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THE RELATIONSHIP AMONG FOREIGN DIRECT INVESTMENT, INFLATION AND ECONOMIC GROWTH AN ARDL CO-INTEGRATION APPROACH FOR LIBYA

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DEDICATION

This work is dedicated to my parents. All I have and all I will accomplish are only possible due to their love and sacrifice. Furthermore, I would like to dedicate this work to my beloved husband and amazing sister.

ABSTRACT

The main emphasis of this study was to analyze the relationship between inflation, foreign direct investment and economic growth in Libya. This was attributed to the study used Augmented Dickey Fuller (ADF) and Phillips Perron test (PP) to check the presence of unit root and the results showed strong evidence that the model variables satisfied ARDL Bounds test requirements. Hence, the Johansen co-integration test and the ARDL Bounds test were utilized to determine the presence of a longterm relationship among the model variables. The obtained results showed that there is a continual correlation between inflation, foreign direct investment and economic growth in Libya. Further observations showed that foreign direct investment policies being implemented by the Libyan government had an adverse effect on economic growth.

Keywords: Economic Growth, Foreign Direct Investment, Inflation, Money Supply, Oil Prices, ARDL Bounds Test.

ÖZET

YABANCI DOĞRUDAN YATIRIM ARASINDAKİ İLİŞKİ VE 1970-2015 DÖNEMİNDE LIBYA'DA EKONOMİK BÜYÜME ENFLASYONU

Bu makale de; 1970-2015 döneminde Libya'daki yatırım, enflasyon ve ekonomik büyüme arasındaki ilişki incelenmiştir. Çalışma da Otoregresif Dağınik Gecikme Yaklaşımı (ARDL), birim kök varlığını kontrol etmek için Artırılmış Dickey Fuller (ADF) ve Phillips Perron testi (PP) kullanıldı. Ayrıca, ekonomik büyüme ile diğer seçilmiş makro ekonomik değişkenler (Doğrudan Yabancı Yatırım, Enflasyon, Petrol fiyatı, Para Arzı) arasındaki eş bütünleşme ve uzun vadeli ilişkinin varlığını ortaya çıkaran modelin eş entegrasyonunu kontrol etmek için sınır testi uygulanmıştır. Araştırmanın temel amacı, Libya'da doğrudan, enflasyon ve ekonomik büyüme arasındaki ilişkiyi kısa ya da uzun dönemli etkilerle incelemektir. Ayrıca Libya'nın doğrudan yabancı yatırım hacminin düşüklüğünden çekildiğini ve ekonominin büyümesine olumsuz etkisi ve yüksek enflasyon oranları analiz edilmiştir. Doğrudan yabancı yatırım desteğinin akışını istikrara kavuşturmak ve bu durumu düzeltmek için makro-ekonomik politikanın istikrarini korumak için birkaç adım atılmalıdır.

Anahtar Kelimeler: Doğrudan Yabancı Sermaye Yatırımları, Enflasyon, Eş Bütünleşme Yaklaşımına Yaklaşım, Ekonomik Büyüme

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CHAPTER I

INTRODUCTION

Despite the different economic systems that are prevalent around the world, inflation is instrumental in attaining economic objectives. However, there is broad consensus on the importance of its effect on economic growth and this effect is posited to be deeper and more profound in developing economies, including the Libyan economy. It is apparent that the inflation rate is an important indicator of economic performance of any country. As a result, this has necessitated the urgent need to measure, study and analyze this phenomenon. There is however other important factors affecting economic growth, such as foreign direct investment, which plays an essential role in the economies of host countries, especially those that are developing. This is because it is an important source of funding and offers a successful means of exploiting natural resources that are untapped. In addition, it is also an effective way of transferring modern technology and it provides modern economic production methods that have positive implications on economic development. On the other hand, the Libyan economy has many characteristics and features that make it attractive to the foreign investment zone.

Background of the Study

Advancement and progress are the most important goals of any country and to achieve these economies must take into account economic growth since it is the most important element of development. It is without doubt that a high rate of economic growth is the key to economic development for any country, but there are several factors that affect economic growth that must be observed and studied so as to gain access to the growth point.

In this research, the researcher seeks to analyze the effects of Foreign Direct Investment (FDI) and inflation on economic growth with regards to the Libyan economy. It is apparent that economic growth is an essential mechanism for reducing poverty and improving personal satisfaction attained by building nations. Both studies of the historical background of an economy and investment levels during a certain period of time, do yield strong evidence that accelerated and managed economic growth is the norm towards realizing Millennium Development

Goals; economic growth creates high-minded circles of success and opportunities. Important lessons from the previous fifty years of progress in studying economic strategy shows that economic growth offers a solid approach that can pull individuals out of poverty, thereby transferring more of their widespread targets towards a superior life (DFID, 2016).

Generally, nothing has exhibited superior changes in economic growth other than investing in societies to improve life chances of their individuals, including those of which are at the very bottom (Rodrik, 2007). Many policy designers and scholars commented that FDI can have necessary and useful outcomes on a host country's economic growth. Besides, FDI offers immediate financing capital that can be an important source of innovation and potency, whilst promoting relations with other economies that can kick start an economy.

With regards to the above arguments, countries have provided motivation to boost FDI in their economies (Laura, 2003). Besides FDI, economic analysts have long realized that unsuccessful management of exchange rates is a terrible impediment of economic growth. Avoiding serious overvaluation of a currency is a standout objective among other huge goals that can be harnessed from mixed efforts to influence economic growth around the globe and it is also firmly supported by cross-country measurable confirmation (Dani, 2008:365).

The economic growth of any country also has effective links with inflation. Tsegaye explained that inflation diminishes the level of business ventures and the ability with which helpful variables are put to use. He went on to say that and that inflation also provides insights about future economic growth and financial development. Inflation is the main subject of macroeconomics strategy among other numerous variables that offer a strong economic growth foundation (Tsegaye, 2012).

FDI can be a major driving force of the Libyan economy, however, its potential remains unrealized. Despite natural comparative advantages, Libya has one of the most diminutive levels of FDI inflows among North Africa's countries having suffered negative annual FDI of between US$80 million and US$150 million amid late years (Wallace and Wilkinson, 2004). After the lifting of sanctions by the UN in 1999, Libya is now more investment attractive and during 2003 recorded positive FDI inflows of US$ 700 million (UNCTAD, n.d) and the number has been increasing enormously since the end of 2004.

The above research strongly indicates that the economic growth of any country depends on FDI and inflation and hence the researcher desires to look for the

effects of FDI and inflation on Libya's economic growth. Libya is a well-known and important country in North Africa, which has great financial potential, a huge workforce, a long shoreline, and hydrocarbon assets. Libya confronted numerous serious stuns that forced a sizable circle of economic growth, especially FDI and high inflation levels.

In the long run, the economy stabilized and started recovering in 2012. Libya's main financial target is to achieve high and stable economic growth, which can satisfactory boost employment levels. This needs a supported approach that can assist in overcoming difficulties in achieving the maximum economic growth rate. It is especially necessary to handle weak FDI trends and inflation rates so as to improve economic growth, advance human capital and improve support to the poor (Program Note, 2015). With the fast changing global economic landscape, all countries, whether developed or developing, large or small, have the required FDI's that can make the development process swift.

FDI is frequently undertaken with the purpose of exercising control over a venture, rather than simply achieving an inert voice in corporate affairs. Thus, FDI can deeply influence a country's growth; industrial structure; employment and trade patterns (UNCTAD, 2004). Hence, FDI affects the intensity of a country's output and trade by serving as an engine of growth and development (Meyer, 1988). This unparalleled boost in the size of FDI in developing countries has stimulated studies on the linkages between economic growth and FDI and how this has intensely changed the shape and performance of the modern and current global economy (UNCTAD, 2006).

During the past two decades, FDI has been the main source of external funding for developing countries such as Libya. FDI is considered by different economists and international institutions to be a key player of enhancing economic growth and addressing developing countries' problems. Generally, FDI is characterized as an investment surrounding the transfer of human and capital assets, including financial capital, advanced technology, better managerial practices etc. Experimentally, numerous studies have been undertaken on FDI through which they reasoned that FDI supported economic growth, enhanced the way of life and decreased destitution. However, it has additionally been confirmed that FDI has negative effects. However, some proof bolstered that FDI does not influence economic growth. A few perspectives are that FDI hastens economic growth. The motivation behind this study is therefore to examine the effects of FDI on economic growth in Libya.

Problem Statement

Assertions are high that stable and highly growing economies are as a consequence of price stability (Allen, 1969). Contrasting results were obtained in Libya in which the rapid growing Libyan economy is being characterized by high inflations levels. This tends to violate theoretical aspects put forward that economic growth is conversely identified with inflation. This can be further compounded by shifts in money supply, which have been lowered by the Libyan government so as to reduce demand of the Libyan Dinar with the main emphasis of attaining exchange rate stability. However, variations in money supply are also believed to be the main reason why economic growth expands, as firms and other individuals are having access to funds to support domestic production (Paul, 1989). This contradicts the ideas outlined by (Shami, 1916) which showed that variation in money supply has a negative effect on economic growth.

Similar observations can be made in connection to FDI, which has been relatively falling due to incidences of political instabilities and yet Libya's economic growth capacity has been expanding lately. Theories put forward by (Alpharese and Shehoumi, 2006) do show that economic growth is positively related with FDI, which contradicts with the former. This study therefore subsequently analyzes the relationship between economic growth, FDI and inflation by considering the effects that are also being posed by changes in money supply and oil prices.

Objective of the Study

The fundamental aim of the study is to look at the experimental relationship between FDI, Economic Growth (EG) and Inflation (INF). To achieve this broader objective, this study is specifically defined to:

- Examine how FDI inflow policies can hamper efforts to eradicate inflationary pressure in Libya.
- Analyse how long term changes in money supply and oil prices are affecting the growth of the Libyan economy.
- Explore monetary and fiscal policy initiatives that can be employed to address inflationary, constricted growth and weak FDI problems in Libya

Research Questions

Having clearly established the desired targets above, this study therefore embarks on providing answers to the following enquiries;

What is the experimental relationship between FDI, EG and INF?

- How do FDI inflow policies hamper efforts to eradicate inflationary pressure in Libya?
- How long term changes in money supply and oil prices are affecting the growth of the Libyan economy?
- How monetary and fiscal policy initiatives can be employed to address inflationary, constricted growth and weak FDI problems in Libya?

Justification of the Study

There are several reasons why the dynamic interaction between inflation, FDI, and economic growth must be studied. Firstly, this study addresses the subject of the main themes in life and economics. This is because FDI is an important determinant of Libya's growth process. Therefore, literature that will empirically examine the causal linkage between inflation, FDI and growth is important because high rates of inflation impede FDI inflows into the economy, thus slowing the growth process. The direction of causality between FDI and growth will be crucial for the formulation of policies that will either encourage foreign investors or deter them.

Another factor that makes this study worth undertaking is that most of the studies on the linkages between inflation FDI and growth are based on cross country studies. However, the conclusion from such studies may be less relevant at country level. In addition, aggregate cross-country studies constrain the coefficients of inflation and FDI to be the same across countries. Questions therefore arise about the homogeneity of the sample of the countries in terms of economic performance, structural characteristics and political stability, as well as other factors .Finally, this study will aim to close the obvious research gap that already exists in the literature regarding the subject matter. It will also serve as a point of departure for further research, in addition to providing information to future researchers who may be interested in studying the inflation-FDI-growth nexus in Libya.

Methodology

There are several tests available to analyze the existence of a joint integration between variables (long-run equilibrium relationship between variables) and these include Johansen test, (1988; 1991) Engle and Granger test (1987), Gregory and Hansen test (1996) and Johansen and Julius test (1990). The aforementioned co-integration tests require that variables be the subject of an integrated study of the same rank. However, these test results can produce inaccurate results if the sample size is small. As a result his has led to the development of the Bounds Testing Approach which has been commonly used in much econometric analysis. This study will use the modern methodology, ARDL, which was developed by Pasaran, Im & Shin. A common feature of this test is that it does not require the variables to be integrated of order at the same degree. Estimations of the ARDL will proffer insights if a long term relationship exists between FDI, INF and GDP, as well as policy recommendations that can be used to address inflationary problems in addition to weak FDI inflows. The bounds test has gained favor against other tests such as Vector Error Correction Model (VECM) when dealing with small sample estimations for its ability to yield efficient short run results. The study employed the ARDL bounds test using secondary data from the period 1980-2015 This model was employed because it possesses the ability to offer estimates that are consistent in the long run. Furthermore, all the variables satisfactorily succumbed to the preconditions of the ARDL model. The estimation process drew focus on the association between economic growth, FDI and inflation. Their inclusion in the study is based on observations that have been made in Libya, which demarcates that these three aspects have been of considerable concern to the Libyan economy.

Organization of the Study

The study is organized into six chapters. The first chapter is an introduction that covers the background to the study, a problem statement and hypothesis, justification of the study and organization of the study. Chapter two presents a summary of the existing theoretical and empirical literature on inflation-FDI-growth interaction. Chapter three provides an overview of inflation, FDI and growth development in Libya. Chapter four describes the methodology used for the study. Chapter five focuses on models estimation and data analysis. Chapter six comprises of a summary, conclusions and policy recommendation.

CHAPTER II

LITERATURE REVIEW

Introduction

This chapter offers a detailed review of literature on foreign direct investment, inflation, economic growth and other variables used in the study. The aim of this part of the study was to identify the theoretical framework of this relationship, as well as a review of some previous experimental studies relating to the relationship between foreign investment, inflation and economic growth. To achieve this goal, this chapter is divided into two sub-categories: Firstly, a review of the relationship between economic growth and these variables in economic theory. Secondly, studies relating to the empirical relationship of these variables and economic growth.

Theoretical Review of Literature on Economic Growth

The basic objective of any economy is to grow. Policies both fiscal, monetary and others are always in place by government, monetary authorities, the Central Bank and other such institutions in order to achieve this objective and thus, economic growth has been a very old discussion point. Various theories have been put forward and this section will consider some of them that are relevant to this research.

