on the basis of realized prices that prevailed between the two parties previously.

2.4.4 Tax –paid cost prices

In fact, these prices represent the true cost paid by major oil companies in order to get a barrel of crude oil product under agreements (concessions) held with the governments of countries producing oil in question at the same time these prices Qaeda that underpin the prices achieved in the oil market is considered as the sale of crude oil at less than these prices mean (loss) course and become these prices equal to the average The following

tax cost price of production = cost + Government

Dividend yield government = rent + tax

2.4.5 Spot prices

Lutz (2009) and Fattouh (2011) concur that spot price is mutual oil unit price or an immediate and in the free oil market and that price crossing or reflected the value of the item oil cash in the free market mutual oil between the crossbar parties and procuring immediate and more or vessels has emerged as the prices on the world oil market with the end of 1978 after Iran's oil exports have stopped consuming countries (contractors), forcing the latter to search for alternative oil due to the increased global demand against the supply of it, so the major independent oil companies to sell the quantities of crude oil one way or another according to certain rebates in the immediate oil market, instant Market and the market to redistribute part of the oil supply to the oil-consuming countries. At the end of 1978, the small amounts ranged between (5% -10%) of the total world oil exports, then escalated lineage ranged between (15% -20%) of the total world oil exports through 1979. Rotterdam market is an example of real-time market for oil and some OPEC countries joined the companies that sell oil in immediate markets such as Iran and Kuwait, Qatar, Venezuela and Indonesia.

2.4.6 Official and administrative price

This price is the expression of oil unity raw value in a limited time and in units of cash information and specific by a party official government entity or administrative (company or institution belonging to state the company of countries or information). This price has emerged in the appearance of trading and international exchange in the early seventies the twentieth century in order to signify the official prices of the stated OPEC countries by it in that period and the subsequent period as well as the specific period than before, according to

standards set by it which is an objective, scientific and fair criteria for determining the value of oil prices in the international market and represent it in the rule of this price in the international market for the duration of the seventies. Until the mid-eighties, particularly in 1987 when the average of these seven crudes prices move adopted, the OPEC price basket of crudes diverse number seven, including six crudes from member countries of OPEC and the seventh from the outside State of Mexico through a concrete time frame is the foundation and the base that is determined by the official Advertised price administrative for the countries of OPEC and various oil meaning that the official price administrative OPEC and the advertiser by it actually turned into a continued price in the amount and level of oil price in the spot market since that year, in particular, and its aftermath in the nineties to the present, after the price of OPEC after the price of OPEC seventies hold a special leader and a key driver for the development trends of prices on the world market (Fattouh, 2011).

2.4.7 No back arrangement price

The price of crude oil is intended to express the oil unit raw value in units of cash information and specific based on the average agreed prices of oil products minus the cost of refining the oil unit of information and the profit margin of the refining of oil per unit of information, as well as the cost of transporting oil from the buyer port to port the seller time. The net of it is the amount of price Not back arrangement crude oil (Not back arrangement crude = the average price of petroleum products specified - the cost of the oil unit - refining profit margin transport from the buyer port until the port of the seller) is the oil price back in the spot market for the exchange of item-oil the mid-eighties period between many oil transacting parties in this market, including some OPEC countries such as Saudi Arabia, Nigeria, Venezuela.

2.5 Factors affecting the price of oil

Controversy shrouds are the attempts to spell out the world market for oil (Lutz, 2009). A host of direct and indirect factors ranging from purely economic to political issues play an influential role in the movement of oil prices, whether up or down. The international community has set up relevant organizations to ensure that the invisible hand is given fair latitude to determine the global price of oil on the one hand, while a relatively counter arrangement is the organization that politically protects the interests of producers by setting artificial prices (Desta, 2003; Lutz, 2009; Lutz & Murphy, 2011 and Ruta & Venables 2012).

2.5.1 Oil supply

As has been noted by Ruta and Venables (2012, 9), the oil supply side gets tangled up by a variety of different and varied factors in the form of sole producers' power as well as its non-renewable nature. Beyond that, supply decisions rely on the exploitation capacity of the extractive machinery which, in turn, determines the daily yield of the resource (ibid). In the same breath, the literature on the production and use of oil, irrespective of the school of thought, maintains the position that the industrial demand for oil is derived from the various energy applications in the production process of consumer goods.

One approach sees the market value of oil as the outcome of changes in the world deflationary and inflationary cycles (Lutz, 2009; 19). To this end, shocks may be experienced in the present flow supply of oil gauged by world production of the crude commodity. An unanticipated disturbance to that flow entails a skyrocket to its value (ibid).

(Lutz, 19) Alternatively, shocks to the present flow demand are influenced by unanticipated changes in the world, real sector business which, in turn, leads to a rise in the price of oil and its subsequent production. The production side influence is generally agreed by most authorities whose empirical studies conclude that it has less phenomenal effects since the price elasticity of the supply of oil in the immediate term is close to zero.

(Lutz, 20) However, this approach to the world market is inconclusive except one of the factors in the issue of storage. Future anticipations of change in supply and demand could trigger an upward jolt to the market of oil. This is the speculative component in the oil market.

2.5.2 Speculation on the oil market

(Lutz, 20) Current literature is aware that the "speculative demand shocks", as opposed "to the flow demand and flow supply of oil", are likely to register automatic results in the market value of oil. In a variety of scenarios, speculative demand shocks are typified by external politics as in the Middle East which are crucial via their impact on anticipated, future production disturbances with little attention to their impact on oil production.

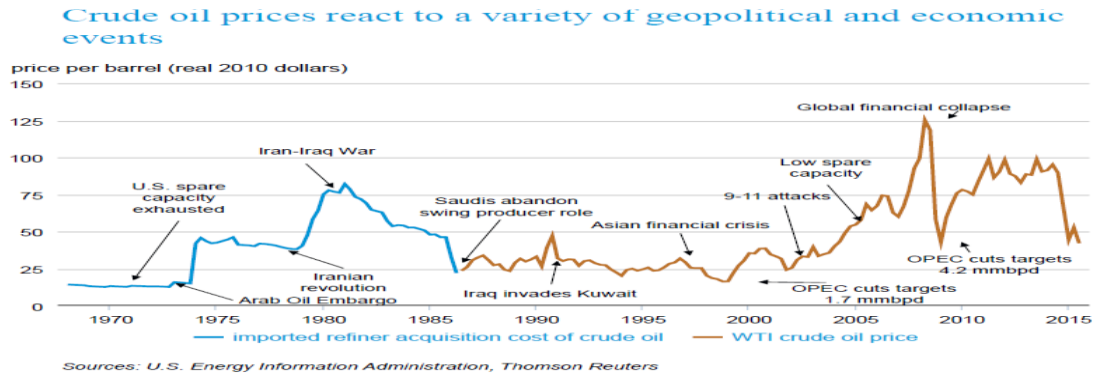
2. 5.3 Policy of oil and the policy of production

Desta (2003) points out that, as a result of production policy, whether to expand or reduce, the power of oil producers measures the strength of a particular group or views in how to exploit oil is an economic and political weapon is an important that has taken several forms in the oil market, for example, what was done by the Arab states in the war in 67 and 73 of the last century and had an impact on global oil supply and rationing supply him several targets including the utilization of oil for the longest period and that what was done by OPEC through the rationing of production (1). In terms of increasing the supply or with the aim of production increase financial returns, as happened with Saudi Arabia and Iran due to their huge reserves of oil.

2.5.4 The price of oil

A host of literature notes that the relationship between the oil price and supply an inverse relationship and this is contrary to the provisions of the economic theory of the existence of a direct correlation between any commodity, supply and this is the result of the specificity of oil as a commodity strategy. Increasing the supply of oil leads to lower prices, and vice versa, when the increase in oil prices is seeking countries oil producers to increase output of the source and that the additional revenues to cover the special economic their needs if these countries depend mainly on oil revenues. OPEC has done during the eighties to lower oil prices to record levels. For example, the industrialized nations tried to increase its production in order to reduce oil imports in addition to the impact on prices to reduce them, such as what is done in England (North Sea) and the prices were low and the producers seek to reduce the supply, especially if it has reached levels that do not fit in with the cost of oil extraction.

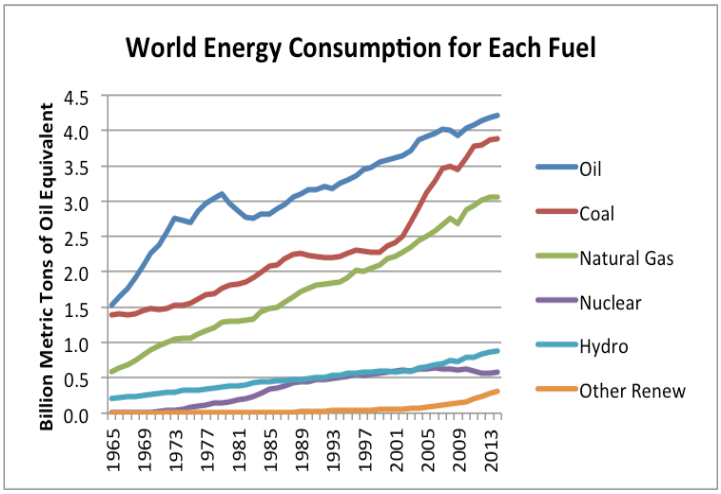
Fig 2.4.5: Crude oil prices react to a variety of geopolitical and economic events



2.5.5 The price of alternative goods

Before the discovery of oil as an energy source, there were other sources of energy such as coal. Because of the high costs and the difficulty of extraction, industrialized countries are looking for new sources of energy alternatives such as solar energy, corn, and coal.

Fig 2.5.5: World energy consumption for each fuel



scour:Based on BP Statistical Review of World Energy 2015

2.5.6 Oil demand

Oil demand defined by the International Energy Agency "consists of pledges distributors refining factories and private amounts or oil is refined theme of the distribution directly " and by reference to show the oil can be given. The oil demand is defined as representing those

quantities of oil item needed by the human at a certain level and during a specified period of time for the purpose of satisfying the needs of a variety of whether consumer such as gasoline or lighting.

The demand for oil is of two types, demand for crude oil and the demand for petroleum products which implies that there is no demand for petroleum products unless there is a demand for crude oil. Hence, it can be said that there is a reciprocal effect between the demand for crude oil and petroleum products. The change affects the price of crude oil on the commodities, but that might be little because it does not appear immediately, but it is divided between petroleum products and the only source, crude oil.

2.5.6.1 Factors affecting oil demand

Economic growth

The most influential factor in oil demand and the advanced stages of economic and social development, especially with the emergence of the industrial sector economic sector is important and commander of all economic activities. This translates into a positive impact on the evolution and the growing demand for energy, especially including oil. At present, the increase comes in the global demand for oil to meet the needs of the growth achieved in the economies of European countries and the United States outside the geographical boundaries, and that increases the demand for oil. They are also represented new capital markets in emerging Asian countries and China.

Climate

It is one of the factors affecting the oil demand and this effect is caused by the amount of temperature change throughout the year. Whether it is a decline or increase, it increases the demand for oil in the winter and decreases in summer but climate no longer bears much impact on the global demand for oil because it used to depend on heating and industry.

Price

Price is one of the most important factors affecting the oil demand for oil commodity. Whether for crude oil or oil products, the rise in the oil price in the short term may not affect the prices of oil products, therefore less demand for crude oil keeps the demand for petroleum products due to the difference in prices. This is because it is divided between these products

either in the long-term; the rise in oil prices affect the demand for crude oil and the demand for petroleum products prices begin to rise.

Population

It is one of the factors affecting the oil demand whenever a growing population led to an increased demand and having this effect is important if linked to other factors, for instance the most important economic growth factor shall be a significant impact if the economic growth (GDP) is high and having its impact limited if dropped (national income).

Other factors beside supply and demand:

Global Economic Crises

The crises such as the financial crisis in 2008 and the Asian crisis of 1999 weakened the power of investment, leading to a reduced demand for oil and lower prices.

Wars

Especially in the oil-rich areas such as the wars in the Middle East, which has about 80% of the world's stocks of oil, there is 62.5% of it in the Saudi Arabia, United Arab Emirates, Iraq, Kuwait, and Iran while America owns 3% of world reserves.

Natural disasters

Such as hurricanes and earthquakes, especially those that hit the oil-producing regions, leading to a lack of production and the rate of price increase

Dollar exchange rate

Given the close correlation between the dollar and the price of oil, where most of the commercial oil exchanges are conducted through the dollar currency, this will affect the economies of producing countries positively or negatively.

International political decisions and statements

Such as the threat of war or the imposition of economic sanctions on the oil-producing countries like the sanctions imposed by America on Iraq and on Iran.

2.6 Organization of Petroleum Exporting Countries 'OPEC'

In light of the massive discoveries of oil, the world has seen this in various regions in the 1950s, there was a general conviction of an anticipated surplus production, which emerged with an urgent need for an organization that works on coordination between producing countries to regulate oil markets and from here emerged the Organization of Petroleum Exporting Countries oil (OPEC). OPEC is the platform for negotiating, monitoring and controlling the petroleum supplies including the prices thereof (Desta, 2003).

2.6.1 Establishment of the Organization of Petroleum Exporting Countries

OPEC was established in September 14, 1960 in the Iraqi capital Baghdad by an agreement among five oil-producing countries, and these countries are Venezuela, Iran, Iraq, Kuwait and Saudi Arabia, latter joined Qatar of the organization in 1961, and Indonesia and Libya in 1963, the United Arab Emirates and Algeria in 1967, Nigeria in 1971, and finally Ecuador and Gabon in 1973, both of which pulled out in a row in 1992 and 1996, leaving eleven members (Desta, ibid).

2.6.2 Reasons for the emergence of OPEC

The Arab region has gained great importance especially after the discovery of oil, prompting countries that produce and export oil such as Iraq, Saudi Arabia, Kuwait and Iran to unite their efforts to preserve their interests and influence on oil-consuming countries. According to Desta (2003), OPEC is not entirely satisfied with the advantages of free exchange in the oil enterprise as enunciated by the theory of comparative advantage. Unfettered exchange precipitates damaging rivalry among exporters, ending up in net losses. It dissuades such rivalry within its community by instituting prices which are applied in synchronized manner with supply controls (ibid). Therefore, OPEC is a strong advocate for governmental intervention in the production and exportation of oil (Kyepa, 2014).

2.6.3 The Libyan case

The Libyan economy is dependent on revenues from the oil sector, which contribute to about 95 percent of export earnings, 25 percent of GDP, and 80 percent of government revenue (Economywatch, 2010).

Alafi and de Bruijn (2009, 7) point out that by means of two consecutive five-year plans from 1976, almost forty billion Libyan dinar (LD 40 billion) was applied to various sectors with the aim of balancing the economy rather than allowing it to be entirely skewed under one key resource. This is a common problem among most of petroleum-dependent economies which leads to what is often termed the Dutch disease (Ruta & Venables, 2012). Once more, it was observed by Alafi & de Bruijn (ibid) that as income inflows from oil fell drastically between 1980 and 1986, the government's generous populist stance was severely affected. Its corresponding reduction in imports was of little benefit. Thus, the road back to privatization had to be pursued from 1987 to 2008.

(Alafi and de Bruijn, 2009; 8) A myriad of Participatory, small scale private business collectives (10233), were promoted to take over state enterprises (102). Other collectives were realized in retail business, "services and light industry." Once again, the benefits were outweighed by costs since the whole process was allegedly, poorly planned.

(Alafi & de Bruijn, ibid) The next adjustment phase was geared towards survival against economic sanctions and a fall in the prices of oil in the 1990s. Private players were permitted to open foreign exchange accounts and import equipment through a facility called sharika musahima (joint stock company), a system of cost-sharing between private and public entities. This was also a flawed process since it focused only on "employee buyouts, exposing the privatized entities to expensive spare parts" and hurdles in their procurement.

Thus, a broader scope of privatization, al tamleek was rolled out in 2003 where citizens (and aliens to a limited extent) would take shares in state enterprises so as to discourage the uneven distribution of the national cake.

At the start of 2002, inflows from oil trade rose in the face of reduction in the exchange rate of the Libyan currency against other currencies. No proportionate increase in tax and customs inflows was experienced since most of the players were public sector businesses which were not taxed.

State intervention caused negative repercussions in the industry and commerce, stifling the development of the economy, weakening the aggregate economic variables, and exposing the whole nation to exogenous shocks. Hence, the government had to call for World Bank technocratic advice.

The advice focused on the need to "consolidate finance, streamline budgetary management, remove external trade restrictions, complete price liberalization, rationalize the subsidy system, develop a vigorous privatization program, and improve the business climate". All this was intended to stabilize the economy and ensure judicious utilization of oil as the economy mutated to the capitalist mode, encompassing other areas of business besides oil.

Libya's public industrial sector which was targeted to promote other economic activities outside the oil sector since 1969 has apparently little to show for the outlay poured into it over the years until 2005. It is asserted that the close of 2007 saw the liquidation of 57 firms which were chronically experiencing losses. Meanwhile, 80 public industrial businesses were privatized.

Significant positive changes on the economic front have been realized through tariff reduction by 17,8%, attracting foreign direct investments and the desired capital inflows. Private players got the green light to engage in the production or foreign purchase of items which were originally the preserve of the public sector. Business contracts with foreign nations were mooted. Sophisticated infrastructure is being planned and developed while free zones are being put in place.

According to Combaz (2014;1) there is need to identify variables, far and immediate past which are still pertinent to the current scenario in Libya. There is a death of stability, unity and inclusivity within the state of Libya. Qadhafi is seen as having diluted state apparatus by nepotistic, minority rule of the oil moguls, suppressing any form of dissent. There is no rallying point among the varied cities, tribes, regions, political parties and religious sects. (2) Libya's long history of "localism and regionalism" created tensions on the balance of power at various levels in a nation where the centre exhibits power vacuum vis-à-vis strong peripheries.

(Combaz,2) The incumbent leadership dominated by revolutionaries and the Muslim Brotherhood are alleged to thrive on "patronage to ensure political stability". Major groupings have been offered government posts. Distribution of the oil money is " a major

stake". Zintan city federalists are yet to be accommodated into mainstream politics and business. The security system is virtually porous. Oil and its legacy of rentier state tower prominently above other activities which are in any case ill defined, accompanied by any inefficient, opaque and corrupt state which lacks regulation and accountability.

(Combaz, 2014; 6) The Qadhafi era was characterized by problems of a rentier state, mono-commodity status, economic wastages and patronizing stance in business and national affairs. Lack of human competence to tap on vast reserves hydrocarbons which she has constitutes another setback. Public economic management remains incompetent. The business environment does not promote FDIs given the fluid legal and investment regime with a deficit of technocrats. No initiatives have been taken to capitalize on local and foreign skills in business opportunities outside energy fields. Most businesses in other sectors are informal. Libya naturally provides the geographical centre of gravity for transit location between Europe and sub-Saharan Africa, and for trans-Maghrebi and Maghrebi-Arab trade.

In view of political challenges, Khodr & Ruble (2013) propose the need for revised political game plan and nation building that addresses the adverse political ambitions of various constituencies. Under policy challenge, they posit the argument that there is no energy policy; inadequacy of the regulatory framework; the legal structure change is still to be realized. Administrative challenges are characterized by lack of human resource planning; lack of capacity building and weak corporate governance. Strategic challenges have to do with forging relations with the European Union. Economic challenges entail oil prices; when the demand for energy goes up; competition between big consumers of energy; less oil from the Middle East, leading to decreased influence; rentier economy; development of new energy sources.

Diversification is an important issue because at current rates of production, Libyan oil reserves are not expected to last beyond the second decade of the next century. Thus, the long-term health of the Libyan economy hinges on developing a self-sustaining nonpetroleum sector. Otherwise, once oil reserves are depleted, Libya will become as poor as it was before its current oil boom (US Library of Congress).

A longer term goal is to help develop the framework and institutions for a more diversified market-based economy, broadening the economic base beyond the oil and gas sector. Although the Bank's post-conflict engagement was initially expected to accompany

only Libya's short term economic recovery efforts, the transition program will lay the foundation for longer term goals. This includes creating a more vibrant and competitive economy with a level playing field for the private sector to create sustainable jobs and wealth. It also includes transforming the management of oil revenues to ensure they are used in the best interests of the country and to the benefit of all citizens equally. This will also ensure that citizens have a role in defining and voicing their communities' best interests (World Bank, IBRD & IDA, 2015).

CHAPTER THREE

CONCEPTS AND FACTORS OF ECONOMIC GROWTH

3.1 Introduction

This chapter focuses on the various views of economic growth advanced over the years. Literature on growth elements and parameters, costs, the classical and neoclassical as well as current ideas is explored in depth.

3.2.1 Economic growth and economic development

A superficial glance at the terms ‘economic growth’ and ‘economic development’ might lead one to the illusion that these are synonymous. However, the yawning gap between these terms can be identified semantically and practically as given by diverse authorities in these fields.

3.2.1.1 Economic growth

As expressed by Perkins, Radelet and Lindauer (2006), economic growth consists of an increase of goods and services over the broad front of the economy accompanied by an increase in income per head. This is further elaborated by Osinubi (2005, 227) that such a change in output should show greater volumes in the current year as compared to the previous one. Kuznets makes it more comprehensive by stating that it needs be long-run increase in the national, ideological, institutional, industrial and technological capacity to supply the varied economic goods and services for the populace.