Classical Theory: the concept of economic growth can be found in various classical economics thoughts. Most notable of these first conceptual frameworks of economic growth were in the writings of both Adam Smith and Ricardo, in which Ricardo helped Smith's significant contribution to the economic growth analysis through an analysis of the general principles of the economy in a book, Wealth of Nations. Smith explained that the specialization and division of labor must be preceded by the accumulation of capital, which comes mainly from savings, and therefore savings are the basis for economic growth. Addıtıonally division of labor along with technology ıncrease increase production, Ricardo states that agriculture is the main industry and that it is important in economic activity, which is subject to the law of diminishing returns, ignoring what has been wrought by technological advances of the effect,

Neoclassical Theory: neoclassical thoughts emerge through the contributions of the prominent economist, Alfred Marshall. The neoclassical thought opened the debate on the possibility of continued economic growth without recession, - assuming the new classical theory. The most important theoretical ideas of neoclassical economic growth are an integrated coherent process and the positive impact of a linked economy where growth in a particular sector provides a pathway for other sectors to grow. More precisely, the neoclassical model shows the economy would converge at a steady growth path along which output and capital stock would both grow at the exogenous rate of population growth. Technological improvements would therefore offset diminishing capital accumulation permitting steadily rising labor productivity and output per worker.

Keynesian Theory: Keynes explains that national income is determined by the level of demand or total spending on consumer goods, along with the level of income of investment in households and government sectors. Keynes believed that particular capital and technological advances in correlation with a certain level of employment and rising incomes, often leads to full employment. Keynes assumed that technological progress is constant and that there is a limit to which labor can increase that would result in increase of national income and investment; this is at the point of full employment. The national income at full employment point is referred to as 'potential output'. After the potential output point, increase in labor will not lead to more productivity. When the potential level of national output is not attained; the difference between it and the actual output (less than full employment) represents the level of unemployment. If the state wants to increase aggregate demand, it must strive to raise government spending to deal with issues of unemployment and recession, as well as to increase consumer and investment spending, by reducing prices, interest, grant tax benefits or subsidies. (Handa, 2000)

New Theory of Growth: supporters of this theory believe that the growth process is a natural result of the long term balance and that savings and investment are essential factors in accelerating the process of economic growth. This indicates that the variation in investment returns is due to the variation in rates of investment in human capital, education and training, research and development, in addition to the availability of the infrastructure of the national economy. Economists and proponents of this theory argue that the role of the public sector in achieving the development objectives, are contrary to neoclassical theory. Most importantly, this theory has been criticized on the assumptions of the new classical theory, because ıt

does not give it enough attention and basis of infrastructure and institutional underdevelopment problems.

Empirical Studies on Economic Growth

Some studies have also examined the nature of economic growth in countries, with particular emphasis on the determinants, as this often varies from country to country. Barro (1996) investigated the nature of e determinants of economic growth by analyzing the regression of 100 countries during the period 1960-1990, in order to identify the various common determinants that lead to economic growth between selected countries. Barro explained that there are many of the same emotional impact variables determining the long term rate of economic growth in 1960, such as the level of education and the ratio of investment, political and initial level of income stability of any individual's share of output.

Benito's (2009) research was also similar to that of Barro. He adopted method panel data models for 73 countries during the period (1960-2002) in order to discover the variables that have had a significant effect on the economic growth. The researcher in the study identified many theoretical impacts on economic growth variables. Among these factors are the political variables such as the quality of government and the strength of the factors relating to investment growth, in addition to the degree of economic openness to the state and the availability of relative stability in the macroeconomic variables.

Musabbah's (2008) study concentrated on the topic of growth determinants of the economy in Syria during the period 1970-2004.Employing the method multiple regression analysis, the research findings identified that a combination of factors explain economic growth, including overall productivity, factors of production, economic diversification, fiscal policy, monetary and trade openness, as well as human capital. The study also recommended the need for attention towards education in order to transfer its negative impact on economic growth to a positive impact. The researcher recommended that in order to increase the possibility of positive impact growth.

diverse sources of income are needed in Syria, as well as institutional reform and the localization of technology and manufacturing, in addition to improved terms of trade.

Raad's (2006) research, entitled "What explains the economic growth in

Algeria?", attempted to examine the various determinants of economic growth in Algeria for the period 1970-2000) Using the standard method, by estimating regressions (method GMM), the researcher aligned Algeria with a group of countries from different regions, namely Tunisia, Egypt, the Middle East, North Africa, Nigeria and Venezuela as the exporters of petroleum and South Korea, as the country that achieved an economic miracle. The empirical findings of the research identified that important economic variables such as investment as a share of GDP and human capital, as well as macroeconomic variables and trade openness have no significantly positive effect on the Algerian economy. The researcher explained that economic growth in Algeria is linked to oil revenues and the study recommended that attention should be given to the qualitative aspect of education and improving political aspects, including the promotion of the rule of law, in order to create an attractive environment for investment.

Theoretical Review of Literature on Inflation

There are many theoretical studies on the nature of inflation and how it affects economic growth. Firstly, inflation in economic theory; this concentrates on several economic schools to explain the reasons for inflation, relying on the theory of supply and demand as the key to the mechanism for specified prices.

Demand Theoriess: the causes of inflation due to an excess in overall demand differs depending on the sources or the school of thought one considers in this regard.

***Quantity Theory of Money*:** The change in the general price level can be explained in the simplest form using the Fisher equation., According to Fisher's equation, the theory is expressed as:

The Fisher Equation: MV = PT (the Fisher Equation)

M = Money Supply

V = Velocity of Circulation (the number of times money changes hands)

P = Average Price Level

T = Volume of Transactions of Goods and Services

Fisher considered that an increase in the velocity or rotation of money and the number of transactions where the firm and/or households carried out will increase the quantity of money, which will lead to a rise in the aggregate demand for goods and services, while the stability of the supply of goods and services is reflected on the general level of prices, which rise in the same proportion. Fisher drew his analysis of the assumptions adopted in the classic thoughts:

Use money as a broker for exchange only, not as a store of value

Full employment: The community uses all its energies and resources and under these conditions of production remains constant. Any increase in the quantity of money will inevitably lead to increased aggregate demand, which in turn leads to higher prices.

One of the most important criticisms that was directed to this theory was the violation of reality. Individuals retain a portion of the increase in their income in the form of savings, and therefore any increase in the quantity of money is not fully reflected in the general level of prices. Added to this, the change in money velocity in the short term also provides another criticism. For example, rising interest rates stimulates people to get rid of the money in their possession through the purchase of securities and thus earn money whıch leads to an increase ın short-run spending velocity of money and consequently an increase ın the general level of pricesç In addition, new technologies that have contributed to the emergence of e-cash as payments are made through various devices further leadıng to an increase ın the computer speed of money circulation. Some British economists led by Marshall and Pigou make adjustments on the Fisher equation, reaching to the formula below

Cambridge Equation: (M / p = k y (1-2)

k: inverse velocity of money.

y: real gross national product.

This equation assumes that individuals wishing to retain a percentage of their real income in the form of cash balances, taking into account their purchasing power (real assets) represent the previous equation in real assets for individuals and from that we can conclude the following formula:

M = k p y (1-3)

In the above formula (1-3) M expresses the equation for a balance between the money supply and the demand for money during a certain period of time. Increases in the demand for money as a result of an increase (k) or a result of increased cash income (y p) we assume that a constant (k) due to the stability of the rotational speed of money in the shortterm. In addition to stability in real income when there is full employment, an increase in the money supply will lead to a general level of prices rising at the same rate and spectrum leads to increased demand for money, equal to the demand for money with the money supply. This theory was based on the same assumptions as Fisher’s equation and also came under the same criticisms.

Keynesian Theory: Keynes said that the function of money is not limited to being a mediator in the exchange, but beyond that, as a store of value and as such, any increase in the quantity of money will lead to prices rising by less than the increase in the amount of money. In this case resources and idle capacity in the community can be soaked up by excess demand (caused by rising money supply, increasing the velocity of money or the use of non-performing assets by individuals) by raising production. The increase in production or prices is subject to get growing full employment, therefore the closer a country is to full employment, the greater impact on prices, and in the opposite case decreases over the impact on production.

In summary, the analysis of the causes of inflation on demand theories, depend on how flexible the aggregate supply is and the degree of responsiveness of aggregate demand. Thus the inflation rate is equal to the difference between the increase in aggregate demand and the rate of real GDP growth rate.

Supply Theories: tthese theories suggest that inflation is caused by deficiencies in the aggregate supply.

Cost Push Inflation: aaccording to this theory, the causes for inflation, are the high prices of the factors of production, such as high energy prices, wages, and profits, which is not offset by an increase in production, therefore leading to higher costs that are reflected in the general level of prices. The decline in real wages because of the high prices paid to labour unions, whodemand higher wages for workers in order to absorb the increase in prices, is that this represents an additional cost for businesses, thus raising prices again. This process is repeated continuously and produces an inflation spiral.

Structural Inflation Theory: the structural theory of inflation in developing countries in particular, are a direct result of structural changes resulting from their dependence on developed countries. If developed countries reduced demand for raw materials due to the discovery of new alternatives, such as the North oil discovery in England, this leads to a reduction of foreign currency reserves in developing countries, which prevents access to the factors of production such as plants and machinery, and decreases output and the general price level rises. The high prices of raw materials such as high oil prices are reflected on the industrial products exported from developed countries to developing countries, resulting in a rise in prices of imported goods and creating imported inflation.

Empirical Reviews of Literature on Inflation

Mukhopadhyay and Datta (2011) highlighted the main objectives of countries in maintaining high economic growth along with low inflation rates, by conducting a study to investigate the nature of the relationship between inflation and economic growth. Using various tests such as the ADF, PP unit Root test and Vector Auto regression, the conclusion of their findings was that there existed a short run causality between inflation and economic growth, however in the long run, economic growth causes inflation.

Li's (2006) study deals with the relationship between inflation and economic performance using annual data from 28 developed countries and 90 developing countries during the period 1961-2004. The results indicate that developing countries data show the presence of two thresholds for inflation. Threshold one: when inflation is below 65%, inflation effects on GDP become insignificant, but also positive. When the inflation rate is more than the threshold, the impact of inflation on economic growth will be greatly negative. In developed countries, when inflation falls below 42%, the effects on GDP become insignificant, but also positive (Hanif 2004) studied the relationship between inflation and economic growth in Fiji examining annual data that covered over 100 countries during the period 1960 – 1990 and using a system of regression equations.. The findings concluded that a negative relationship between inflation and economic growth exists. The study also explains that if inflation rises by 10% per year,this results in a reduction in the growth rate of real per capita GDP. For instance 0.2% to 0.3% per year in the short run, but in long run, this raises the inflation rate by 10 % per year and is estimated to lower the level of real GDP years by 4%-7% percent.

Malik and Chowdhury (2001) focused on the inflation economic growth relationship for India, Bangladesh, Sri Lanka and Pakistan. The focus on these countries was due to the fact that international bodies such as the IMF were pressuring these countries to lower their inflation rate. They carried out their study using the PP unit root test, ECM and co-integration. The research results offered two interesting outcomes; firstly, inflation and economic growth were positively related in such countries and it would have been detrimental to reduce the inflation rate as the IMF has suggested. Also, sensitivity of inflation rate changes, to changes in growth rates is larger than that of the growth to changes in inflation. Similar results were found in Mehmet's (2011) study. Mehmet explored the relationship

between growth, FDI, trade, and inflation in Turkey using a series of annual data during the period from 1970 - 2008. To explore the relationship between growth, FDI, trade, and inflation, the Johansen cointegration test was used. The results showed that inflation and FDI are positively related to growth Farai and Carnier (2001) studied the relationship between inflation and output in Brazil. The results concluded that there is no relationship between inflation and output in the long term, but in the short term a negative relationship between inflation and output exists. This was contrary to Faiza et al. (2012) exploration of the impact on foreign direct investment due to the growth and inflation of Pakistan using annual data during from the period 19902011. To investigate the impact of FDI on growth and inflation, time series data regression was used. The findings concluded that foreign direct investment relates positively to inflation and growth.

Some empirical studies have still been carried out on the domestic economy of Libya in a bid to understand the relationship between inflation and economic growth. The study of Chenbash (2009) concentrated on trying to examine the relationship between inflation and money supply and the exchange rate in the Libyan economy during the period 1992-2008. The results of the analysis explained that there is a direct correlation between inflation and money supply. In the narrow sense of the Libyan economy it means that an increase in money supply by 100% will lead to a higher inflation rate of 65%.

Alkoum and Agil (2013) examined the main determinants of inflation in Libya during the period 19802011 by employing the ARDL approach, which indicated that there is a co-integration relationship among the variables under study. In both the long and short term, money supply, imported inflation and real income have the most significant impact on the inflation rate in the Libyan economy. As a corollary, Zaki's (1986) study addressed the various channels in which imported inflation seeps through the Gulf Cooperation Council (GCC) economies during the period of the seventies. This study relied on imported inflation

The study also highlighted that the imported inflation phenomenon of Arab oil states, due to defects in the structural formation of GDP through the dominance of the oil sector, as well as the heavy reliance on the production and export of crude oil, also illustrated the difficulty in the fight against imported inflation in the short term.

Mehran's (2006) paper addressed the factors that can affect inflation rates in the GCC. For this purpose, the research utilized an annual data series and the panel

data analysis for the period 20022005, in order to estimate the relationship between inflation, money supply and government revenue. The research also used the Ordinary Least Squares estimate to measure the responsiveness of domestic inflation to global inflation. Results showed that there is a high degree of response to domestic inflation in the countries concerned with global inflation. The reason for this is the structural production of the economies of those countries that indicates a high degree of dependence on imports of consumer goods and capital goods, which in turn is due to the weak contribution of the agricultural and industrial sector in GDP, as these economies are highly dependent on oil. As such, in the short term these countries are vulnerable to fluctuations in world prices, imported inflation and economic instability.

Theoretical Review of Literature on Foreign Direct Investment (FDI)

The theoretical basis of previous empirical studies of the relationship between FDI and economic growth are derived from the neoclassical models of growth or growth models procedure. In the neoclassical growth models of economic growth, economic growth stems from two factors, namely technological progress and/ or the growth of the labor force. These two factors address external variables, which means that all of the mentioned workers values are determined by the values of other variables out this model. According to this model, FDI impact on output growth is only in the short term. As it is in the long term and assuming diminishing returns to capital, the FDI will not have an impact on the economic growth rate. This means t FDI will not have a lasting impact on the economic growth rate under the assumption of diminishing returns to capital and then the technological progress is a basic channel through which that affect FDI on economic growth. In Endogenous Growth models, the overall positive impact of the variable FDI on economic growth is divided into two different effects.

The first is the direct impact. The direct impact suggests that FDI will lead to increased economic growth rate if it leads to increased domestic investment growth rate. This means that the impact will only be achieved if the relationship between FDI and domestic investment are complementary, or that a positive relationship between domestic investment growth rate and FDI (Effect in-Crowding) exists. The second effect is the positive indirect impact which stipulates that FDI will increase

the rate of economic growth and this increment is accompanied by positive effects of foreign investments in the host country.

Empirical Literature Reviеw on FDI

The nature of the relationship between Foreign Direct Investment and economic growth has been the focus of many researches. Frimpong and Abayie's (2006) research studied the relationships between FDI, trade and GDP in Ghana. In this study, the data span for the study was from 19702002. ARDL was used for the analysis of the data. The study provided some interesting results. Firstly, trade openness was found to have positive impact on economic growth. However, FDI has a negative impact on growth while, FDI inflows statistically have a significant a negative effect on GDP in the long term. This spectrum exists because of the dominance of the mining sector to foreign direct investment, which does not generate direct effects of growth on the broader economy. Therefore, the study shows the importance of foreign direct investment in attracting export-oriented industrial and agricultural sectors of the economy of Ghana, so that foreign direct investment has a positive effect on growth.

The study of Abushhewa and Zarook (2016) aimed at clarifying the casual relationship between Foreign Direct Investment and economic growth in Libya. In their study, which was conducted by examining the FDI-Led Export (FLE) and Export-Led Growth Hypothesis over the period of 1992-2010 utilizing the Vector Autoregressive (VAR) model on FDI inflows, oil exports and economic growth, their findings indicate a long-term relationship between FDI and increasing oil export as well as economic growth in the economy of Libya.

Yousuf and Asghar (2013) similarly investigated the relationship between FDI, exports and economic growth for the Pakistani economy. By employing the ARDL, approach using time series annual data for the period of 1975 to 2011, the results of the study concluded that a positive relationship between FDI and exports exists in the short termsand longterm . The study concluded that government should attract FDI in those sectors that fundamentally contribute to exports directly, in order to make exports competitive in the international market, thereby providing a frontier for further economic growth in the country. A similar study was carried out by Alireza, and Strauss (2000) on Pakistan. This study aimed to measure the impact of FDI on economic growth in Pakistan in the period 19812010 using least squares

method. The results of the study however proved to be contrary to Yousuf and Asghar's (2013) study as foreign direct investment was found to have a negative role to play in this economy. Not only was it also found that FDI, impact negatively on the economic performance in Pakistan, but also debt, trade and inflation. This has been interpreted by the limited capacity of the host country to absorb and transfer knowledge and technology for further development.

Abadi (2009) suggested that incentives such as tax exemptions and other factors must be taken into account in order to encourage foreign companies. These suggestions were made after reviewing the experiences of Egypt, Jordan and Yemen in the field of attracting investment and the volume of foreign direct investment flows to these countries. This is due to economic, political and legal factors, as well as the administrative environment affecting the process of attracting foreign direct stock, as well as indirect investments, and infrastructure, which represents a dimension of the Egyptian influence on the process of attracting investments. The results also indicated that most foreign companies are reluctant to invest because of fluctuations in the rate of tax incentives and tax breaks, which are important factors that must be taken into account in order to encourage foreign companies.

The study of Aarivci and Ozturk (2012) in measuring the relationship between FDI, export and economic growth in ten transitional European countries is also worthy of mentioning. The focus of this research was Bulgaria, The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia and quarterly data time series from the period 19942008 was used.

The ARDL bounds testing approach based on Granger's causality testwas used to test the relationship between the aforementioned variables in the short and long term. The empirical findings of the study revealed that a causal relationship between FDI, export and economic growth existed in only four of the countries tested (Latvia, Czech Republic, Poland and Slovak Republic).

Khashman (2006) stated in his study, that the amount of contribution that foreign investment to the Jordanian economy and economic was enormous. He concluded his study by noting that foreign investment contributes directly to the economy of Jordan, at both public and private levels. He went on to say that foreign investment also contributes to the establishment of new economic relations with local investors and investors from other countries, as well as the the development of future economic plans and programs.

Qtro (2004) carried out extensively research by analyzing the reality of foreign

investment in Oman, and the reality of its performance, through focusing on the impact of the interaction of economic variables, as well as the impact of external factors. A View Finder approach was used along with simple statistical analysis (ordinary least squares), in the analysis of the relationship between foreign investment and activity within the Oman Stock Exchange, taking into account local variables. The study found that foreign investment had a positive influence in the country and in the growth of national income and per capita income, in regards to activating the role of the competitiveness between companies, and raising human capital and skills, as well as addressing the structural imbalances in the economy. Quazi's (2007) study concluded that a good domestic investment climate and large domestic market, yield high investment and enhance the flow of FDI to the host country.

Empirical Review of Literature on Money Supply

The nature of the relationship between money supply and economic growth is one that will peripherally be touched upon in the model of this study and as such, there is need to examine literature that has been carried out by other scholars in order to support the expectation in this study. In his study, Mohammed (2012) came to the conclusion that there is a relationship between money supply and inflation, meaning that the money supply is in charge of changes in inflation. The study went on to recommend the need for a prudent monetary policy as this will lead to reduced inflation. This prudency can be carried out by the financing of investment projects that increase production and activation tools that lead to attracting liquidity, such as securities and work, in order to reduce inflation and maintain price stability so as to achieve economic stability.

Dagher and Alsoiei (2009) set out with the aim of examining changes in the money supply and the exchange rate and the impact of domestic inflation rate in the Libyan economy during the period 1990 – 2008. Using the analysis of the data model (ECM) and Granger Causality model they concluded that changes in the growth of money supply and the exchange rate, helps to explain changes in the growth rate of inflation in the long run and short term. The study also proved that the exchange rate would have significant impact on money supply, and this is because of the nature of the drainage system that is followed by the Central Bank of Libya since

1986, which is the direction of installation and the SDR system.

Ogunmuyiwa and Ekone (2010) investigated the impact of money supply on economic growth using GDP growth rates as an indicator of economic growth using annual time series data between 1980 and 2006. They used the Ordinary Least Squares, Causality Test and ECM test. The findings of their research showed that money supply is positively related to GDP, but insignificant to GDP growth rate in Nigeria. Nouri and Samimi (2011) also carried out a similar study using the same Ordinary Least Squares (OLS) and annual data from 1974-2008 in Iran, employing the Levine and Renelt growth model. They found that there was a positive and significant relationship between money supply and economic growth in Iran. Noureddine (2013) utilizing the Vector Autoregressive Model framework, analyzed the impact of money supply on the official exchange rate of the Libyan dinar against the US Dollar for the time period of 2010-1970. The results reveal that there is direct relationship between money supply and exchange rate. In light of the findings of the research, it is recommended to activate the role of the Libyan Central Bank so that it is able to adjust to monetary expansion and that money supply should be permitted to grow, but at a rate that is in proportion with the real GDP growth rate.

However, the study of Fawwaz and Sawaie (2012) found a contrary opinion to that of Noureddine. Their paper focused on the relationship between output, money, and prices in Jordan over the period of 1976-2009 and this relationship was tested by applying the error correction model (ECM), (Engle and Granger 1987). The results showed that there was no existence of a short term relationship between money supply and GDP growth and notably, in the short term , an increase in money supply does not lead to arise in economic activity in Jordan.

Review of Empirical Literature on Oil Prices

Dhaoui and Khraief (2014) in their study of the relationship between oil price shocks and stock market returns in eight developed countries (Switzerland, France, Canada ,United Kingdom. ,Australia, Japan, Singapore and the United States.) utilized monthly data between the period 1991 and 2013 and applyed the EGARCH-in-M model. They found that a negative and significant link between oil prices and stock market return existed for the seven countries tested, except

that of Singapore, where oil prices were seen to have an insignificant effect on the stock market.

Aimer (2016) measured the effects that fluctuating oil prices have on the economic development of Libya using the Vector Autoregressive (VAR) and co-integration estimation techniques o annual series data from 2000-2015. The results of this study showed that higher oil prices were significant and had positive relationship to the economic growth of Libya.

Rodríguez and Sánchez (2004) empirically investigated whether oil price shocks impact the real economic activity for industrialized The Organisation for Economic Co-operation and Development (OECD) countries. Using monthly data of the main industrialized OECD countries to analyze the effects of oil price shocks on GDP growth, a vector auto regression (VAR) model was employed. The empirical results show that a rise in oil prices has a negative impact on economic activity in all countries included in the study, except Japan. However, the rises in oil prices affect the United Kingdom (U.K) negatively, whilst positively effecting Norway. It was also observed that a fall in oil prices had more significant effects and shock in economic growth compared to rises in oil prices. Regarding the domestic economy of Libya, the study of Abu Ghalia and Alvhl (2012) attempted to explore the nature of oil exports and its relationship, in order to evaluate the Libyan economy's openness to the outside world during the period of 19952008. The study established that Libyan exports in crude oil led to increased openness of the Libyan economy rates abroad, which increases the degree of vulnerability of the economy to be affected by external factors beyond the control of the Libyan economy.

Chapter Summary

The role of inflation and its relations to the economic growth of any economy was explicitly discussed by the Quantity Theory of Money in its classical form and sharpened further by the Fisher's Equation. While inflation can be demand caused, supply caused or structural, theories suggest that in whatever form, it is likely to have a negative effect on economic growth. This however is not fully backed by empirical studies, as various empirical literature shows that the inflation economic growth relationship can be negative, positive and uncertain in rare cases.

The FDI and economic growth relationship on the other hand, as explained by the new theory of growth model, is one of the short term positive relationships and this

is often the case even going by empirical literature. The money supply and oil prices relationship, empirically shows to be a positive one, except that the openness of economies to outside economies seems to have a negative effect on the less developed countries as their weak economic institutions puts them at a disadvantage. This often leads to various economic deficiencies, such as imported inflation.

CHAPTER III

ECONOMIC OVERVIEW OF LIBYA

Introduction

The aim of this chapter is to present an insight into the nature of the Libyan economy with particular reference to the developmental strides achieved in the economy in terms of policies and decisions made on issues that are pertinent to this study.

Overview of the Libyan Economy

Libya is an Islamic country located in northern Africa, between Egypt and Tunisia, bordered to the north by the Mediterranean, with Niger and Chad to its south east. It is the fourth biggest country in Africa with a total area of 1,759,540km square. According to World Bank data, it is an upper middle income country with a population of 6.278 million (2015 est.). Its 2015 GDP estimate is 29.153 billion (current USD) with GNI per capita (2015) estimate at 6,030 (current USD). The Libyan economy has undergone profound changes since the beginning of the last century, especially with the discovery of oil in the 1950s and early 1960s. State ownership of all such resources has helped to increase revenue tremendously which in turn has fueled ambitious developmental programs.

Although the overall objective of the development strategy in Libya was focused on directing oil revenues for the development of all economic sectors, especially the productive sectors (industry, agriculture) in an attempt to create alternatives to the oil as a natural resource; the Libyan economy so far has not been able to be free from the control of the oil sector, which still has dominant control of most of the economic activity in Libya. After independence in 1951, the major contributor to the Libyan economy was agriculture with more than 70% of the country's labor force actively involved in various agricultural activities. Agriculture also accounted for about 30% of GDP. Libya was rated as one of the poorest countries at that time. However, with the discovery of large quantities of oil in 1961 and huge revenue from exploration, it began to experience strong economic and social development .The dominance of the oil sector in Libya's economy steadily grew reaching 72.6% of GDP and also formed 90% of government revenue and 95% of export earnings in the 1970s.

The 1990's came with a different reality for Libya as it was faced with heavy sanctions from the United States (U.S.) and the United Nations (UN). These sanctions had a negative effect on economic activities. For example, in 1986, the U.S. imposed sanctions to prevent its companies from trading with Libya or conducting any financial transactions with them, as well as the freezing of Libyan property in other countrıes. This major sanction by the U.S was unsavoury for Libya as the U.S was a major importer of oil. Other sanctions followed, like the sanction in 1992 that prevented international air traffic to Libya and froze Libyan property, except those which were deemed necessary for the operations of oil conversion. However, because of the cooperation extended by Libya to resolve the "Lockerbie" issue, the UN sanctions were suspended in 1999, to be abolished completely in 2003. In addition, the U.S. sanctions were cancelled in 2004 as a result of Libya's cooperation with international efforts aimed at non-proliferation of weapons of mass destruction. Due to the high dependence of the local economy of Libya on oil revenue, all such sanctions on the oil sector gravely affected other sectors of the economy. The Libyan economy weakened dramatically during the 1990'sas a result of the acute shortage of spare parts and lack of access to raw materials and new technologies, which was due to various international sanctions imposed on Libya, and this caused major industrial and infrastructural constraints. A drop was also recorded in tourist income.

Despite all these setbacks, major developmental projects such as the Great Man-Made River Project and Smaller-scale projects, including the establishment of desalination plants, appeared to be unaffected, , but a delay in completion was recorded. This prompted the government to cut agricultural subsidies, halting all efforts to advancing the development of the agricultural sector. Libya has since taken steps towards openness, with a focus on private institutions so as to exercise their activities in retail and small industries, in addition to investment in agriculture. In 1992, the law on privatization was rectified but it failed to have the structural effect on the economy for which the initiative was implemented (Ghalia, 2008). There are a number of factors that explain the limited success of the partial opening up of the private economic activity in the early1990s. Firstly, the solution has been the linked to the main institutions that could play a role in the market (as markets real estate and cash markets) as a mechanism of privatization. Secondly, state

intervention in the economy prevailed. Its continued control over food prices and the continuation of tariff protection and, high non-tariff barriers all led to the emergence of parallel markets for consumer goods (brought in from Algeria and Tunisia). Finally, while the banks supported public institutions by granting loans, the availability of private sector loans was limited and restricted. Additionally,, property rights were not guaranteed, as international sanctions increased the basic obstacles to the movement of the market economy and as a result of its high ambitioned-oriented economy, what remained of the public sector, occupied three-quarters of employment, whereas the investment sector remained stagnant as it is not exceed 2% of GDP. Oil production growth did not reflect the possibilities that were available.