3.2.1.2 Economic development

Huque and Zafarullah (2005) consider it a tall order to precisely define such an elusive term as development. They cite, over the years, that the authorities have grappled its definition from Sutton’s (1961) rationalisation, Eisenstadt’s (1963) modernisation, Esman’s (1966) socio-economic progress and Riggs’s (1966) bundled economic and political perspectives. Development is viewed by Remenyi (2004, 22) as a process whose main target is the enhancement of the quality of life hinged upon the increased capacity for self-sustenance by nations, which essentially reflects the need for international cooperation as a prerequisite to their success. This definition gives a clear picture that development encompasses growth

among other essential components. Frankel (2005, 17) identifies the components of development as economic growth, income distribution, disposable income, sustainability, individual freedom and human rights as well as democracy.

It has been pointed out by Abiola (2005, 254) that economic growth could be experienced by a nation without realising the required development. He (ibid) states that the economic development calls for qualitative phenomena in the form of modernisation of the productive sector as well as changing it from traditional to industrial, widening consumer options and the provision of a secure and free environment. Similar sentiments have been expressed by Cypher and Dietz (2004, 29) that development embraces a wide spectrum of yearnings for decent living as defined by the community's socio-political and economic standards.

For purposes of this paper, economic growth will be focused.

3.3 Rationale for economic growth

Several questions have been advanced as to why nations are obsessed with economic growth. Abiola (2005, 255) identified the main reasons as being that expanded real output implies greater supply of the nation's material needs, thereby addressing the basic economic problem of meeting people's demand for goods and services. A constantly booming economy gains the strategic advantage of addressing its current economic obligations while at the same time scanning the horizon for business diversification. Individuals within such an economy can broaden their consumption without the need to ensure austerity to their household basket. This also applies at government budget level where national goals are executed comprehensively and emergent projects are not ignored due to lack of fiscal space. Either way, scarcity is reduced (ibid).

3.4 Elements of economic growth

The opinion of Anyanwu and Oaikhenan (1995) as cited in Osinubi (2005) is that the concept of economic growth has to be articulated from three significant perspectives which include the nominal, the real value of output and the per capita value framework. One would easily understand that the nominal value stance on growth is of peripheral importance where businesses and households are concerned with the real output growth together with an increase in the purchasing power of national currency. The national income deflator can be used to adjust the nominal value of output lands one at the definition of real value of output

growth. The per capita aspect measures the increase in output per head, holding prices constant over the given period.

Arnold (2002, 1) posits the idea of economic growth that is characterised by ups and downs which are termed business cycles. Elements of economic growth can alternatively be termed determinants of growth and these are capital formation, technological advancement and institutions. Siebert (2007, 102) propounds that capital formation is largely influenced by savings and the anticipated return on investment. The lower the time-preference rate by a given country, the greater its propensity to save. Given the principle of rationality in economic analysis, a high rate of return on capital attracts the accumulation of capital. Conducive institutional systems provide a positive influence on savings. Growth spin-offs can be generated through technological improvements which emanate from research and development thrust.

Siebert (ibid) observes that different growth elements exerted pressure for growth at different stages in the development of world economies. He (ibid) cites the US case where working capital propelled labour productivity at the dawn of the 19th century; physical stock of capital then took centre-stage in capital deepening towards the close of the that century and the initial part of the following century. The closing part of the twentieth century saw an intangible capital (knowledge assets) rising to overshadow the rest of other elements of growth.

One authority, Ajila (2005), has identified productivity as crucial for the economic growth. He defines productivity at micro level as the proportion of output to inputs that have been fed into the entity of production. Where the output soars beyond the volumes injected into the production process, then productivity is deemed to be high which essentially implies positive growth. On the other hand, if output falls below the inputs injected, it is concluded that productivity would consequently fall, logically leading to the conclusion that growth has plummeted (ibid).

Siebert (ibid) also acknowledges that such institutional framework as the rule of law, the tax system, free enterprise and political association, an autonomous reserve bank among other aspects, has a crucial part in influencing income level and economic growth. He further states that the framework articulates the rules of the game and stamps the riot act which subsequently impacts on capital formation, creativity and innovation as well as human capital

development. (103) A robust framework is a prerequisite inspires economic agents to execute their operations with confidence while a weaker one is recipe for business apathy.

According to Ayadi and Balouga (2005, 484) trade triggers the mutually beneficial economic growth for both poor and rich nations by providing developed economies to acquire raw materials from developing economies which, in turn, get back capital goods and technical expertise. Despite the contrary arguments, international exchange promotes the global growth by allowing unfettered flow of services and material items, companies as well as physical and financial capital beyond national boundaries.

In agreement with the above authorities, Siebert (2007, 105) further observes that the more open a nation is for global business transactions, the more the opportunities of that economy to grow. He (ibid) expounds this stance by means of World Bank: *World Development Indicators* 2005 covering 16 developing countries which are described as after 1980 globalizers. Each of these nations' growth rates between 1985 and 2003 are viewed as a function of openness. He (ibid, 106) further cites a similar observation that was carried out for emergent and industrialised nations between 1970 and 1990 with relatively similar conclusions.

Siebert (ibid) articulates that economic activities are not evenly spread across the globe just as resources are not equally endowed across the earth. In that view, he (ibid) identifies physical geography as a critical element of growth.

A peculiar approach to such growth and development has also been presented by Siebert (2007, 92) which relies on the global view of the production function as illustrated below:

Y = F(L, K, T, R, ..; In) where Y, the global output is the result of the factors of production L, labour; K, capital; T, technological knowledge; R, resources among other factors which include In, institutions. The growth equation that is logically derived from the production function is as outlined below:

Y^ = G(L^, K^, T^, R^, .. ; In) The message presented here is that the growth in global output is affected by the rate at which labour, capital, technological knowledge, natural resources and other factors are growing. Siebert (ibid) admits that such an effort as to measure any of these variables is prohibitively impossible. Thus, one can endeavour to measure regional economic growth or better still, national economic growth.

With reference to Nigeria, Ajila (2005, 480) states that its economy will be stunted with productivity in the doldrums as long as long as infrastructure, the economic, managerial and technological framework is inadequately addressed by the authorities.

3.5 Economic growth parameters

As expounded by Cypher and Dietz (2004), economic performance is gauged by means of increase in aggregate output or aggregate income that is in real or financial terms. The instruments by which economic growth is measured are Gross National Product (GNP) and Gross Domestic Product (GDP).

Parkin (2005) agrees with Cypher and Dietz (ibid) that GNP represents the total value of income from all final goods and services obtained by citizens of a given economy irrespective of the origin of that income. On the other hand, GDP is viewed as the total value of income from all final goods and services originating within a given economy, irrespective of where it is finally consumed.

Taking each of these parameters at face value is bound to lead to misconceptions on the implications of economic growth for different countries. Weil (2005), Parkin (ibid) as well as Cypher and Dietz (ibid) share similar views that GNP or GDP figures could appear impressive but one would need to know what that translates to in terms of national averages. Thus, a country that has low growth figure compared to one that has higher figures could be better than the latter when growth per head.

The other distortion could come from the national or average growth figures without taking into account the distribution of the national cake. High figures at national and average levels according to the authorities (ibid) above, might falsify huge income disparities where only a small percentage of the economy's population is getting the lion's share. By means of the Lorenz curve, the Gini coefficient is obtained to gauge the spread of income between the rich and the poor. Where the spread is narrower, then that economy is judged to be posting better economic growth than one whose spread is wider.

Yet another possible challenge emanates from bigger income figures over the period under consideration without taking into account inflation. Some large GNP/GDP figures could just be propelled by changes in the economy's price levels without any proportional rise in output. The use of the consumer price index and the GNP/GDP deflator could help to measure these parameters at constant prices.

There are also issues of externalities where growth is achieved at serious social loss. This occurs because certain spill over costs and benefits are not registered into the business's accounting system.

3.6 Economic growth costs

Although every nation desires to improve its technological and industrial capacities in order to boost economic growth and consumption levels, the attendant side-effects also need to be considered. Zhang (2006) observes that production and could be lead to environmental damage. In one way or the other, economic progress has been seen to leave a trail of destruction of the ecosystem at the initial stages the industrialisation drive. However, for nations which have covered extensive milestones of growth spanning many years, he (ibid) points out that they have the stamina to accommodate environmental factors into their growth thrust.

It has been proposed by Weil (2005) that national income accounts need to factor in the natural resources that are negatively affected as a result of the production processes during each financial year. By so doing, one can then arrive at Green GNP/GDP which is the GNP/GDP for the given economy less the natural resources which have been damaged.

3.7 Economic growth from the traditional perspective

3.7.1 The classical school of economic growth

The history of economic thought is replete with cutting-edge, classical ideas from stalwarts such as Adam Smith, David Ricardo, Thomas Malthus and Karl Marx. Each one of these presented a unique picture of the economic behaviour of society that is worth of academic attention.

3.7.2 Adam Smith's division of labour

According to Thirlwall (2006), by coining the idea of increasing returns emanating from the division of labour, Smith provided a great milestone to economic thought that gradually led to current perspectives on endogenous growth. His conceptual framework can be illustrated this way (ibid, 124): as each worker concentrates on a particular job for which he/she is best suited, greater output ensues since practice further enhances perfection. Beyond that, no time is wasted moving from one job aspect to the other. The time so saved is incorporated into the production process thereby boosting output per worker. Thus, it can be concluded that

specialisation is the precursor to capital formation which encourages smaller, achievable units to be assigned to each worker on the production line. The resultant large-scale production is worthwhile as long as there is a ready market to absorb all excess output.

3.7.3 Thomas Malthus's theory of population

Malthus is viewed as the only one of the classical school to stress the relevance of demand in influencing the level of output. The rest relied on Say's law which postulates that every supply is capable of creating its own demand. According to Thirlwall (2006), Malthus saw population as increasing in geometrical fashion while food production was increasing in an arithmetic way. Thus, he envisaged a day when current output would not be able to meet current consumption which translates to global starvation. According to Ghatak (2003), Malthus perceived growth potential scuttled by the law of diminishing returns, with wages swallowing all output to such an extent that nothing is left for capital formation and economic diversification in the face of an increasing population. The mismatch between population increase and food output increase was seen as culminating in income per head that revolves around the subsistence level, commonly called low-level equilibrium trap. The prescription he provided for this scenario was the introduction of birth control to limit population growth to acceptable levels.

3.7.4 David Ricardo's model of the economy

Ricardo shared similar views with Smith in respect of growth that is the outcome of capital formation which, in turn, is affected by reinvested profits. Thirlwall (2006) explains that Ricardo regarded profits as wedged between subsistence wages and the payment of rent to landlords which rose in the face of food price increases due to diminishing returns to land and increasing marginal costs. He arrived at the conclusion that the real increase of wages is a direct consequent of a real reduction in profits. As a result, land can only yield increased returns to a certain limit, but no further. It eventually fails to give enough to its workforce because it has reached its peak in terms of capital as well as population. He was averse to anything that depressed capital formation including high labour costs and taxes on the productive sector.