In 1962, Libya joined the Organization of Petroleum Exporting Countries (OPEC). Libya's oil production rose rapidly in 1969, with more than 3 million barrels per day being produced and =became one the strongest countries of the OPEC members at the time. Libya's production of oil has exceeded the total ceiling set by OPEC by a large margin, despite the fact that production in the last fifteen years has risen moderately compared with OPEC's growth rate of around 3% annually. But Libya's oil capabilities remained limited due to a lack of investment and economic sanctions that were imposed on Libya, which led to the oil sector being in dire need of foreign capital and technology. However, Libya's available resources allowed them to raise their production capacities. Due to the deterioration of oil revenues during the 1980s, it has seen a significant intervention of the government in the economy. Libya became a socialist state in the early 1970's and although it did not continue with the socialist system, the final stages of socialism saw efforts to encourage heavy industrialization. However, when oil prices fell all over the world at the beginning of the1980s, government revenues plummeted, which also caused a significant deterioration in economic activity.

Overview of Economic Growth in Libya

According to the 2005 Annual Report of the Central Bank of Libya, the average growth rate in the 1990s was around 2.6%. However, there were significant fluctuations from this average. For example, in 1991 a13.5% increase in growth was seen conversely, the growth rate fell during the years 1994, 1998 and 1999.

Apart from a decrease in the growth rate of the general economy, the 1990salso witnessed a decrease in GDP of non-oil growth. This was due to an increase in state control of major sectors of the economy and lower government revenues. However, after the lifting of the UN sanctions in 1999 and an increase in global oil prices, the increased revenue transmitted to the economy and the growth rate increased.

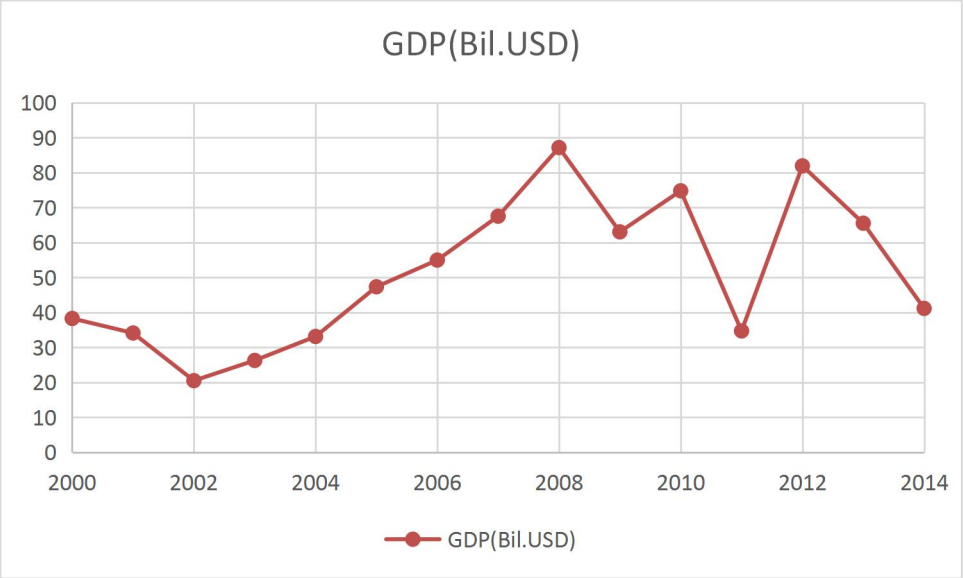
The 2006 Report of Middle East and North African Region maintains that the changing growth rate of the Libya economy has always been in accordance with changes in oil revenue, due to its over dependence on oil revenue, and that the average growth rate of the economy in the 1990swas 2.6% This was not only caused by the reduced oil revenue during this period, but also because of weak, volatile and inefficient government command of the central economy. Revenue from oil increased at the turn of the 2000s that meant the economy again experienced growth. For example, the growth rate in 2004 was 4.6% and it fell slightly the next year to 3.5%, which still was higher than the average of the nineties. The performance growth of non-oil sectors (such as manufacturing, agriculture, tourism) was slow And tt became clear that the non-oil sector needed strengthening. The Libyan economy continued to maintain positive growth levels during the years 2006 to 2010, as it became less volatile. There were also a notable shift in the economic reforms especially in strengthening the roles and autonomy of the private sector. Huge financial savings also occurred this period; record GDP growth of 6.1% was witnessed in 2008 compared the impressive growth rate of 5.6 and 5.9 in 2007 and 2006 respectively.

In the last five years (2010-2015), Libya has been engulfed by a severe political crisis and this political crisis this has adversely affected the economy of the country to the extent that the economy is now in a state of economic recession. Political conflict, poor security conditions, and the siege on the infrastructure of the oil sector has weakened the supply side of the economy, and the economy has shrunk by 10% in 2015. (Economic Observatory for Middle East and North Africa, 2006).

Political stability is very essential for the success of any economy and the political stability in Libya for the last five years has evidentially and significantly impacted various sectors of the economy negatively. Conflicts in the region have led to a siege on oil sector infrastructures that have led to lower oil production and lessened government revenue. This has led to a lower cash reserve and the inability of the state to produce, which has led to increased importation of goods, thereby reducing the exchange power of the local currency. All of these have resulted in an

unprecedented increase in the budget deficit in 2014. These harsh economic realities and have resulted in the Bank of Libya and the Ministry of Finance to formulate an unusual policy to reduce the reserve of foreign currency.

Figure 3.1: Trend of GDP (2010-2014)



Source: Computed by Researcher using data from World Bank

The Figure above shows the trend of GDP of Libya measured in billions of dollars from the period 2000-2014. As can be observed from the trend, from 2002-2008, the GDP of Libya grew slowly but steadily from 20.48 billion (USD) to 87.14 billion (USD), which is the peak in the period under review. GDP fell in 2009, as was the case in almost all economies of the world due to the global economic crisis of that year, and increased a little in 2010. The political uncertainty from 2010 has affected the trend of GDP in Libya as can be observed from the graph, because even though GDP did rise in 2012, its value reduced by half in 2014, to 41.14 billion USD.

Overview of Inflationary Patterns of Libya

According to the International Monetary Fund (IMF) working paper of 2003, the rate of inflation in Libya between the periods of 1970-2010 is moderate and although it is characterized by great volatility due to political instability and external shocks, the average inflation over this period was 5%. Consumer price has been very cyclical, with a period of low and stable prices followed by a sudden rise.

The mid 1980s in Libya was characterized by a lack of stability in the general economy which was caused by government budget revenue, reduced foreign reserve, and lower oil prices in the international market. All of the aforementioned factors contributed to the resulting fixed exchange rate policy of the government, and monetary authorities totally failed to achieve its objective. This resulted in the establishing two exchange rates (the official rate and the parallel market rate) and in doing so strengthening the currency black market. All of these economic realities led to the inflation spiral (Ali, 2012), which meant that inflationary patterns of this period were very unstable. However, in the 1990sthe consumer price index fell by 21%. (Ali, 2012). The downturn in continuous and broad base rates effected all sub-categories of the Consumer Price Index (CPI) and has subsequently been controlling the inflation. Price controls continued the process of absorption of inflation since 2000. During the period of 2000 to 2002, Libya announced an annual inflation rate of 7.2% (in cash), while stocks increased by 9.2% annually. Between February 1999 and January 2002, the unification of the Libyan dinar has contributed in the inflation absorption process. Inflation rose in consumer prices by 6.3%in 2007 to 10.4% in 2008 and then it dropped significantly to 2.4% t in 2009. This was due to changes in policies related to support and price controls, as well as international sanctions and external shocks prices, all of which contributed to the rise and fall of inflation during the period 1964-2010. After a period of deflation, resulting from the lifting of international sanctions, consumer prices rose at an average annual rate of 4.4%, , during the period 2004 to 2008, with the rate of inflation peaking at 10.4%in 2008. Although this was partly as a result of an increase in world prices, the main factor for the payment of higher inflation in consumer prices for goods tradable and non-tradable, was a response to the cyclical expansionary fiscal policy, which inflated the economic cycle during the height of the global commodity prices. With the outbreak of the financial crisis, which resulted in a contraction in global economic activity in 2009, this led to minus inflation, a, reducing the average inflation rate in consumer prices to 2.4% t in 2009-2010. From 2010 to 2015 a large increase in the general level of prices has been witnessed. This increase was a result of the events in Libya during this period that have beendiscussed earlier, such as the weakness of the banking system and its inability to attract liquidity. In a recent attempt to curb inflation, the Central Bank raised interest rates from 10% to 12%. This increase in interest rates have been analyzed by economic observers and conclusions have been drawn that it was

unable to have any positive effect, due to the inflation of capital being greater than the interest rate , and therefore, this policy is not sufficient in maintaining the purchasing power of the Libyan dinar (Noureddine 2016).

Table 3.1: Annual rate of change in the index of consumer)2000, 2007-2014 (in Libya

Years	2000	2007	2008	2009	2010	2011	2012	2013	2014
Inflation Rate	2.9	6.2	10.4	2.4	2.4	15.9	6.5	8.3	11.6

Source: Unified Arab Economic Report 2012

Overview of Foreign Direct Investment in Libya

The Libyan economy suffers from inadequate monetary volume of incoming FDI compared to many similar developing economies; and this volume of investment continues to dwindle and fluctuate from year to year. The volume of incoming FDI is confined to very limited sectors with the oil sector being the main attraction for all such investment.

In the early 1970s, Libya chose the planned economy system, which limited investment to the extent determined by the state, with imposed strict restrictions on foreign trade and wide spread restrictions on price and other numerous forms of support. This meant that the private sector was almost entirely no existent. The suffocating government intervention in the economy over these years led to sustained deterioration in the business climate, low economic growth, and increased vulnerability of the economy to external shocks. Weak institutions and inefficient governance were other obstacles to economic development. The deterioration of economic conditions continued in the mid-1980s with the fall in world oil prices and conditions worsened in the 90sas a result of international sanctions. In addition to the above, the policy of a fixed exchange rate in Libya led to its currency becomes exaggerated. This overvaluation (Overvalued) against other currencies in the exchange rate will reflect negatively the overall economy through several aspects. The most important being domestic and foreign investment opportunities, as well as its impact on trade, which will reflect on state revenue from foreign currency and thus reduce the chances of foreign investment that characterized the Libyan economy. during the period of 1980-2010.

In contrast, the dinar exchange rate against other currencies remained almost constant for decades.. The effectiveness of the reforms was difficult to see due to the absence of reform of the holistic strategy (large restrictions imposed by the shortage of human capacity and weak institutions). As a result, not the only did the Libyan economy remain largely state-controlled, it continued to suffer from a declining volume of foreign direct investment, compared to other developing economies (Gmad, 2004).

The beginning of the 21st century marked a new dawn for FDI in Libya for various reasons. Firstly, the simplification of the procedures for applying and the process of doing business, contributed to the abolition of customs duties, which granted exemptions to public institutions, and the liberalization of most prices meant that private businesses and enterprises had more leverage. The removal of restrictions on foreign trade allowed for foreign investment in some sectors. By 2005, the government had established a fund to invest, take part of the government's holdings of foreign exchange management and simplified tariffs significantly (Investment Promotion Board 2006). Table 3.2 below shows foreign direct investments allocated to the various economic sectors. These investments amounted to 189.150 million dinars in 2000, this fell to 121.323 million dinars in 2002 and then increased to 521.333 million dinars in 2005, with annual growth averaging 134.9% during the period 2000-2005.

Table 3.2: FDI Volume to various Economic Sectors (2000-2005)

Sector	Industry		Agriculture		Tourism		Health		Marine Resources		Services		Total
Year	the value	%	the value	%	the value	%	the value	%	The value		the value	%	
2000	65.000	34.4	-		124.15	65.6	-	-	-	-	-	-	189.150
2001	14.763	100.	-		-	-	-	-	-	-	-	-	14.76
2002	73.636	60.7	0.65	0.5	-	-	29.636	24.4	-	-	17.40	14.4	121.3
2003	33.979	18.2	-	-	112.5	60.3	30.17	16.2	6.50	3.5	3.56	1.8	186.7
2004	155.047	83.4	-	-	-	-	10.55	12.6	-	-	15.19	8.2	185.8
2005	399.136	76.6	-	-	-	-	65.60	-	-	-	51.87	9.9	521.3

Source: Investment Promotion Board, Annual Reports for the period 2000-2005

During the next five years, the government continued to promote privatization procedures aimed at improving the business climate, encouraging foreign investment and technology in all sectors of the economy. The measures taken by the government included:

Modifying foreign investment laws to simplify the procedures and speed up the approval and registration procedures

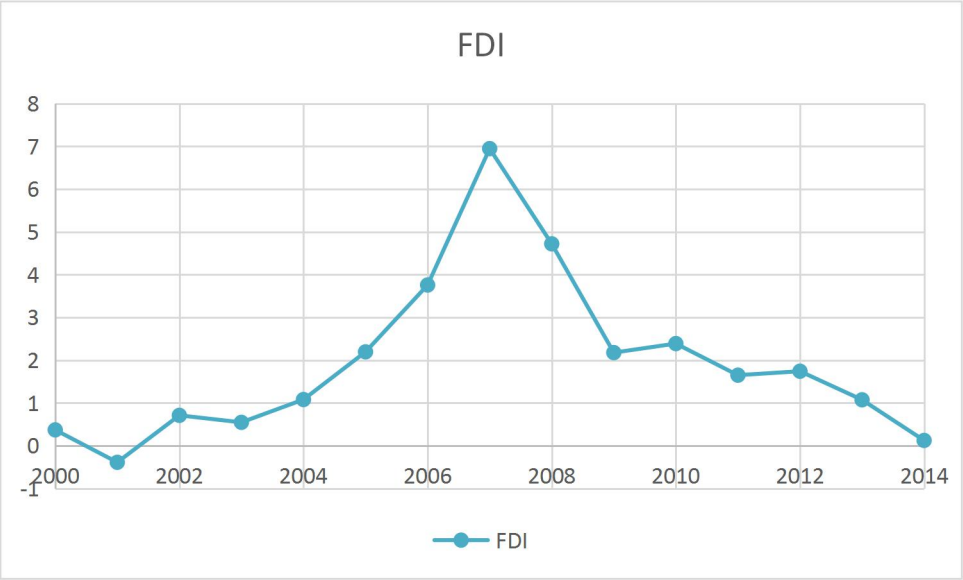
Reorganization of tax incentives in the tax code

Rationalization of the Investment Promotion Board's activities

Working actively to create a more competitive investment climate etc.

These measures have had a positive impact in the flow of good proportions of foreign investment, as shown in the World Investment Report for 2011 issued by the United Nations Conference on Trade and Development (UNCTAD), where inflows amounted to Libya have increased by more than 40% in 2010 to reach $ 3.8 billion. However, after the revolution of February 17 2011, the absence of safety along with political confusion and the closure of a large number of foreign companies, all led to a significantly low volume of foreign investments in Libya.

Figure 3.2 Trend of FDI % of GDP (2000-2014)



Source: Computed by Researcher using data from World Bank

As revealed by a research paper for the ANIMA Investment (a network which monitors FDI flows in Southern and Eastern Mediterranean countries for variations in risk and the total FDI volume) published in 2015, Libya recorded a drop in foreign investment due to the very tense conditions in the country, with the exception of the ENI group of Italy.

The dismal performance of FDI contribution to GDP can be observed in Figure 3.2 above, which shows the contribution of FDI to GDP percentage from 2000-2014. As already explained, this is the period in which government policies allowed for the highest activities of FDI in the country and it can be observed that it is yet minimal. At its highest point, FDI contributed to only 7% of the total GDP of Libya and that was in 2007.

It can be generally observed that the liberalization and openness of policy that accommodated foreign investment lead to a steady increase in FDI contributions to GDP from 2002. This continued to grow gradually, especially with the lifting of various sanctions, which meant more investment could enter the domestic economy and this peaked in 2007, when FDI contributed to about 7% of the total GDP of Libya. There was a decline in 2008 and a further decline in 2009, which can be attributed to the Global Financial Crisis of 2008/09 that affected virtually all economies around the world.

The effect of the political crisis in Libya from 2010 to date is also reflected in the contribution of FDI to GDP. It can be observed that since 2010, FDI contribution to

GDP has constantly been on the decrease from 2.39% in 2010 to 0.12% in 2014. This is not favorable for any developing economy. FDI plays a very crucial part in the economic growth of any country, as it ensures that new production frontiers can be attained in the economy using the resources from investment overseas.

CHAPTER IV

RESEARCH METHODOLOGY

Introduction

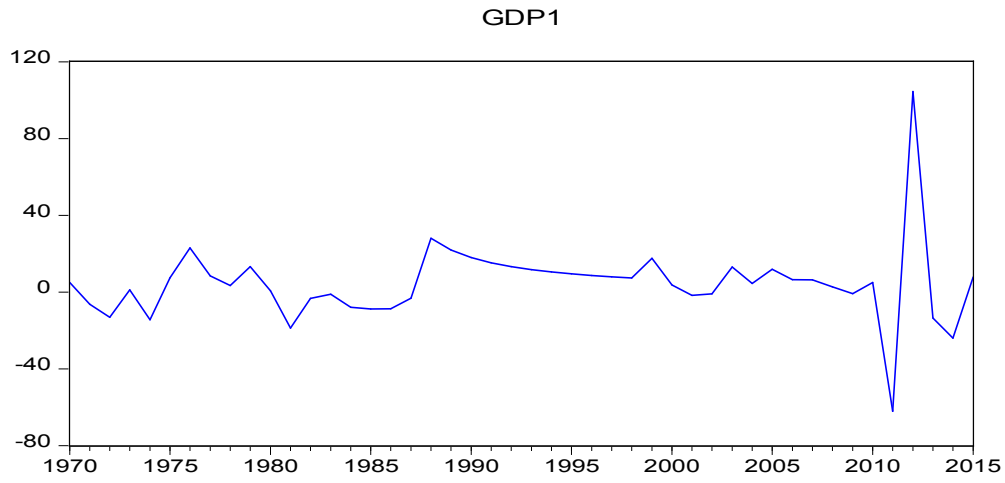
This chapter offers a description of the model variables that were utilized in the estimation process and outlines the steps and procedures used in the study to investigate the long-term relationship between inflation, foreign direct investment, money supply, oil prices and economic growth, along with the estimation techniques utilized. This study used annual time series data to analyze the relationship between FDI and economic growth from the period 1970- 2015 and this was aided by the use of the Bound Test Method developed by Pesaran and Shin.

Definition and justification of variables

The explanatory variable in the research is Economic Growth at time t, which was measured by the rate of change of a nation's GDP from year to year. The first dependent variable is Inflation at time t denoted by INF, which was measured by the consumer price index CPI. The second dependent variable is FDI at time t denoted by FDIt, which forms a controlling ownership in a business in one country by another country. The third dependent variable is oil price at time t denoted by OPt which is taken from the oil price index. The fourth dependent variable is money supply at time t denoted by MS and is calculated by all currencies in the current banks in the market.

Gross Domestic Product (GDP): there have been some significantly high growth patterns observed in the Libyan economy. However, a sharp decline in GDP has also been taking root and this has been attributed to a number of factors that include political instability, exchange rate instability and falling oil prices. The highest level of economic growth experienced averaged 104.49% in 2011, whilst the highest decline was experienced in 2011 and averaged -62.08%. This is reinforced by figure 4.1 which was established using estimates obtained from the World Bank country indicators data for the period 1970-2015.

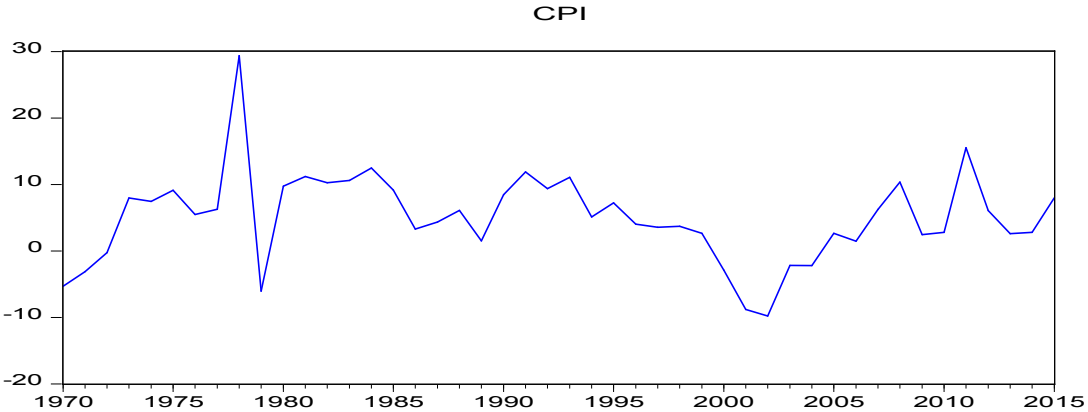
Figure 4.1: Libya's economic growth pattern 1970-2015



Source: Computed by Researcher using data from World Bank

Inflation (INF): Libya's capacity to institute prudent monetary policies that can combat the effects of inflation, have not managed to yield the desired results. as patterns of inconsistencies can be observed in the inflationary trend. Information provided in table 4.3 shows that there was a sharp increase in the consumer price index (CPI) which soared to 29.38% in 1978. Though the CPI declined to -6.04 in 1979, efforts to combat inflation began to yield satisfactory results during the period 2000-2004, in which negative CPIs were registered. Overall, inflationary pressure has been taking an upward path and this been pointed out to be one of the major reasons behind the economic hardships being experienced in Libya. Thus, the relationship between GDP and INF is viewed to be negative (Andinuur, 2013). GDP and INF data were scaled using the formula sign(x)*Abs(x)^n where x is the value to be scaled. Figure 4.2 was developed using un-scaled values.

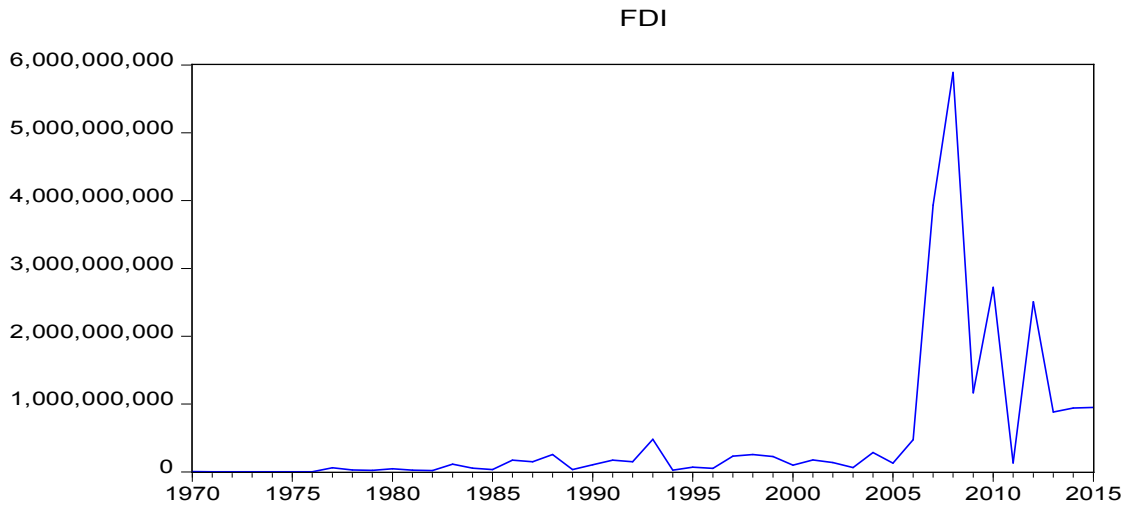
Figure 4.2: Inflation pattern 1970-2015



Source: Computed by Researcher using data from World Bank

Foreign Direct Investment (FDI): foreign direct investment is regarded to be a major driver of economic growth and most nations around the world are making frantic efforts to scoop it from investors. Andinuur (2013) posits that there is a unilateral association between GDP and FDI. Incidents of political instability have driven FDI needs to insatiable levels. The obtained FDI data is in constant US$ and was converted to logs to deal with homoscedasticity and normality issues. Figure 4.3 provides a detailed description of FDI patterns that characterized Libya from 1970-2014.

Figure 4.3: FDI pattern 1970-2015

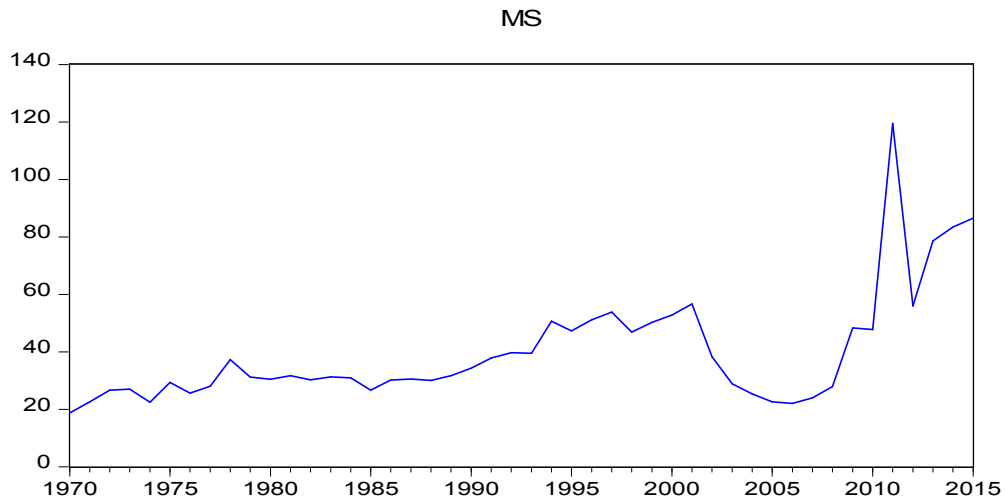


Source: Computed by Researcher using data from Federal Bank of St Louis

It can be observed that the FDI pattern has been exhibiting a staggering pattern and major changes can be observed within the period 2006-2011. Sharp increases and decline have been observed in 2008 and 2011 respectively.

Money Supply (MS): money supply is not only a monetary policy instrument, but also a tool that can be used to spur economic growth by financing economic activities. This implies that the relationship between GDP and MS hinges on the successful ability of the use of MS to achieve the desired objectives. Ping, Bin & Yong (2005) contends that there is a positive relationship between MS and economic growth while Ahmed & Suliman (2011) argue that the relationship is inverses. The Libyan monetary authorities have been injecting money into the Libyan economy so as to spur economic activities. This is shown using figure 4.4.

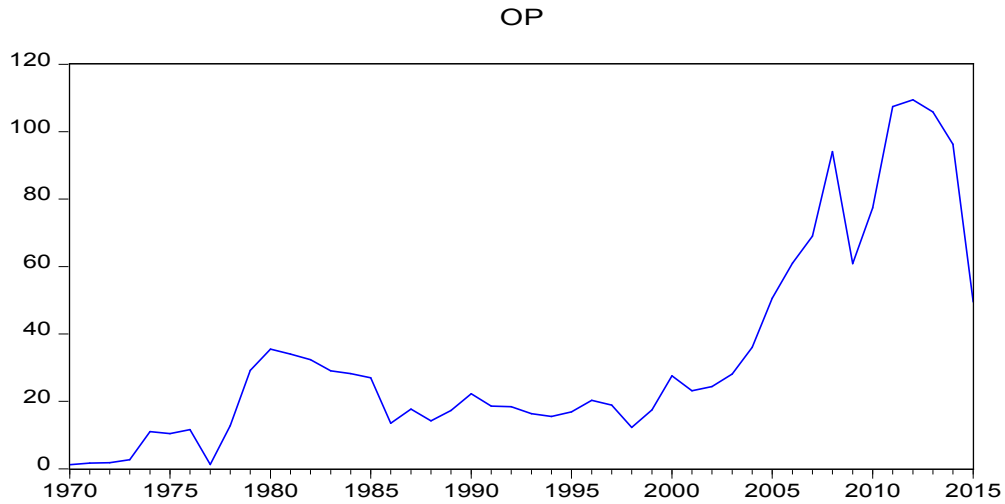
Figure 4.4: MS pattern 1970-2015



Source: Computed by Researcher using data from World Bank

Oil Prices (OP): oil is a major contributor to Libya's economic performance and most revenue inflows are from oil related products. The financial systems are also dependent on the performance of oil sales. This entails that there is a positive relationship between OP and GDP (Du, Yanan and Wei, 2010), however oil prices have been declining since 2011. = Figure 4.5 provides a description of changes in oil prices.