3.7.5 Flaws of the classical school

Below is a brief summary of the appraisal of the classical model by Ghatak (2003, 38-39):

(a) Technological advancement is not given the prominence it deserves in the model. The part played by diminishing returns as an indicator of the doomsday has faded over the years.
(b) Malthus understood wage determination only in terms of supply (population), yet it is the result of the interaction of supply and demand in the face of union bargaining.
(c) Malthus's assertion that an increase in wages would translate into more children has failed to stand the test of time.
(d) The model fails to account for the complexity of labour and capital especially in less developed countries.
(e) Traditional growth theory tended to ignore matters on energy, natural resources and environmental damage (Zhang, 2006).

3.8 Neoclassical growth models

By re-expressing the classical theory with mathematical descriptors of the key economic agents' preferences and technology at their disposal, one can therefore transpose the old production and distribution functions into modern, neoclassical terms. As argued by Lucas (2002), such terms make the classical theory a useful model for determining income in economies prior to the industrial revolution.

3.8.1 Solow-Swan growth model

According to a research conducted by Palley (1996, 114), models of economic growth have been evolving over the years to this date. The old Solow (1956) growth model essentially holds the view that exogenous population increase, in tandem with workforce supporting technological advancement, are sufficient to orchestrate exogenous, steady-state growth. This model also points out that capital formation relies on household savings regardless of business investment efforts. On the basis of Say's law, the demand side of this model is automatically covered.

This model provides a vortex of academic discussion between the old and new schools of economic growth. It is rightly observed by Zhang (2006, 8, 13) that current neoclassical growth models are plausible elaborations and broad applications of the pioneering efforts by

Swan and Solow who introduced fresh ideas to economic growth, combining the neoclassical production function and the neoclassical production theory on the same traditional platform of dynamically handling and analysing consumer behaviour. According to Zhang (ibid), Dixon (2006) and Agenor (2004), the underlying assumptions of this model are a closed economy that employs labour and capital to produce a single product. Both technological advancement and the rate of saving are beyond its control (given). Government does not feature in this set up. There are a fixed number of firms utilizing the same technology, such that they can be viewed as one for convenience. Total output is derived from a total production function. Product price is deemed to remain stable while input prices vary in response to their full exploitation.

In view of the foregoing, Agenor (2004, 440) draws Solow-Swan aggregate production function as:

$Y = F(K, AL)$ where Y stands for flow of output; K for stock of capital; L for number of workers and A for knowledge or the effectiveness of labour.

The properties of the production function as presented by the two authorities above (ibid) are noteworthy. Firstly, since K and L are stock variables, the production function utilizes the flow rates of these factors which can be given in the case of L as the fixed number of workers times the rate of utilization of their labour service. Time is not catered for directly but it appears via K, L and A. In other words, fluctuations in output during any period of time are attributable to fluctuations in these inputs. A and L are factored in multiplicatively. AL is referred to as effective labour, while concomitant technological advancement is termed labour augmenting or Harrod neutral.

In this scenario, as stated by Zhang (ibid), the application of ductile capital where one does not need to be preoccupied by how the capital was utilized prior to its current designation. Such capital is necessarily mobile across high and low capital intensity production processes. In the event that knowledge is factored in the form $Y = F(AK, L)$, then technological advancement is called capital augmenting or Solow neutral (Agenor).

The production process is described by the above function in a smooth manner. According to Zhang (2006, 8-9), that production function is considered neoclassical if it agrees with the conditions below:

(a) F(K,AL) is nonnegative if K and AL are nonnegative;

(b) F(0,0) = 0;

(c) Marginal products, F_K and F_{AL} are nonnegative;

(d) There exists second partial derivatives of F with respect to K and AL

(e) The function is homogeneous of one degree

(f) The function is strictly quasi-concave

Zhang (2006) and Agenor (2004) concur with (Palley (1996, 115) who points out that the neoclassical model was further adjusted by Tobin (1965) in a bid to factor in monetary variables and decision making which have ramifications on the steady-state capital-labour ratio. This introduction of Keynesian liquidity preference theory strengthened the model for long-term economic analysis. The main snags were its failure to endogenize the steady-state growth and the dependence on household savings to the exclusion of business investment for capital growth.

Having made these observations, Palley (ibid, 116) proposes a Solow model that is revised in this case in the following manner:

(1) $k = I – [d + n + a]$ [Capital deepening]

(2) $I = z(r)f(k)$ $z_r < 0, f_k > 0, f_{kk} < 0$ [Investment function]

(3) $r = f_k$ [Interest rate]

(4) $g_y = n + a + [f_k k/f(k)]k/l$ [Output growth]

where k = capital-labour ratio; I = gross investment per worker; d = rate of depreciation; n = rate of population growth; a = rate of labour augmenting technical change; z = marginal propensity to invest per worker; r = interest rate.

Equation (1) specifies the creation of the capital-labour ratio. Equation (2) specifies the direction of expenditure on investment, where f(k) is the intensive aspect of the production function. Equation (3) specifies the interest rate and finally, equation (4) specifies output growth rate. Dixon (2006) has come up with identical expressions.

The symbol fk/f(k) stands for the elasticity of output in the face of capital, which remains constant as articulated by the Cobb-Douglas assumption of the production function. It calls for a fall in investment growth rate expenditure in the face of the rise in the capital stock per worker for this model to attain stability. Thus, the stability scenario is depicted as:

$d^2I/dk^2 = zf_{kk} + 2z_rf_{kk}f_k + f(k)z_{rr}f_{kk}^2 + f(k)z_rf_{kkk} < 0$. This translates the steady-state capital-labour ratio and growth rates as:

(5) $k^* = k(d,n,a)$

(6) $gy = n + a$

Without the financial sector in this model, investment behaviour is not properly depicted. (117) It also ignores aggregate demand (AD) which can be viewed as impacting on investment as given below:

(7) $I = z(r,gD)f(k) \quad zr < 0, \; zgD > 0,$

where gD is the rate of AD growth which positively impacts investment expenditure. It is asserted that the steady-state rate of output growth has to be endogenized in order for AD to independently it. Thus, a pertinent Keynesian model of growth is to be predicated against a theory of endogenous output growth.

3.8.1.1 Solow-Swan model predictions

Dixon (2006, 578) agrees with Agenor's (2004, 457) comments on the above model's predictions on the long term behaviour of output, consumption and investment together with how they respond to fluctuations in the rate of population growth and savings as summarized below:

(a) The capital-effective labour ratio, the marginal product of capital, and output per unit of effective labour are constant on the balanced growth path.
(b) The steady-state growth rate of capital per worker K/L and output per worker Y/L are determined singly via the rate of technological advancement. None of these variables is dependent on the saving rate or a specified production function.
(c) Output, stock of physical assets and effective labour all grow by the same rate, given the sum of the growth rate of the workforce and the growth rate of technological advancement.
(d) A fall in the population growth rate increases the steady-state levels of the capital-effective labour ratio and output in efficiency units and decreases the rate of output, physical assets stock and effective labour growth.

(e) An increase in saving rate translates into increases in capital-effective labour ratio and output in efficiency units in the long term, without any effect on the steady-state growth rates of output, the stock of physical assets and effective labour.

It has been empirically verified that these predictions compare with the experiences of industrialised countries Romer (1989) has noted that the growth rates of labour, capital and output are approximately constant in the long run. Capital and output growth rates are almost equal as well as bigger than labour growth rate thereby authenticating that output per worker and capital per worker are increasing over time.

3.8.1.2 Limitations of the Solow – Swan model

It has been argued by Zhang (2006) that the snag behind the above model is the absence of a rational mechanism for articulating household behaviour when confronted with choice among multiple goods. Without adaptability to multiple goods and capital, the model loses its potency as a macroeconomic instrument for analysing economic growth.

3.8.2 Harrod-Domar growth model

This essentially is a cross breed of the classical and Keynesian growth models. According to Ghatak (2003) and Solow (2006), Harrod and Domar accentuate that the key element of the economy is investment which has a dual role, creating demand (from the Keynesian perspective) and capacity (from the classical view). The model assumes that capital and labour are utilized in a fixed technical or behavioural relationship and that output is the outcome of the stock of physical assets. The other underlying assumptions are the consistency of the savings ratio, the absence of time lags, the vertical integration of the economy without inter-industry delivery bottlenecks, the conditions of autarky, the zero capital depreciation and a single factor of production.

According to Ghatak (ibid) the strength of this model is derived from its simplicity. However, there are several setbacks that confront this model.

3.8.2.1 Setbacks to the Harrod-Domar model

Solow (2006) shares similar sentiments with Ghatak (2003) who has exposed a number of limitations faced by the model as outlined below:

(a) Being too aggregative, the model fails to provide detailed quantitative study just as it fails to pinpoint structural and regional challenges
(b) Estimation of income poses a serious challenge especially for less developed nations.
(c) Emphasis on surplus labour is inauthentic even in less developed countries.
(d) The absence of trade has proved a fallacy so far.

3.8.3 Keynesian basis for reformulating growth models

A wrap up of Palley's (1996) discourse involves an articulation of the four key adjustments to the neoclassical growth model based on the Keynesian plane. Below is a list of the proposed adjustments:

(a) the inception of an investment function rendering business the pivot of capital formation;
(b) the inception of an interest rates theory where investment is ignited by the marginal efficiency of capital with the rate of interest as a constraint;
(c) the establishment of a theory of aggregate demand growth and
(d) endogenizing the rate of output growth such that aggregate demand growth sways it directly or otherwise.

Zhang (2006) supports Palley's (ibid, 118) sentiments that, lacking the internal dynamics to accommodate investment, the neoclassical model can only be rescued by the Tobin (1965) monetary growth model. In this context, agents can produce wealth on monetary or capital basis. In order to shift from a focus on household savings, the investment function and capital markets are introduced. Capital is held by firms, while equities are held by households. The following scenario as outlined by Palley (ibid) shades the neo-Keynesian picture of the growth components:

(8) $k = I - [d + n + a]k$ [Capital deepening]

(9) $I = I(fk/R)$ $I^1 > 0$ [Investment function]

(10) $R = x_I r_E$ $0 < x_I < 1$ [Managerial cost of capital]

(11) $P_E E = E^*(r_E, p, k, x2)$ $E^*_{rE} > 0$, $E^*_p > 0$, $E^*_k > 0$, $E^*_{x2} < 0$ [Equity market clearing]

(12) $M = M^*(r_E, p, k, x2)$ $M^*r_E < 0$, $M^*_p < 0$, $M^*_k > 0$, $M^*_{x2} > 0$ [Money market clearing]

(13) $r_E = f_k k/P_E E$ [Market cost of capital]

(14) $g_M = m – p - n$ [Rate of real money growth]

(15) $g_y = n + a + s_k k/k$ [Rate of output growth]

(16) $p = m – g$ [Rate of inflation]

where R = managers' cost of capital; r_E = rate of return on equities; x_I = managerial discount factor applied to r_E; P_E = market price of equities; E = units of equities in issue per worker; E* = equity demand per worker; M* = real money demand per worker; x_2 = liquidity discount applied by shareholders against equities; gM = growth of real money balances per worker; g_y = rate of output growth; m = rate of nominal money supply growth; and s_k = capital's share of output.

Dixon's (2006) observation is also expressed by Palley (1996, 120). A loose linkage emanates from the dichotomy between owners (households) and managers (firms) by virtue of this dichotomy. The company operations and investment decisions are the prerogative of managers whose expenditure on investment is influenced by the managers' cost of capital.

Yet another loose linkage is brought about by what is called the equity-physical capital distinction. Here, the valuation of equities of the owners is influenced by the current and expected profit flow on the one hand and the illiquidity discount factor on the other.

Palley (1996, 123) is supported by Zhang (2006) and Dixon (2006) on the statement that the main characteristic of the neoclassical model of growth is the steady-state rate of growth that is exogenous. Such exogeneity characteristic reduces the potency of the model in terms of practical policy implications. In order to circumvent this logjam, the current endogenous growth model posits possible dynamics where steady-state growth can occur under the sway of endogenous variables.

This updated stance views technological advancement as the outcome of human capital formation and knowledge which influence research and development back and forth. Zhang (2006) states that the important factor for realising growth is the generation of novel concepts leading to the production of commodities which have to be protected by patents and copyrights. According to Romer (1990), endogenous growth is realized when human capital is given the leeway to spill over and catalyse technological advancement.

Scott (1989) observed that endogenous growth is affected by investment expenditure in research and development. Technological advancement is, in this case, the endogenous outcome of capital formation. The investment factor plays multiple roles which include spearheading the expansion of the stock of physical assets, stoking technological improvements into the production system and discovering untapped opportunities for diversified operations. It is this last role of identifying unexplored opportunities which forms the core of understanding investment from the endogenous perspective.

It is Palley's (ibid, 125) speculation that a Keynesian model of growth could be built upon the marriage of a technological advancement function to an investment function where the latter is propelled by aggregate demand. It is asserted by Palley (ibid) that the former endogenizes the equilibrium rate of growth while the latter supplies the channel through which aggregate demand can affect output growth. The Harrodian (1939) model was open for aggregate demand factors to influence changes around the natural (supply-side) rate; the Kaldorian endogenous model was open for aggregate demand factors to sway the natural rate directly, thus encouraging the interplay of the growth forces of supply and demand.

3.8.4 The Lucas model

No dichotomy is assumed between the workforce and producers as far as the Lucas model is concerned. Lucas starts with a general theory of how growth could be sustained and reasons for different growth rates among nations, through a model of impressive growth for some countries in the twentieth century, to an account of the take-off of growth in the Industrial Revolution, and finally to a prediction about patterns of growth in this new century. He relies on a paradigm where the accumulation of both physical and human capital, with emphasis on the external benefits of human capital through diffusion of new knowledge or on-the-job learning, often stimulated by trade. He considers the interaction of human capital growth and the demographic transition in the early stages of industrialization. Conclusively, Lucas uses a diffusion model to illustrate the possibility that the vast intersociety income inequality created in the course of the Industrial Revolution may have already reached its peak, and that income differences will decline in this century.

3.9 Summary

This chapter has been opened by distinguishing between economic growth and economic development. The significance of economic growth was explored as well as the discussion of growth factors and parameters. Traditional, neoclassical and modern models of growth were adequately expounded.

CHAPTER FOUR

Oil's role in Libyan development policy

4.1 Introduction

The Libyan economy is heavily dependent on hydrocarbon industries which rack in approximately 95% of export income, around 92% of the aggregate financial inflows to the treasury (CBL, 2012, p. 37) and about 70% of the GDP of the country according to US Energy Information Agency for 2012 statistics. Thus, the oil sector plays an important role in the development process.

As a developing country with huge amounts of oil and natural gas reserves, Libya has always endeavored to utilize earnings these resource endowments to promote economic growth and social development. Her development plans aimed at spreading education and health services, and extending water and electricity networks across the country, accompanied with the desire to establish productive structure in order to diversify her exports including sources of national income are operationally viable through a kick-start from the oil sector.
The oil sector in Libya was instrumental in the necessary funding for major development programs and projects. However, the Libyan economy is yet to wean itself from overreliance on oil and natural gas. Developmental efforts on implementing the initial stages for alternative sources of energy and economic benefits from the geographical location of the country remain a critical issue for the country.

4.3 Economic and social development plans

Libya has unrolled these plans and development programs for decades since attaining political independence.

In December 1951, independent Libya drew up a host of plans for the overall economic growth and social development. These grand plans were targeted at the advancement of Libya's weak agrarian community, but external support and donations could not provide a robust platform for a sustainable program. Therefore, the economy could not achieve the stated, ambitious, development goals (Alafi & Bruijn, 2009; Khodr & Ruble, 2013 and Combaz, 2014).

Alafi and Bruijn (ibid) point out that in 1962 the Libyan economy experienced a new turn as a result of the emergence of the discovery and exploitation of oil in the national economy.

Crude oil became a critical commodity in domestic production, and in the total Libyan exports, tilting positively the domestic trade balance for the first time a surplus in 1963 estimated at 35 million pounds Lippi. Previously, the budget deficit had been very high. As a result of the trade surplus scored through oil exports, Libya is no longer dependent on aid and international grants to achieve budget balance. The deflated significance of agriculture in relation to total exports culminated in the government issuing a law in 1963 to allocate 70% of the oil income for economic diversification and social development projects.

4.3.1 Economic and social development plan (1963 to 1968)

The period 1963-1968 witnessed the attempt to implement the first plan for economic and social development as the state allocated 169 million pounds to this plan. The development budget allocations have been compounded over the years to 336 million pounds targeted to effectively attain the desired progress. A brief identification of the areas earmarked for such progress is in order (Alafi and Bruijn, ibid).

Agriculture is Libya's backbone for food self-sufficiency and an immediate source of household income for the majority of the nation. The industrial capacity of Libya another area where great benefits were envisaged to accrue from processing the economy's raw materials thereby encouraging further expansion of the private sector. There was also articulated the need for investment in public services and infrastructure of education, health, transport and housing and other necessary for the growth of the national economy sectors. In respect the marginalized rural areas, the development thrust focused on the establishment of service production projects, allowing a large number of residents of these constituencies to get jobs locally, thus reducing rural-urban migration.

The plan was modified and scored high growth in gross domestic product stood at 72.3% during the plan period, and at an annual rate exceeded 5%.

4.3.2 Economic and social development plan for 1973-1975

The costs of ensuring that this plan was on course were astronomically high. Monitoring of this plan is estimated at 2.622 billion Libyan dinars in order to achieve economic and social development financial budget.

On its own, agriculture walloped 29.3%, while industry took 14.2% of the total budget as the aim to diversify sources of income and reduce imports from abroad escalated.

The oil sector has been dedicated to the proportion of 10.5% to finance the total development by the creation and establishment of six programs, each of which contains a number of projects in order to achieve sector goals. These are represented in the oil exploration and production programs such as the establishment of a national company excavating and searching for oil. The oil refining program included the establishment of three plants for oil refining, and gaseous Brega complex program, and program storage and transport of petroleum products to meet domestic demand (Alafi & Bruijn, 2009).

This plan achieved a growth in GNP of 9.2%, which is close to the target rate, and has achieved as well as the growth rate in non-oil sectors stood at 72.7%, which is greater than the target rate.

However, there were setbacks encountered by this plan, chief among them being the lack of national labour, and lack of sufficient expertise, and a lack of detailed studies on the natural resources and investment projects, and other obstacles (Combaz, 2014; and Khodr & Ruble, 2013).

4.3.3 Economic and social development plan for 1976-1980

The total amount allocated for this plan was 7.17 billion Libyan dinars. It was a carry-over of the original plans with minimal modifications. The changes entailed the trend towards heavy manufacturing yields due to poor light industry. The other change involved paying proportional attention to other sectors whose progress was negatively affected by the lion's share gobbled by the agricultural sector in the initial phases. Closer focus was also made to raise the efficiency of the human element, because the trend to industrialization requires strength skilled workforce.

The precise objectives of the plan are outlined below:

- The spread of income sources by means of the increase in the gross national product at a rate of 10.7%, and development of other non-oil sectors at an annual rate of 14.1% and the development of the oil sector by 7.8%.
- The attainment of output self-sufficiency in some products and the establishment of local products replace imports.

As for the oil and gas sector, the plan aimed to continue to apply rationalization policies, and raise the economic returns of crude oil and the quest to get to the fair rates consistent with the

Libyan oil advantages, and the expansion of exploration activity and preparation of the necessary national technical elements. There was also identified the need for expansion in the establishment of refineries and achieve optimum utilization related to the oil sector projects productive energies, expansion of education and teaching on oil affairs programs to enter the oil industry petrochemical diverse stage.

Social and Economic Transformation Plan 1976-1980 revealed that the previous plan of 1973-1975 has been developed to complete the appropriate strategic line of the Libyan economy for the liberation of the national economy from the dominance of the oil sector, and it seems evident that the State has strengthened its presence fully in the Libyan economy through ownership of many projects and factors of production, has been issuing several laws aimed at expanding and the dominance of the public sector base (Alafi & Bruijn, 2009).

4.3.4 Economic and social development plan for 1981-1985

The most important goals of economic transformation plan (1981-1985) include:

(i) To continue and to intensify Aljhoda for development to achieve economic and social transformation and achieve the highest possible rate of growth in agricultural and industrial sectors, while ensuring the integration and interdependence between economic and social sectors.
(ii) To achieve the greatest degree of self-sufficiency and self-reliance in economic construction, and to give priority to increase the efficiency and productivity of the factors of production.
(iii) To reduce production of crude oil to the appropriate level in line with the needs of the necessary financial resources for projects and programs shift.
(iv) To intensify efforts for human resources development, and increase the contribution of the Libyans in various areas of the shift from project implementation and operation, and to increase their efficiency, including also lead to the reduction of the growing foreign hand produced.

Libya's productive sectors increased the size of the estimated investments by about 96% the size port during the period of the previous plan, and has allocated $ 2410 million Libyan dinars to the agriculture sector, as well as 439.8 million dinars to the oil and natural gas, besides the $ 3024 million Libyan dinars earmarked for the manufacturing sector, with a the share of the manufacturing sector rising to 17.9% of the total volume of investment compared

with 14.9% in the previous plan. A clear focus on the industry was in an attempt to change the economic structure and to achieve the target in the gross domestic product diversity.