Figure 4.5: OP pattern 1970-2015



Source: Computed by Researcher using data from Statista

Data Sources

The ARDL was estimated using yearly model data stretching from the period 1970-2015. Below is table of the associated data sources and period of study for each model variable.

Table 4.1: Model variable, data sources and time scale

VARIABLE	SOURCE	TIME SCALE
GDP	World Bank	1970-2015
INF	World Bank	1970-2015
FDI	Federal Bank of St Louis	1970-2015
MS	World Bank	1970-2015
OP	STATISTA	1970-2015

Source: Computed by Researcher

Stationarity Test

The essence of stationarity thrives to ensure that the obtained results are not spurious. Dickey and Fuller (1979) assert that non-stationarity is a situation which occurs when the model variable has a unit root. Tests are therefore conducted to determine if the model variables have a unit root or not. The estimation of the ARDL requires that the variables be either composed of stationary and non-stationary variables at levels, but all of them must not be integrated of the order 2 (Pasaran et al., 2001). The order of integration is therefore determined by tests such as Phillips Perron (PP) and the Augmented Dickey Fuller Test (ADF). The characterizing feature of both tests is that there are initially undertaken at levels: 1st difference, then 2nd difference and either at constant with no trend, or at constant with trend. Though contentions seem to show that the PP has some age over the ADF, which is more responsive to changes in lags structure, both tests will be used in this study to determine if the variables have a unit root or not. The formal ADF test procedure can be presented by the following equation.

$\Delta Xt=\alpha 0+\alpha 1t+\beta Xt-1+\Sigma\delta\rho j=1j\Delta Xt-1+Ut$……eq (4.1)

Were ΔXt denotes first difference of the time series data while ρ represent the la order and t is representing time. In the ADF result, we will reject the null hypothesis that variable (x) is no stationary (HO:β=0) if β is significantly negative.

Empirical Framework

The following model will be used to analyze the empirical relationship between FDI, INL, OP MS and GDP and can be implicitly stated as follows:

EG = *f*(INF, FDI, OP,MS)…… eq (4.2)

The equation (4.1) can be transformed into linear function consequently:

$EGt = \beta 0 + \beta_1 INFt + \beta_2 FDIt + \beta_3 OPt + \beta_4 MSt + \varepsilon t$ …..…… eq (4.3)

Where,

EG_t = Economic Growth at time t

INF_t = Inflation at time t

FDI_t = Foreign Direct Investment at time t

OP_t = oil price at time t

MS_t = money supply at time t

B_0 = the slope or the constant of the model

$B_1 – B_4$ = coefficient of the explanatory variables in the model

εt = error term

The entire variables are transformed into natural logarithm to eardicate heteroscedasticity in the time series data and hence the ultimate model can be stated as follows;

$\ln EGt = \beta_0 + \beta_1 \ln INFt + \beta_2 \ln FDIt + \beta_3 \ln OPt + \beta_4 MSt + \varepsilon t$…….. eq (4.4)

ARDL Model Specification

The study will be based on the ARDL estimation procedure. The usage of the ARDL bounds test is justified by its ability to establish the existence of long run dynamic and co-integration between variables. Further justification of the ARDL bounds test stems from ideas developed by Pasaran, Im, & Shin, (1995), which Integrated of order at different lvariables whose stationarity is either I(0) or I(1)(.

The adoption of the ARDL does not only lie in its simplicity, but also in its ability to be applied irrespective of mutual, pure integration or total Stationarity (Pasaran and Shin, 2001). The evidence of co-integration can signify the absence of spurious results. Narayan and Narayan (2006) further outlined that the estimation of the ARDL, results in the establishment of both short term and long term results.

The bounds test has gained favor against other tests, such as VECM, when dealing with small sample size, for its ability to yield efficient short run results (Adinuur, 2013). The error correction term that is specified by ARDL is considered to be unrestricted and can be estimated using the following procedures; the estimation of the ARDL confers with the ability to ascertain, if the variables are integrated. This can be achieved by comparing the obtained F-statistic value with the proposed critical values I(0) and I(I). If the obtained F-statistic outweighs the upper bounds value I(I), then conclusions can be made that there is cointegration or joint significance among the variables. Thus, a null hypothesis asserting that there is no cointegration can be formulated and tested. This can alternatively be described as follows;

H_0: There is no long term relationship among the variables, that is, ($_Y = 0 = \beta = \lambda = 0$).

H_1: There is no long term relationship among the variables, that is, ($_Y \neq 0 \neq \beta \neq \lambda \neq 0$).

The error term is integrated into equations (4.5),(4.6) , (4.7), (4.8) and (4.9), so as to obtain short term estimators, and this resultantly produces the following set of equations;

$$\Delta GDPt = \beta 0 + \sum^{n}_{i=1}\lambda 1i\Delta INF_{t-1} + \sum^{n}_{i=1}\beta 1i\Delta FDI_{t-1} + \sum^{n}_{i=1}\beta_2 1i\Delta MS_{t-1} + \sum^{n}_{i=1}\beta_3 1i\Delta OP_{t-1} + \sum^{n}_{i=1}\lambda 1i\Delta Y_{t-1} + \lambda_1 ECTM_{t-1} + \mu_t \quad \text{eq}(4.5)$$

$$\Delta FDIt = \beta 0 + \sum^{n}_{i=1}\lambda 1i\Delta INF_{t-1} + \sum^{n}_{i=1}\beta 1i\Delta MS_{t-1} + \sum^{n}_{i=1}\beta_2 1i\Delta OP_{t-1} + \sum^{n}_{i=1}\gamma 1i\Delta Y_{t-1} + \lambda_1 ECM_{t-1} + \mu_t \quad \text{eq (4.(6}$$

$$\Delta INFt = \beta 0 + \sum^{n}_{i=1}\beta 1i\Delta FDI_{t-1} + \sum^{n}_{i=1}\beta_2 1i\Delta MS_{t-1} + \sum^{n}_{i=1}\beta_3 1i\Delta OP_{t-1} + \sum^{n}_{i=1}\gamma 1i\Delta GDP_{t-1} + \lambda_1 ECM_{t-1} + \mu_t \quad \text{eq (4.7)}$$

$$\Delta MSt = \beta 0 + \sum^{n}_{i=1}\lambda 1i\Delta INF_{t-1} + \sum^{n}_{i=1}\beta 1i\Delta FDI_{t-1} + \sum^{n}_{i=1}\beta_2 1i\Delta OP_{t-1} + \sum^{n}_{i=1}\gamma 1i\Delta Y_{t-1} + \lambda_1 ECM_{t-1} + \mu_t \quad \text{eq (4.8)}$$

$$\Delta OPt = \beta 0 + \sum^{n}_{i=1}\lambda 1i\Delta INF_{t-1} + \sum^{n}_{i=1}\beta 1i\Delta FDI_{t-1} + \sum^{n}_{i=1}\beta_2 1i\Delta MS_{t-1} + \sum^{n}_{i=1}\gamma 1i\Delta GDP_{t-1} + \lambda_1 ECM_{t-1} + \mu_t \quad \text{eq (4.9)}$$

Equations (4.5),(4.6),(4.7),(4.8) and(4.9) are essential in determining the speed of adjustment. Spend of adjustment is considered to be the rate at which the variables will return to a long term equilibrium. (Erricson, 1991) .

Diagnostic tests

Diagnostic tests which encompass heteroscedasticity, serial correlation and normality tests will be undertaken to determine if the model variables do violate the OLS assumptions. The notion of heteroscedasticity is derived from a scenario that exists when the error terms are considered to be heteroskedasticity, that is, not equal. There are numerous cases that can be attributed towards the causes of heteroskedasticity. Greene (2003) asserts that model miss-medication, such as omitting a variable or a wrong functional, can cause heteroscedasticity. Measurement error problems can also be pointed out as another cause behind the problem of heteroscedasticity. When detected, heteroskedasticity implies that the assumption of ordinary least squares has been violated and consequently affects OLS estimators. The same applies with serial correlation and normality. Hence, it is of paramount importance that the estimated model satisfies the ordinary least squares assumptions (Gujarat, 2009). The Breusch Godfrey and Arch Test will be employed to ascertain the presence of homoscedasticity, while serial correlation tests will be undertaken using the Breusch Godfrey Serial correlation LM test. This will be supported by the Cusum test and Cusum of squares stability tests.

CHAPTER V

ANALYSIS AND PRESENTATION OF FINDINGS

Introduction

This chapter addresses the empirical procedures that were used to estimate and test the ARDL model. As such, it deals with unit root tests, bounds test estimation procedure, model selection, diagnostic tests and hypothesis testing. This aids in the analysis and presentation of the obtained data so that conclusions can be easily drawn and policy recommendations proffered.

Stationarity test

The prime focus of stationarity tests were to check if the model variables have a unit root and to determine which model would be used to estimate the relationship between economic growth, foreign direct investment and inflation.

Table 5.1: ADF test at level

	ADF at level (intercept)			ADF at level (trend and intercept)		
VARIABLE	T-statistic	Critical value at 5%	Prob. p-value	T-statistic	Critical value at 5%	Prob. p-value
GDP	-8.957176	-2.92814	0.0000*	-8.94058	-3.513075	0.0000*
INF	-5.084608	-2.92814	0.0000*	-5.23359	-3.513075	0.0005*
FDI	-3.764401	-2.92814	0.0062*	-4.53321	-3.513075	0.0038*
MS	-0.772081	-2.929734	0.8171	-1.62664	-3.515523	0.7661
OP	-1.536615	-2.92814	0.5062	-2.02074	-3.513075	0.5744

Source: Computed by Researcher

*, ** ***and, Significant at 0.01, 0.05 and 0.10 significance level

The requirements of the ARDL bounds tests are that the model variables can contain a mixture of stationary and non-stationary variables, which can be at level or first difference. However, all the variables must not be stationary at 2nd difference.

Table 5.2: ADF at first difference

	ADF at 1st Differences (intercept)			ADF at 1st Differences		
VARIABLE	T-statistic	Critical value at 5%	Prob. p-value	T-statistic	Critical value at 5%	Prop. p-value
GDP	-6.24664	-3.59662	0.0000*	-6.11998	-3.52079	0.0000*
INF	-11.28026	-2.92973	0.0000*	-11.1780	3.515523	0.0000*
FDI	-10.04142	-2.92973	0.0000*	-9.92126	3.515523	0.0000*
MS	-11.94056	-2.92973	0.0000*	-11.9201	3.515523	0.0000*
OP	-4.98747	-2.929734	0.0002*	-4.84700	3.515523	0.0016*

Source: Computed by Researcher

*, ** ***and, Significant at 0.01, 0.05 and 0.10 significance level

Table 5.3: Phillips Perron Stationarity tests at level

	PP at level (intercept)			PP at level (trend intercept)		
VARIABLE	T-statistic	Critical value at 5%	Prob.p-value	T-statistic	Critical value at 5%	Prob.p-value
GDP	-9.0088	2.92814	0.0000*	-9.0009	-3.513075	0.0000*
INF	-5.23096	2.928142	0.0001*	-5.25305	-3.513075	0.0005*
FDI	-3.76440	2.928142	0.0062*	-458272	-3.513075	0.0033*
MS	-2.31141	2.928142	0.1729	-3.70621	-3.513075	0.0398**
OP	-1.582219	2.928142	0.4833	-2.13034	-3.513075	0.5154

Source: Computed by Researcher

*, ** ***and, Significant at 0.01, 0.05 and 0.10 significance level

The null hypotheses that GDP, INF and FDI have a unit root are rejected at 5% at both levels, as well as first difference, since its obtained p-values are less than 5%. Information provided in table 5.1 and 5.2 also shows that variables MS and OP are non-stationary at all levels, but becomes stationary when first differenced. Such a condition implies that the variable GDP, INF and FDI are I(0), while MS and OP are I(1) and thus fulfilling the conditions of bounds test.

Deductions can also be made using PP stationarity test results shown in table 5.3 and 5.4, where the variable GDP, INF and FDI are I(0), while MS and OP are I(1) and thus further fulfilling the conditions of bounds test. Hence, the ARDL bounds can be estimated. However, MS is I(0) at level with intercept and trend.

Table 5.4: Phillips Perron Stationarity tests at 1st Difference

	PP at 1st Differences (intercept)			PP at 1st Differences (trend intercept)		
VARIABLE	T-statistic	Critical value at 5%	Prob.p-value	T-statistic	Critical value at 5%	Prob.p-value
GDP	-25.09258	2.929734	0.0001*	-25.1459	-3.515523	0.0000*
INF	-13.09267	2.929734	0.0000*	-13.0228	3.515523	0.0000*
FDI	-22.88808	2.929734	0.0001*	-22.3318	3.515523	0.0000*
MS	-12.0163	2.929734	0.0000*	-12.08472	3.515523	0.0000*
OP	-4.98747	-2.929734	0.0002*	-4.84700	3.515523	0.0016*

Source: Computed by Researcher

*, Significant at 0.01significance level

Descriptive Statistics

Information provided in table 5.5 depicts that an average GDP growth of 4.04% was experienced during the period 1980 -2013. The minimum growth rate experienced clocked -0.102%, whilst the maximum growth rate was pegged at 9.30%. Inflationary pressure experienced during the period in question can be said to have been relatively lowly contained, as the maximum inflationary pressure recorded was 6.76%. The amount of foreign direct investments that were racked in, have not been substantial and this can be evidenced by a maximum rate of 22.50. Significant deviations of 2.22 were observed to be in relation with FDI and this entails that FDI inflows in Libya have a high positive responsive effect. A skewness of -9.889 entails that inflation was more to the decline side during the period 1980-2013.