An evaluation of this plan showed that it did not achieve the desired results, the growth rates reached very low levels, in non-oil activities, the growth rate reached 2.7%, while the GDP growth rate stood at a negative rate (4%) of the oil sector growth rate of minus also achieved (8.9%) and has oil and natural gas sector form the largest share of the total Libyan exports, accompanied by a significant drop in oil prices in the period, resulting in lower revenue, and the low percentage of actual allocations for the development of oil revenues from 51% to about 26% by the end of the plan .

4.3.5 Economic and social development projects 1986-2006

- Project Social and Economic Transformation Plan 1986-1990
- Project Economic and Social Transformation Plan 1991-1995
- Trio program 1994-1996
- Project Social and Economic Transformation Plan 2001-2005

The authorities have adopted the implementation of the annual development budgets, and abandoned its former layout schematic, and objectives have not changed much, it was those budgets aims to create a strategy to diversify income sources and reduce dependence on oil.

4.4 Libyan oil business

Libya is appreciated for its greater crude oil reserves than any other African nation. Its total production is six percent of global output of that commodity.

4.4.1 Production and consumption of oil:

Libya's oil production came to its upper thresh hold in 1970 as she pumped about 3.3 million barrels per day, before dropping and reaching about 2 million barrels per day in 1979, and then settled in the range of 1 to 1.5 million barrels per day during the eighties and nineties, have in 2010 oil production amounted to about 1.118 million barrels per day, while domestic consumption has increased gradually over the past decades, in 1980 the volume of domestic consumption of 100 000 barrels daily, rose and became 149.7 thousand barrels, then 289 arrived in 2010. Table 4.1 shows the production trends over the years.

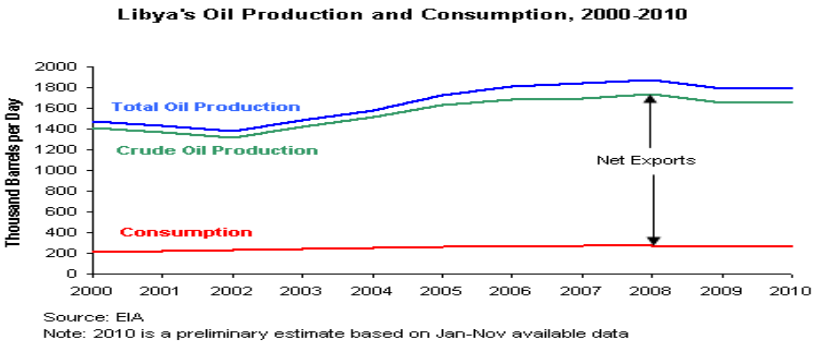
Table 4.1 : Production and consumption of oil in Libya

Libya's oil consumption (1000 barrels)	Libya's oil production (1000 barrels)	year
100	1827	1980
125	1135	1983
124.6	1061.6	1986
146.9	1182.9	1989
149.7	1470.4	1992
178.5	1428.1	1995
187.5	1448.1	1998
225.1	1427.8	2001
254.5	1582.2	2004
270	1845.4	2007
278	1875.7	2008
248	589	2010

As can be seen through the table, the production development between 1983 and 2008 by a total amounted to 65.2%, and an annual rate of 2.33%, while for domestic consumption of oil has developed a high overall rate from 1983 to 2008 amounted to about 178%, an annual rate reached 6.36% .

From the above notes that oil production in Libya has fluctuated significantly over the last three decades, due to several reasons, the most important political and economic conditions experienced by Libya in that period, if you look at oil production in that period, if we look at the development of oil production in the decades the last note that production increased gradually after 2001 after the political détente that has occurred in that year, as production fluctuation is also due to changes in global oil prices, and the crises in the Arab region, and Asian countries, and other reasons that affect the oil production stopped in year to balance world oil demand, and the commitment of Libya ceiling and distribution of quotas among the OPEC countries on the one hand, also depends on the national policy for oil designed to maintain the longevity of supplier dimensions.

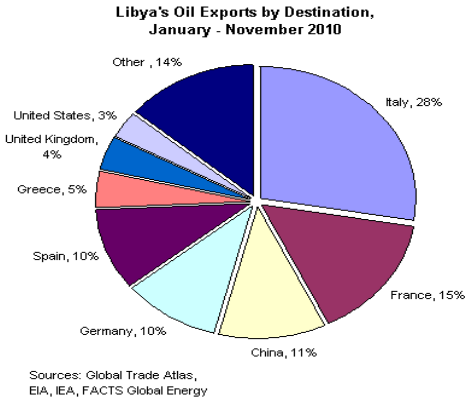
Fig. 4.1: Libya is oil production and consumption



4.4.2 Geographical distribution of Libyan exports

Notes from the figure below the geographical distribution of exports Jamahiriya, large relative importance enjoyed by Libyan exports to EU countries, reaching Libya's exports to these countries on average by 82.3% of the total Libyan exports obtained Italy the largest share of oil exports as it accounted for an average of 28 % of total exports of the European Union, followed by France, Germany and The reason for the rise in the relative importance of oil exports to EU countries, to adopt the economies of these countries on crude oil, to maintain the continuity of economic growth rates. And come Asian countries in the second place, in terms of the relative importance of oil exports, if Libyan exports to these countries, on average, amounted to about 10% of the total oil exports Jamahiriya, but this figure rose to experience by Asian countries in the development of their economies growing on oil and its request.

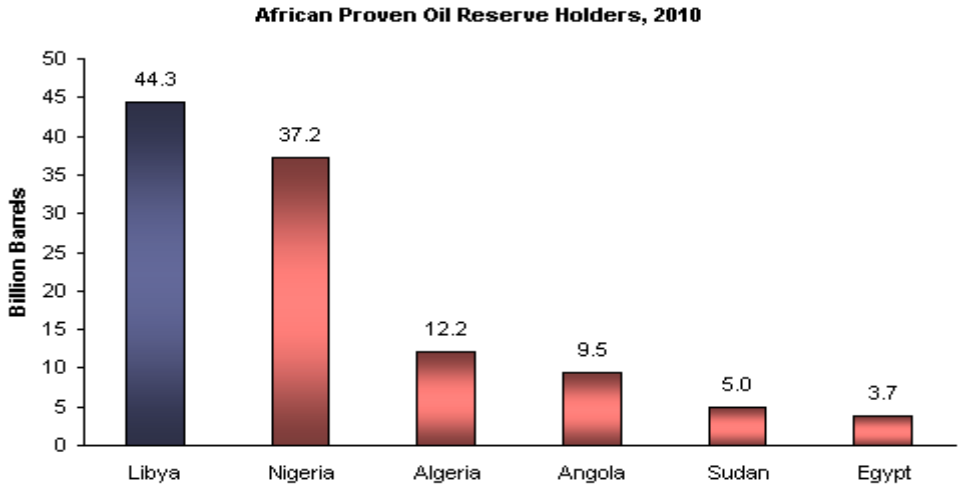
Fig. 4.2: Libya is oil exports by destination January- November 2010



4.4.3 Libya's oil reserves

Libya has oil reserves of about 44 billion barrels, which is the largest oil reserves in Africa, according to figure 4.3.

Fig. 4.3: African proven oil reserve holders, 2010



Source: Source:Energy Information Administration

4.5 The relationship between inflation and oil prices

High oil prices over the past years, the state budget has achieved significant financial returns, in turn, led to increased spending on projects and rising money supply and the high liquidity in the local market, which in turn contributed to a general rise in the price level «inflation», and the erosion of value purchasing power of the dinar in the domestic market because of this rise.

And high prices in conjunction with the rise in spending as a result of normal size, the more the level of increased national income in a country living prices raised the most expensive states in the world are richer countries

With the decline in oil prices in recent times, it is natural that at least spending on the size of projects if the decline continued in the future below the price of a barrel of oil set by the Ministry of Finance when appreciation for the general budget, and no recourse to the oil reserves, which in turn will lead to a decline in higher prices.

It is true that there are reasons and internal reasons external inflation but in Libya internal causes may be more of external factors, is considered government spending is the size of the

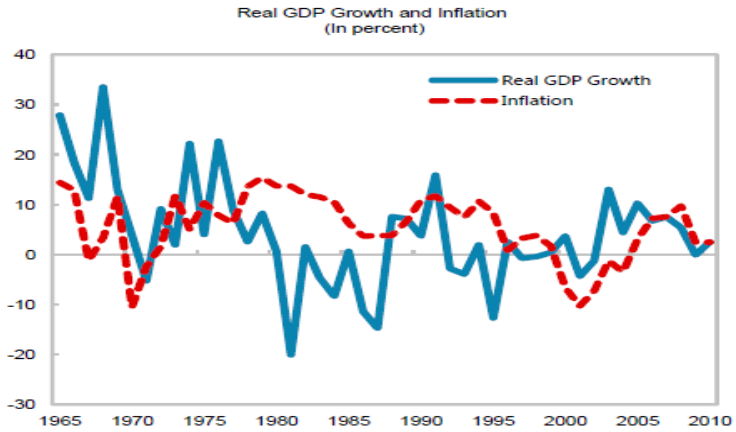
engine first of inflation, and can be measured by what happened in the economic first boom in Libya, where the reason for the high rates of inflation is high spending and failure to meet the supply of goods to the size of the growing demand because of the unprecedented renaissance that was taking place in Libya, and the high volume of the money supply after the increase in state revenues dramatically after the rise in oil prices

With the decline in oil prices in the eighties it began declining inflation rates ,, even were in the lowest level in the mid-eighties to the early nineties, which witnessed a rise of inflation rates for a limited period, due to rising oil prices during the second Gulf War and increase the size of state spending, to re-drop again after Oil prices fell on world markets, did not increase significantly until resumed oil markets rise again, which brings us back to the question again, you will fall in oil prices in the coming period to reduce the size of state spending on government projects, and thus reduce liquidity level in the local market, to the decline in prices and a decline in inflation, the size of which has become a citizen suffered in spite of efforts by the State to reduce this effect, and in raising the purchasing power of the dinar

, Even if they are related to the causes outside the domestic market, constantly falling oil prices, which is not the wish of course, by virtue of it is the primary source of revenue for the state and for the services that are offered to the citizen and the first engine of development in our country, will lead to lower energy prices in the international markets, which in turn will to reduce production costs in the industrial and agricultural sectors and services.

As regards the domestic market, it will lead the decline volume of liquidity available, whether individuals or companies to the decline in demand for materials and labor, will be the volume of supply over demand, and may also lead to a decline in rents and real estate, which may currently be the biggest impact when prices calculation of inflation rates in the domestic market

Fig. 4.4 Real GDP growth and inflation (in percent)



Source: The work of researcher depending on the attached data

4.5 Dutch disease and resource curse

Research on economic progress is replete with the unusual picture that finding and exploiting a natural resource could result in a double evil instead of a boon since the resource-endowed nation experiences more sluggish growth than other economies (Larsen; Smith; and Rajan & Subramanian, 2009). One aspect of the evil comes as a resource curse that is manifested via a speedy rise in national output occasioned by the exploitation of the resource, only to recede eventually. The other dimension of the evil is the concentration of the exploitation of that natural resource, leading to the crowding out of other sectors fundamental to the overall growth of the economy that is, the Dutch Disease (ibid).

On record are many nations which have succumbed to the disease and the curse. Rajan and Subramanian (2009) agree with Larsen and Smith Nigeria experienced economic stagnation ever since it started exploiting its oil deposits. Iran and Venezuela posted a minus one percent annual growth rate from 1965 to 1998 while Kuwait and Iraq posted a negative three percent annual growth rate during the same period.

To the contrary, Norway managed to dodge the twin evil, having discovered oil in 1969 and exploiting the resource in earnest in 1971. According to Larsen, Norway has continuously experienced an impressive, parallel growth between key sectors and the oil business. How she managed to stay afloat the Dutch Disease and the resource curse is a tool by which other nations such as Libya can replicate to their advantage.

4.6 Summary

In an effort to explore the role of oil exploitation and exportation in the economic expansion of Libya, this chapter referred to a series of economic and social development plans mooted by the government from 1965 to 2005. Her production and consumption of oil was fully explained. The possibility of Libya contracting the Dutch Disease and resource curse was also studied to great lengths. Norway's exceptional case of dribbling the two evils was seen as the best route for Libya to follow.

CHAPTER 5

DATA, MODEL AND METHODOLOGY

5.1 The Data

The data employed in this study were yearly, covering the period between 1980-2013. Four variables were used for the Libyan economy.[1] Our variables were measured as follows. Output was measured by Gross Domestic Product (GDP); The GDP can be defined as the broadest quantitative measure of a nation's total economic activity. More specifically, GDP represents the monetary value of all goods and services produced within a nation's geographic borders over a specified period of time. Changing Price (POIL) is the price levels providing a snapshot of prices at a given time, making it possible to review changes in the broad price level over time. As prices rise (inflation), or fall (deflation), consumer demand for goods is also affected, which leads to broad production measures like higher or lower gross domestic product (GDP). Inflation Rate (IFNL) is the inflation in which the percentage changes in the value of the Wholesale Price Index (WPI) on a year-on year basis. It effectively measures the change in the prices of a basket of goods and services in a year. Export Oil (EXPOIL) is a function of international trade whereby goods produced in one country are shipped to another country for future sale or trade. The sale of such goods adds to the producing nation's gross output. If used for trade, exports are exchanged for other products or services. Exports are one of the oldest forms of economic transfer, and occur on a large scale between nations that have fewer restrictions on trade, such as tariffs or subsidies.

[1] The relevant data were obtained from International Financial Statistics (IMF, IFS) and Central Bank of Libya publications.

5.2 The Method of Estimation:

The OLS analysis is used to identify the direction and significance of the relations between financial (and baking) sector and economic growth. The regressions are performed by utilizing the Ordinary Least Square (OLS) in order to estimate the regression coefficients i.e. b_i of the model (5.1). Each regression coefficient estimated by OLS coincides with the true value on the average and they have the least possible variance i.e. they are efficient so that regression analysis can produce the best linear unbiased estimates (BLUE) (Gujarati, 1999, p.203-206).

The results from the estimated model are explained using the followings:

(i) Estimated coefficients (βs),

(ii) t-ratios,

(iii) R^2

F-statistic

Beta coefficients corresponding to the macro variables are estimated for the dependent variable.

In order to test the significance of the individual coefficients, a t-test is performed. If the computed t values are larger than the critical value at a given level of significance, then the null hypothesis, that the given regression coefficient is not significantly different from zero, is rejected.

The R^2 is used to get the percentage of total variations in economic growth explained by the explanatory variables employed in the multiple regression equation.

Finally, F-test is used to test the overall significance of the model, that is, whether economic growth is linearly related to the changing oil price, the volume of export as well as the employed oil price.

CHAPTER 6

THE REGRESSION MODEL AND EMPIRICAL RESULTS

6.1 The Regression Model:

Many economists and researchers used the growth theories so as to emphasise the importance of relationship growth and between changing oil price, volume of export as well as oil price. This nexus between these two issues has been well investigated by Perkins, Radelet and Lindauer (2006), Osinubi (2005, 227); Ruta and Venables (2012, 9), and others who produced considerable evidence that the product of oil correlates with growth.

Here, the frameworks introduced by Pedrogal et al. (2009), Asafu-Adjaye, J. (2000) and Bercement, Ceylan and Dogan (2009) are conducted to investigate the role of the product of oil and the economic growth.

Let us consider the following growth model:

$$GDP_t = (POIL, EXPOIL, INFL)$$

$$GDP = a_0 + a_1 POIL + a_2 EXPOIL + a_3 INFL + e_t \quad (6.1)$$

Where *Y* is the real output, *OIL* is the change in price, *EXPOIL* is the volume of export trade, INFL is the inflation rate, and the subscript *t* indicates time.

6.2 Analysis of the Test Results:

The following issues are checked for this model:

(1) The multicolineartiy between the explanatory variables

(2) The autocorrelation between error terms

(3) The normality of error terms

(4) The heteroscedasticity

6.2.1 Multicolinearity:

In terms of broad interpretation, multicolinearity refers to the situation where there is either an exact or approximately exact linear relationship among the X variables" Gujarati (1995:345).

In order to identify whether multicolinearity exists among the variables used for this study, a correlation matrix has been estimated for the regression equation. Estimated correlation matrixes of the relevant dependent variable and prescribed explanatory variables are presented in Table (6.1). Here, a low correlation is expected to be obtained among explanatory variables, whilst, a high correlation is expected between economic growth and the explanatory variables.

Table 6.1: Estimated Correlation Matrix for Economic growth

	GDP	INFL	EXPOIL	POIL
GDP	1.000000	0.054958	0.927976	0.823161
INFL	0.054958	1.000000	-0.082944	0.147349
EXPOIL	0.927976	-0.082944	1.000000	0.874617
POIL	0.823161	0.147349	0.874617	1.000000

Table (6.1) shows that the correlation between the relevant dependent variable and other explanatory variables is acceptable.

6.2.2 Autocorrelation:

The problem of autocorrelation stems from the error terms when they are not independent from each other. The OLS estimators are efficient (i.e. they have minimum variance) and unbiased only when there is no correlation between error terms.

The most popular test for discovering autocorrelation was developed by Durbin Watson, known as the Durbin-Watson *d* statistic. First order autocorrelation was tested by testing the following null hypothesis.

$H_0 =$ No autocorrelation; if $d_U \prec d \prec 4 - d_U$

$H_A =$ Positive autocorrelation; if $d \prec d_L$

Negative autocorrelation; if $4\text{-}d_L \prec d \prec 4$

Although it is popularly used, one of the disadvantages of the *d* test is that if it falls in region of ignorance where results are inconclusive, we cannot conclude whether autocorrelation exists or not.

$d_L \leq d \leq d_U$ and $4 - d_U \prec d \prec 4 - d_L$ are the regions of ignorance.

The critical values used in testing the hypothesis are as follows:

	d_L	d_U
%5	1.20	1.72

(where n=34, k=4, computed= 1.07)

Here I compare the computed D-W *d* statistics with the tabular values presented above. At 5% significance level, the results show no autocorrelation among the successive residuals taking the form 1.72 <d<4-1.72. The computed *d* statistics of the equation is 1.07. In general, the computed results exhibit that there is first order autocorrelation among residuals. The following table also shows that there is first order autocorrelation among residuals.

Table 6.2 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	**11.72633**	**Prob. F(1,28)**	**0.0019**
Obs*R-squared	10.03605	Prob. Chi-Square(1)	0.0015

6.2.3 Normality

One of the assumptions of the method of OLS is about the probability distribution of residuals. OLS estimators of the regression coefficients are the best linear unbiased estimators if the residuals follow the normal distribution with zero mean and constant variance.

In order to check this assumption, we used the Lagrange Multipliers (LM) test by employing the following hypotheses (Greene, 1993, pp.133-134).

$H_0 = u_t = 0$ (Residuals are normally distributed),

$H_a = u_t \neq 0$ (Residuals are not normally distributed).

Our computed value of Jarque-Bera for normality is 0.703. Since the computed value of normality in both equations is smaller than the tabular value, the null hypothesis of normality of the residuals, which are normally distributed, is accepted. (prob= 0.703614).

6.2.4 Heteroscedasticity:

Another important assumption of OLS is that the residuals have the same variance i.e. they are homocedastic. If this assumption is violated, heteroscedasticity is available. The test whether residuals have the same variance or not was performed for the regression model. The hypothesis was conducted as follows:

$H_0 = \sigma^2{}_t = \sigma^2$ (Homossedasticity),

$H_a = \sigma^2{}_t \neq \sigma^2$ (Heteroscedasticity).

Since the computed value of heteroscedasticity smaller than the tabular value, the null hypothesis of heteroscedasticity is accepted. X_{HET} value is 4.47 (prob=0.0014) as can be seen in Table 5.3.

Table 6.3: Heteroskedasticity Test: White

F-statistic	4.470727	Prob. F(12,21)	0.0014
Obs*R-squared	24.43520	Prob. Chi-Square(12)	0.0177
Scaled explained SS	13.02386	Prob. Chi-Square(12)	0.3673

6.3 Empirical Results:

The empirical test results have been carried out by using Software Eviews 9.0. After the analysis of the misspecification test results for the serial correlation, autocorrelation, normality and heteroscedasticity, the results estimated from the regression equations were evaluated by using:

(i) *t*- test (i.e. individual significance test of the estimated coefficients),

(ii) F-test (i.e. overall significance test of the coefficients),

(iii) R^2 (i.e. goodness of fit) values.

The regression results between economic growth and the relevant explanatory indicators are presented in Table (5.4) for the relevant.

I hypothesize that

$H_0 : \beta_s = 0$ (Not significant)

$H_a : \beta_s \neq 0$ (Significant).

As can be seen in Table (6.2), all the variables used in the relevant equation are statistically significant on the basis of the two-tail t-tests at conventional levels, except change in the price (POIL) in the regression equation. The impact of volume of export trade (EXPOIL), inflation (INFL) and Dummy variable for the year 2011 seem to be more important than the change in the price (POIL) in the equation. In addition to this, the estimated coefficients of the relevant variables have the right signs, as they would be expected to be based on the theory. It is important to mention that dummy variable was also used to capture the effect of lack of production between 2010 and 2011. It gives a negative influence as expected.