Table 5.5: Descriptive statistics in log terms

	LGDP	LINFL	LFDI	LMS	LOP
Mean	4.0437	3.223	18.2594	3.6004	3.0472
Min	-1.0189	-2.7644	13.8155	2.9296	0.1906
Max	9.2982	6.7606	22.4962	4.7833	4.6955
Std. Dev	2.1463	1.665	2.2171	0.4047	1.1167
Skewness	-0.3573	-0.9888	-0.4177	0.8742	0.9419

Source: Computed by Researcher

ARDL Bounds test

The estimation of the ARDL test was to determine the long run dynamic relationship and co-integration between economic growth, foreign direct investment and inflation. ARDL Bounds tests results are shown in table 5.6.

Table 5.6: ARDL Bounds test for co-integration

Significance	I)0) Bound	I)1(Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06
F-statistic 5.3437		

H_0: There is no long term relationship among the variables, that is,

($_Y = 0=\beta= \lambda=0$).

H_1: There is no long term relationship among the variables, that is,

($_Y \neq 0\neq \beta \neq \lambda \neq 0$).

We reject null hypothesis and except alternative hypothesis the Long-run cointegration exist. The standard norm of the ARDL bounds test is that the obtained F-statistic is greater than the upper critical bounds values. Using the established results, it can be observed that the obtained F-statistic value of 5.3437 exceeds all the obtained upper bounds values at 1%, 2.5%, 5% and 10%. Conclusions can therefore be made that there is a long term dynamic relationship and co integration between economic growth, foreign direct investment and inflation.

Short Run Results: the estimated ARDL bounds model also offered short run results of the dynamic short run relationship between economic growth, foreign direct investment and inflation. Table 5.7 denotes that the net effects between GDP and FDI are negative, with coefficients of FDI there is a bilateral relationship between economic growth and FDI of -1.049001 and 0.7528850. This entails that an increase in FDI results in a decline in GDP by the net effect. This supports results established by Andinuur (2013), which showed that there is a negative relationship between economic growth and FDI. Possible reasons suggest that FDI policies are extremely detrimental to Libya's economic growth. This is because the investment climate in Libya has deteriorated significantly as a result of political

instability. Thus, acts of instability have increased the risk of investing in Libya and this is dissuading investments. Hence, efforts by the Libya government to lure in more investments might be out of desperation and can therefore be done in a manner that affects the performance of other macroeconomic variables.

Another possible reason for the negative effect of FDI on economic growth in Libya is the fact that the Libya economy has suffered from many international sanctions over the period in review and as a result, FDI effect over the past years has been so minimal, Further reason for this negative relationship between economic growth and FDI is the fact that for a very long time, the economy of Libya was a closed one. The implication of this is that lesser foreign investment was invested in the economy of Libya in the period under review.

Table 5.7: Short run ARDL estimations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	0.416087	0.150474	2.765172	0.0105*
LCPI	0.294807	0.244774	1.204407	0.2397
LCPI(-1)	-0.652826	0.254171	-1.575125	0.0166*
LCP1(-2)	-0.292468	0.185679	-3.082412	0.1278
LFDI	-1.049001	0.340318	1.856633	0.0049*
LFDI(-1)	0.752885	0.405511	-2.326216	0.0752***
LMS	-4.846056	2.083236	-2.432173	0.0284**
LMS(-1)	6.357054	2.029607	3.132160	0.0044*
LMS(-2)	1.035530	1.841437	0.562349	0.5789
LMS(-3)	0.943017	1.664658	0.566493	0.5761
LMS(-4)	-5.238808	1.655915	-3.163694	0.0041*
LOP	-1.160538	0.750389	-1.546582	0.1345
LOP(-1)	1.302411	0.727437	1.790409	0.0855***
LOP(-2)	-1.042188	0.633961	-1.643932	0.1127
LOP(-3)	2.316990	0.648456	3.573088	0.0015*
LOP(-4)	-0.987176	0.613378	-1.609409	0.1201
C	15.10080	6.430764	2.348212	0.0271**
R-Square 0.6059				

*, ** and *** Significant at 0.01, 0.05 and 0.10 significance level

Source: Computed by Researcher

Further observations can be made that indicate that there is an inverse relationship between economic growth and inflation. Net negative effects of -0.652826 and -0.292468 in lag 1 and 2 respectively, exceed positive effects at levels with a coefficient of 0.294807. This means that economic growth will decline by net effect following increases in inflation. This supports study results obtained by Andinuur (2013) that showed strong evidence of the existence of a negative relationship between inflation and economic growth. This is because inflation erodes the purchasing power of money and other fixed interest bearing investments. Hence, economic activity slows down as producers and consumers cut down their respective production and consumption levels, since production and consumption become expensive. The relationships between both FDI and inflation are however insignificant at 5%, whereas the constant is significant at 5%. It can also be noted that the net effects of money supply on economic growth are negative and this augments findings by Ahmed & Suliman (2011), which outlined that increases in money supply will hamper economic growth. This is because increases in money supply are not causing an expansion in production, but are rather causing inflationary pressure. Net effects of oil prices on economic growth are positive and this reinforces study results obtained by Du, Yanan and Wei (2010), which postulate that positive changes in oil prices will result in An increase in economic growth. This suggests that sales receipts from oil sales are being used to fund other domestic activities, which are further resulting in an increase in economic growth.

$\mathbf{R^2}$ it 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 utilized explanatory variables is found reasonably high with the value of 0.60 percent.

Long Run Results: the established long run results are analogous to the obtained short run results and this entails that the relationship between economic growth, inflation and FDI is the same in both the short run and long run. However, the magnitude of effect of the variables is the one that differs.

The estimated coefficient of the long-run relationship shows that only OP has positive effect on economic growth in Libya under the study review. In addition, t-statistics shows the variable is insignificant at 5 percent level of significance as the probability value is more than 0.05 (p-value > 0.05).

Table 5.8: Long run ARDL results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LINF	-1.114011	0.652537	-1.707200	0.1002***
LFDI	-0.507123	0.571291	-0.887679	0.3832
LMS	-2.995758	2.549069	-1.175236	0.2510
LOP	0.735551	1.235203	0.595491	0.5569
C	25.861366	13.172540	1.963279	0.0608***

*** Significant at 0.10 significance level

Source: Computed by Researcher

Analysis of objectives

One of the objectives of this research was to investigate the relationship between FDI, economic growth and inflation. The nature of the relationship between these variables can be observed in the results below:

Examine the causal linkage between Foreign Direct Investment (FDI) and Economic Growth (EG) in Libya: from the above results shown in table 5.8, the long run co-integration equation can therefore be specified as follows;

LGDP = 25.8614– 1.114LINF – 0.5071LFDI – 2.9956LMS + 0.7356OP

It can also be noted that both FDI and inflation have insignificant effect on economic growth of 0.5072 and 0.114 respectively. This reinforces study results obtained by Andinuur (2013), which posits the existence of bilateral associations between GDP, inflation and FDI.

How long run changes in money supply and oil prices are affecting the growth of the Libyan economy: further observations also reveal that MS is inversely related with GDP by 2.9958,, suggesting that increases in money supply result in a decline in GDP by 2.9958 units as purported by Ahmed & Suliman (2011). The results also vindicate results by Du, Yanan and Wei (2010), which posit that there is a positive association between changes in oil prices and GDP. This suggests that revenue inflows from oil sales are positively being used to finance domestic production or are being used towards productive purposes.

Co-integration Form

The existence of long run co-integration requires that the error correction term be negative and significant at 5%. Deductions can therefore be made that there is a long run co-integrating relationship between economic growth, foreign direct investment and inflation. The obtained ECT of -0.583913 is negative and significant at 1% and implies that the speed at which the disequilibrium between economic growth, foreign direct investment, inflation, money supply and oil prices is corrected, is 58.39%. See Table 5.9. Observations can also be made that GDP is inversely related to FDI, but positively related to CPI by -1.049, and 0.2948 at level and 0.2925 at first lag. This means that each individual increase in FDI will result in a decline in GDP by 1.049 units, and while GDP increases by 0.2948 and 0.2925 units respectively. This signifies that FDI policies are significantly hampering economic growth. Changes in the CPI can be said to be positively influencing economic growth. Possible reasons suggest that prices are sustaining economic growth as the economy is expanding.

Positive changes in MS on economic growth are observed in the first, second and third lags, whereas negative associations will be experienced in at levels. Economic policies must therefore be focused on altering MS in the first, second and third lags. Contrary observations can be observed, with oil prices that are negative form level up to the second lag. Overall suggestions point to the idea that at equilibrium, MS and CPI have positive effects on GDP, while FDI and OP have negative repercussions on GDP.

Table 5.9: Co integrating test

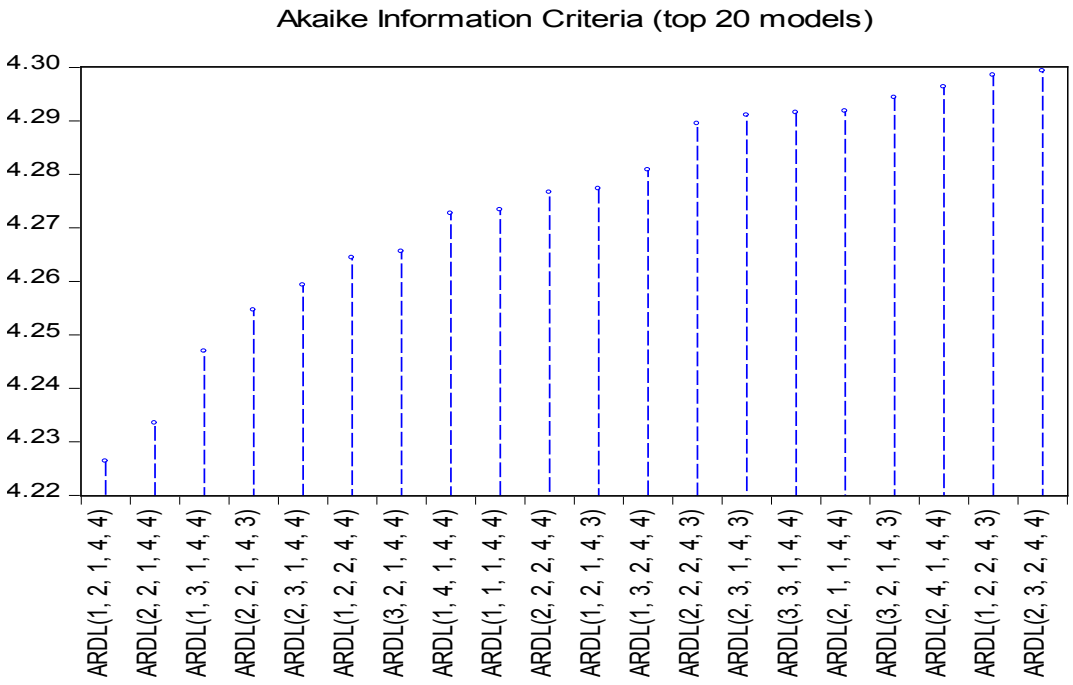
Variable	Coefficient	Std. Error	T-Statistic	Prob.
D(LFDI(-1))	-1.049001	0.340318	-3.082412	0.0049*
D(LPCI)	0.294807	0.244774	1.204407	0.2397
D(LCPI(-1))	0.292468	0.185679	1.575125	0.1278
D(LMS)	-4.846056	2.083236	-2.326216	0.0284**
D(LMS(-1))	3.260261	1.841437	-0.562349	0.5789
D(LMS(-2))	4.295791	1.664658	-0.566493	0.5761
D(LMS(-3))	5.238808	1.655915	3.163694	0.0041*
D(OP)	-1.160538	0.750389	-1.546582	0.1345
D(LOP(-1))	-0.287626	0.633961	1.643932	0.1127
D(LOP(-2))	-1.329814	0.648456	-3.573088	0.0015*
D(LOP(-3))	0.987176	0.613378	1.609409	0.1201
CoinEq	-0.583913	0.103110	-3.880493	0.0007*

Source: Computed by Researcher

*, ** ***and, Significant at 0.01, 0.05 and 0.10 significance level

Model Selection Criteria

Using the Akaike model selection criteria, it can be noted that an ARDL model 1, 2, 1, 4, 4 is favorable for the estimation of the ARDL model. The selection criteria is based on the model with the lowest Akaike values. Figure 5.1: Akaike model selection criteria



Source: Computed by Researcher

Diagnostic Test

Diagnostic tests were conducted in line with heteroscedasticity, serial correlation, normality and stability test. These test results are herein discussed as follows; Heteroskedasticity: The test whether residuals have the same variance or not was performed for the regression model. The hypothesis was conducted as follows:

H_0: There is no heteroscedasticity

H_1: There is heteroscedasticity

By employing results exhibited in table 5.10 it can be accepted using the Breusch-Godfrey test, there is heteroscedasticity, but the null hypothesis of heteroscedasticity is accepted using the Arch test. Conclusions can therefore be made that the developed model does not seriously suffer from problems of heteroscedasticity.

Table 5.10: Heteroscedasticity tests

Test	**F-statistic**	**Prob. Chi-Square(1)**	**Prob. Chi-Square(16)**
Breusch-Godfrey	0.446785	-	0.9999
Arch test	3.950007	0.0522	-

Source: Computed by Researcher

Serial Correlation Breuasch-Godfrey Serial Correlation LM Test was conducted to establish if the developed model suffers from the problem of serial correlation.

The hypothesis was conducted as follows:

H_0: There is no serial correlation

H_1: There is serial correlation

Conclusions can therefore be made that the developed model does not suffer from serial correlation. This is because the null hypothesis of the absence of serial correlation is accepted at 5% since the obtained p-value of 0.8 exceeds 0.5.

Table 5.11: Breusch-Godfrey Serial Correlation LM

F-statistic	0.116202	Prob. F(2,23)	0.8908
Obs*R-squared	0.420144	Prob. Chi-Square(2)	0.8105

Source: Computed by Researcher

Normality Tests:

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: Residuals are normally distributed

H_1: Residuals are not normally distributed

Obtained normality tests shows that the null hypothesis data is normal and is accepted at 5%, since the obtained p-value of 0.7231 exceeds 0.5 and has an associated Jarque-Bera of 0.6485. The results are shown in table 5.12.