The other important issue is to test the overall significance in which F-test was utilised. The tested null hypotheses that employed macroeconomic variables together have an influence on dependent variables as follows:

$H_0 : R^2 = 0$ (Not significant)

$H_a : R^2 \neq 0$ (Significant)

Notes: $F_{k-1,n-k} = F(4,28)$ and the tabulated F-values are as follows: 4.01 at 1% significance level, and 2.69 at 5% significance level.

The calculated F-results are significant (F-cal>F-tab at 1% significance level), i.e., 66.87. Therefore, the null hypotheses were rejected and the alternative hypotheses were accepted, which indicates that the level of regression equation holds overall significance at 1 percent.

Having conducted F-test as mentioned above, the goodness of fit of estimated multiple regressions (i.e. multiple coefficient of determination R^2) was then considered. R^2 gives the percentage of the total variation in the dependent variable explained by the explanatory variables in the regression models. The percentage of the total variation in the dependent variable economic growth explained by the utilised explanatory variables is found reasonably high with the value of 0.90 percent.

Table 6.4: Regression results for the model under inspection for the long run

Dependent Variable: GDP

Method: Least Squares

Date: 03/07/16 Time: 23:22

Sample: 1980 2013

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25.34090	1.888713	13.41702	0.0000
POIL	-0.002447	0.082375	-0.029710	0.9765
EXPOIL	0.000712	9.74E-05	7.310171	0.0000
INFL	-0.455456	0.188520	-2.415957	0.0222
DUM2011	-9.648018	3.791117	-2.544901	0.0165

R-squared	0.902186	Mean dependent var	39.82706
Adjusted R-squared	0.888694	S.D. dependent var	17.41525
S.E. of regression	5.810159	Akaike info criterion	6.492146
Sum squared resid	978.9806	Schwarz criterion	6.716611
Log likelihood	-105.3665	Hannan-Quinn criter.	6.568695
F-statistic	66.87033	Durbin-Watson stat	1.077959
Prob(F-statistic)	0.000000		

Finally, in order to get the short-run model where economic growth can be better explained in the Libyan economy, the OLS procedure was performed to choose the significant *t* values of the relevant variables in the regression equation (see Table 6.5).

Regression estimation results show that Export trade volume is found as a statistically significant variable in determining the economic growth in the Libyan economy. The following estimated results belong to the short-run period and are displayed in Table 6.5:

Table 6.5: Regression results for the model under inspection for the short run

Dependent Variable: DGDP

Method: Least Squares

Date: 03/08/16 Time: 13:01

Sample (adjusted): 1981 2013

Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.213922	0.885787	-0.241505	0.8109
DINFL	0.100346	0.225874	0.444254	0.6603
DEXPOIL	0.000826	9.03E-05	9.149072	0.0000
DPOIL	0.103729	0.125566	0.826090	0.4157
DDUM2011	-13.74747	7.674284	-1.791368	0.0841

R-squared	0.894833	Mean dependent var	0.806364
Adjusted R-squared	0.879809	S.D. dependent var	13.82704
S.E. of regression	4.793637	Akaike info criterion	6.111183
Sum squared resid	643.4106	Schwarz criterion	6.337927
Log likelihood	-95.83452	Hannan-Quinn criter.	6.187475
F-statistic	59.56077	Durbin-Watson stat	1.757308
Prob(F-statistic)	0.000000		

As can be seen in Table (6.5), the export trade volume is interestingly significant at 1% or 5% significance levels in the short-run period; however, the market dummy variable is significant

at a 10% significance level. The other variables were not found statistically significant at the conventional level in the short run period. All coefficients had the right signs and the expected impact.

Table (6.5) also shows that the R^2 value is slightly lower in the short run compared to the previous one. Furthermore, the results of the last equation presented above implying that export oil trade volume variable seem to have a relatively stronger ability about explaining the economic growth in the Libyan economy compared to the equation utilizing the variables in the long run period.

Finally, in order to the test of overall significance, the null hypotheses were rejected and the alternative hypotheses were accepted at conventional levels which states that our equations hold the overall significance since our F-results are higher than the tabulated F-values.

Notes: $F = F_{k-1,n-k}, F(59.56)$ and Notes: F and the tabulated F-values are as follows: 4.01 at 1% significance level, and 2.69 at 5% significance level.

It can be concluded that the changes in the oil prices do not have a significant impact on the Libyan economic growth in both short and long period, whilst the export trade volume has an influence in explaining the variations in the Libyan economic growth.

CHAPTER 7

CONCLUSION AND POLICY IMPLICATION

7.1 Conclusion

In this thesis, it is aimed to investigate the empirical relations between the economic growth and the inflation, the price changing of oil and the export oil volume using a growth model covering the period between 1980 and 2013. The OLS method was conducted to find out the influences of the inflation, the price changing of oil and the export oil volume in the long-run and the short-run period for the Libyan economy.

The results from the estimated regression in the long-run suggest that there is a significant relationship between the inflation, the export oil volume, and the dummy variable whereas the price changes of oil has no impact on the Libyan economic growth. In the short-run, the relationship between the export oil volumes and the dummy variables is statistically significant.

Consistent with the expectations and the findings of other studies, the Libyan economic growth and the related oil concepts used in this thesis are perfectly associated.

Contrary to the findings existed in the literature for some other countries; this thesis does not provide reasonable support for the view that changing oil price has an effect on the economic growth for the two periods. Export trade was found to be positively significant in the long-run period in explaining the economic growth. This may suggest that the findings in this thesis appear to support the view that more oil export leads to changes in the real economic activity variables.

It is noteworthy that a negative relationship was found between the economic growth variable and the dummy variable. This shows that the lack of production effect in the relevant model.

As a result, the explanatory power reached for the sample period supports the view that macroeconomic variables explain a significant part of the observed variations in the economic growth for the sample period.

7.2 Recommendations

1- The ongoing work to mitigate the control of the oil sector on economic activity and export sector .

2- Search for alternative sources of income and GDP and reduce dependence on oil revenues as a source of financing for development projects.

3- Focus on domestic production to cover domestic demand and reduce dependence on imports and restrict the goods and products that are unable Libyan economy on locally produced.

4- Libyans must be certain that the depleting oil supplier meaning it will not achieve ongoing and sustainable development in the light of the negligence of non-oil sectors.

5- The total reliance on oil exports will not achieve the desired stable economic growth and therefore must diversify income sources and create a strategy to help reduce the dependence on oil and accompanied by volatility in the prices of these alternatives and other economic sectors is the most important development of the industrial sector alternatives.

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Table 6.1: Estimated Correlation Matrix for Economic growth

	GDP	INFL	EXPOIL	POIL
GDP	1.000000	0.054958	0.927976	0.823161
INFL	0.054958	1.000000	-0.082944	0.147349
EXPOIL	0.927976	-0.082944	1.000000	0.874617
POIL	0.823161	0.147349	0.874617	1.000000

Table 6.2 Breusch-Godfrey Serial Correlation LM Test:

F-statistic	**11.72633**	**Prob. F(1,28)**	**0.0019**
Obs*R-squared	10.03605	Prob. Chi-Square(1)	0.0015

Table 6.3: Heteroskedasticity Test: White

F-statistic	4.470727	Prob. F(12,21)	0.0014
Obs*R-squared	24.43520	Prob. Chi-Square(12)	0.0177
Scaled explained SS	13.02386	Prob. Chi-Square(12)	0.3673

Table 6.4: Regression results for the model under inspection for the long run

Dependent Variable: GDP

Method: Least Squares

Date: 03/07/16 Time: 23:22

Sample: 1980 2013

Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	25.34090	1.888713	13.41702	0.0000
POIL	-0.002447	0.082375	-0.029710	0.9765
EXPOIL	0.000712	9.74E-05	7.310171	0.0000
INFL	-0.455456	0.188520	-2.415957	0.0222
DUM2011	-9.648018	3.791117	-2.544901	0.0165

R-squared	0.902186	Mean dependent var	39.82706
Adjusted R-squared	0.888694	S.D. dependent var	17.41525
S.E. of regression	5.810159	Akaike info criterion	6.492146
Sum squared resid	978.9806	Schwarz criterion	6.716611
Log likelihood	-105.3665	Hannan-Quinn criter.	6.568695
F-statistic	66.87033	Durbin-Watson stat	1.077959
Prob(F-statistic)	0.000000		

Table 6.5: Regression results for the model under inspection for the short run

Dependent Variable: DGDP

Method: Least Squares

Date: 03/08/16 Time: 13:01

Sample (adjusted): 1981 2013

Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.213922	0.885787	-0.241505	0.8109
DINFL	0.100346	0.225874	0.444254	0.6603
DEXPOIL	0.000826	9.03E-05	9.149072	0.0000
DPOIL	0.103729	0.125566	0.826090	0.4157
DDUM2011	-13.74747	7.674284	-1.791368	0.0841

R-squared	0.894833	Mean dependent var	0.806364
Adjusted R-squared	0.879809	S.D. dependent var	13.82704
S.E. of regression	4.793637	Akaike info criterion	6.111183
Sum squared resid	643.4106	Schwarz criterion	6.337927
Log likelihood	-95.83452	Hannan-Quinn criter.	6.187475
F-statistic	59.56077	Durbin-Watson stat	1.757308
Prob(F-statistic)	0.000000		

YEAR	INF	GDP	OIL P	EXP OIL
1980	14.286	38.9	35.2	6486.4
1981	13.194	33.6	34	4359.8
1982	13.804	33.5	32.38	4054.1
1983	10.512	32	29.04	3654.2
1984	12.439	29.9	28.2	3262.3
1985	9.111	29.4	27.01	3592.2
1986	3.38	24	13.53	2428.7
1987	4.423	22.3	17.73	1663.6
1988	3.131	25.1	14.24	1496.7
1989	4.464	26.6	17.31	1969.2
1990	0.721	30.6	22.26	3034.5
1991	11.7	33.9	18.62	2794.2
1992	9.45	34.4	18.44	2634.8
1993	7.474	30.9	16.33	2327.9
1994	10.671	28.8	15.53	2289
1995	8.342	32.7	16.86	2681.3
1996	3.996	35.7	20.29	3278.6
1997	3.586	36.5	18.86	3479.7
1998	3.719	30	12.28	2275.7
1999	2.574	36	17.44	3128.8
2000	-2.907	38.3	27.6	5930
2001	-8.839	34.1	23.12	6464
2002	-9.863	20.5	24.36	12937
2003	-2.057	26.2	28.1	18814
2004	1.252	33	36.05	26832
2005	2.658	47.3	50.59	41655
2006	1.465	55	61	54679
2007	6.211	67.7	69.04	60253
2008	10.401	87.2	94.1	75243
2009	2.448	63.1	60.86	44626
2010	2.458	74.8	77.38	59850
2011	15.902	34.7	107.46	22789
2012	6.072	81.91	109.45	75353
2013	2.594	65.51	105.87	56445