Table 5.12: Normality tests

Jarque-Bera	Prob.
0.648505	0.723067

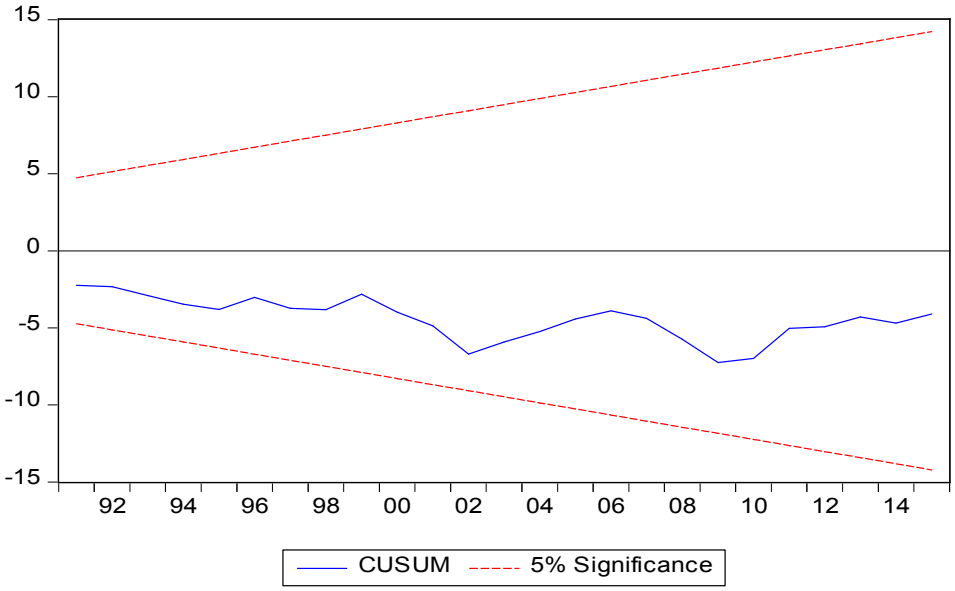
Source: Computed by Researcher

Stability Tests:

the CUSUM and CUSUMSQ tests specify that the model is consistent and constant over time. Since, the plotted recursive residuals at 5% are within the prescribed reliable range or critical lines

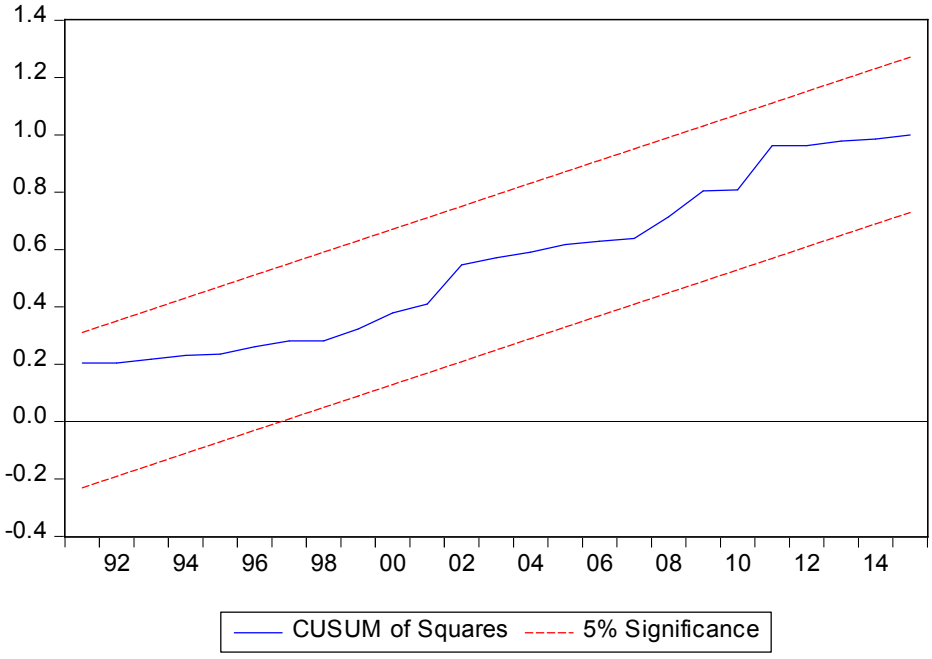
Recursive Cusum test was conducted to determine if the formulated model is stable and can be used for policy related decisions. According to insights depicted in figure 5.2, it can be noted that the model is stable and hence can be used for policy related decision making.

Figure 5.2: Cusum stability test



Source: Computed by Researcher

Figure 5.3: Cusum of Squares stability test



Source: Computed by Researcher

Having established the stability of the model and its successful pass of serial correlation and heteroscedasticity tests, the study will therefore proceed to propose recommendations. Thus, the next chapter will therefore look at recommendations and conclusions.

CHAPTER VI

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

Introduction

Having estimated the relationship between foreign direct investment, inflation and economic growth in Libya, this chapter e provides conclusions that can be drawn from the analysis that has been conducted. Policy recommendations and suggestions for future studies will be made based on the obtained results.

Summary of the Major Findings and conclusion

The obtained findings showed that there is a soar in the inflation rate in Libya and as such is posing negative effects on economic growth and stability. The results also showed that there is an inverse relationship between economic growth and foreign direct investment. Such a relationship demonstrates the possibility that FDI policies are harming economic growth in Libya. This is because the investment climate in Libya has deteriorated significantly as a result of political instability. Accordingly, the increased investment risk has led to the destabilization of investment in Libya and thus further plunging investment levels. Therefore, efforts by the Libyan government to attract more investment may be out of desperation, and are possibly being carried out in a way that affects the performance of other macroeconomic variables. Moreover, the findings of this study reveal that there is a long term relationship between the variables, and the diagnostic tests revealed an absence of serial correlation, heteroskedasticity and normality. The stability of the model was also confirmed by CUSUM and CUSUMSQ, as there is no movement outside the critical line switch, which indicates stability of the regression parameters.

Conclusions can also be made that oil prices have a significant positive impact on the Libyan economy and this is because oil proceeds are a major source of funds for Libya's financial budget. Hence, major drops in oil prices have negative implications on Libya's budget, but expectations are still high that oil revenue will grow in the future as efforts are being implemented to boost daily oil production.

Policy Recommendations

The outcomes of the study have a significant policy for relevant economic agents. Foremost, the government has a fundamental function for further improvement of the contribution and importance of FDI in term of, economic growth. Therefore, the government should ensure that the investment climate is conducive for investment. Corruption is one of the major obstacles that faces implementing conducive investment climate. The government has a key role in term of providing employment, and improving overall welfare.

Since decades, the file of financial corruption has still considered one of the most serious problems in Libya. Consequently, the Libyan government faces many challenges, which lead to stop the economic and social development. The financial and administrative system corruptions are considered the most common sorts of the corruption. Serious and real steps should be taken to tackle this issue. We suggest including financial and administrative reforms by a separation between the legalization of the public money, which is happening now, and the money of the private sector. As well as, providing judicial guarantees for the immunity of the press and media climate. This can be reached via the promotion of the independence of the judiciary, and transparency. In order to implement laws and rules with trust and credibility, the free inflow of foreign capital to Libya, by which will significantly assist in achieving foreign direct investments? This will be much more beneficial when FDI is directed towards sectors, such as agriculture, health, and education by which can improve the welfare of masses. Moreover, efforts must be made to ensure that FDI inflows are accompanied by advanced technology which enhances the economy productivity (Team,2009).

However, FDI policies alone are not enough effectively instituting a sound change in economic growth. Therefore, the Libyan government should encourage joint ventures, in order to stir up domestic production. Thereby boosting output levels that can lead to increase the level of exports. The output is consumed more than being imported is one of the major reasons for raising inflation. Therefore, promotion domestic production will be helpful to curb import inflation.

The study also recommends that there is a review should be done for financial monetary policies. In order to reduce the money supply, and to ensure the rationalization of public spending, especially consumer spending. Efficient monetary management is also crucial for maintaining the economic stability. In

addition, an optimal inflation threshold consistent with growth needs to be maintained carefully.

Suggestions

The use of annual series data in this research is an area in which this study can be improved upon. For future studies, quarterly data can be used as it provides more precise results than annual series data.

The dynamics of the Libyan economy provide a rich avenue for research as not much empirical literatures has been empirical literatures has been carried out to measure the relationship of economic variables in the country. The researcher would suggest that more researches be done so as to capture the interrelationship amongst economic variables.

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APPENDIX A

(ARDL MODEL l) Short Run Results

Dependent Variable: LGDP
Method: ARDL
Date: 12/31/16 Time: 22:26
Sample (adjusted): 1974 2015
Included observations: 42 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LCPI LFDI LMS LOP
Fixed regressors: C
Number of models evalulated: 2500
Selected Model: ARDL(1, 2, 1, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGDP(-1)	0.416087	0.150474	2.765172	0.0105
LCPI	0.294807	0.244774	1.204407	0.2397
LCPI(-1)	-0.652826	0.254171	-2.568451	0.0166
LCPI(-2)	-0.292468	0.185679	-1.575125	0.1278
LFDI	-1.049000	0.340318	-3.082411	0.0049
LFDI(-1)	0.752885	0.405511	1.856633	0.0752
LMS	-4.846057	2.083235	-2.326217	0.0284
LMS(-1)	6.357051	2.029607	3.132159	0.0044
LMS(-2)	1.035533	1.841437	0.562350	0.5789
LMS(-3)	0.943019	1.664659	0.566494	0.5761
LMS(-4)	-5.238810	1.655915	-3.163695	0.0041
LOP	-1.160538	0.750389	-1.546582	0.1345
LOP(-1)	1.302411	0.727438	1.790410	0.0855
LOP(-2)	-1.042189	0.633961	-1.643933	0.1127
LOP(-3)	2.316990	0.648456	3.573089	0.0015
LOP(-4)	-0.987176	0.613378	-1.609408	0.1201
C	15.10080	6.430764	2.348212	0.0271

R-squared	0.605903	Mean dependent var	4.137232
Adjusted R-squared	0.353681	S.D. dependent var	2.153522
S.E. of regression	1.731301	Akaike info criterion	4.226354
Sum squared resid	74.93512	Schwarz criterion	4.929696
Log likelihood	-71.75343	Hannan-Quinn criter.	4.484157
F-statistic	2.402261	Durbin-Watson stat	2.085328
Prob(F-statistic)	0.024027		

*Note: p-values and any subsequent tests do not account for model selection.

APPENDIX B

BOUND TEST TO COINTEGRATION

ARDL Bounds Test
Date: 12/31/16 Time: 22:30
Sample: 1974 2015
Included observations: 42
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	5.343733	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Test Equation:
Dependent Variable: D(LGDP)
Method: Least Squares
Date: 12/31/16 Time: 22:30
Sample: 1974 2015
Included observations: 42

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCPI)	0.294807	0.244774	1.204407	0.2397
D(LCPI(-1))	0.292468	0.185679	1.575125	0.1278
D(LFDI)	-1.049000	0.340318	-3.082411	0.0049
D(LMS)	-4.846057	2.083235	-2.326217	0.0284
D(LMS(-1))	3.260258	1.695115	1.923326	0.0659
D(LMS(-2))	4.295791	1.747354	2.458455	0.0212

D(LMS(-3))	5.238810	1.655915	3.163695	0.0041
D(LOP)	-1.160538	0.750389	-1.546582	0.1345
D(LOP(-1))	-0.287626	0.754305	-0.381312	0.7062
D(LOP(-2))	-1.329815	0.657563	-2.022337	0.0540
D(LOP(-3))	0.987176	0.613378	1.609408	0.1201
C	15.10080	6.430764	2.348212	0.0271
LCPI(-1)	-0.650486	0.324251	-2.006121	0.0558
LFDI(-1)	-0.296116	0.335883	-0.881603	0.3864
LMS(-1)	-1.749264	1.282315	-1.364146	0.1847
LOP(-1)	0.429498	0.726197	0.591435	0.5595
LGDP(-1)	-0.583913	0.150474	-3.880493	0.0007

R-squared	0.762089	Mean dependent var	0.093150
Adjusted R-squared	0.609826	S.D. dependent var	2.771683
S.E. of regression	1.731301	Akaike info criterion	4.226354
Sum squared resid	74.93512	Schwarz criterion	4.929696
Log likelihood	-71.75343	Hannan-Quinn criter.	4.484157
F-statistic	5.005085	Durbin-Watson stat	2.085328
Prob(F-statistic)	0.000178		

APPENDIX C

ARDL COINTEGRATING & LONG RUN FORM

ARDL Cointegrating And Long Run Form

Dependent Variable: LGDP

Selected Model: ARDL(1, 2, 1, 4, 4)

Date: 12/31/16 Time: 22:16

Sample: 1970 2015

Included observations: 42

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCPI)	0.294807	0.244774	1.204407	0.2397
D(LCPI(-1))	0.292468	0.185679	1.575125	0.1278
D(LFDI)	-1.049000	0.340318	-3.082411	0.0049
D(LMS)	-4.846057	2.083235	-2.326217	0.0284
D(LMS(-1))	-1.035533	1.841437	-0.562350	0.5789
D(LMS(-2))	-0.943019	1.664659	-0.566494	0.5761
D(LMS(-3))	5.238810	1.655915	3.163695	0.0041
D(LOP)	-1.160538	0.750389	-1.546582	0.1345
D(LOP(-1))	1.042189	0.633961	1.643933	0.1127
D(LOP(-2))	-2.316990	0.648456	-3.573089	0.0015
D(LOP(-3))	0.987176	0.613378	1.609408	0.1201
CointEq(-1)	-0.583913	0.150474	-3.880493	0.0007

Cointeq = LGDP - (-1.1140*LCPI -0.5071*LFDI -2.9958*LMS + 0.7356*LOP + 25.8614)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPI	-1.114011	0.652537	-1.707199	0.1002
LFDI	-0.507122	0.571291	-0.887678	0.3832
LMS	-2.995759	2.549069	-1.175236	0.2510
LOP	0.735551	1.235202	0.595491	0.5569
C	25.861364	13.172539	1.963279	0.0608

APPENDIX D

CORRELOGRAM OF RESIDUALS

Date: 12/31/16 Time: 23:59

Sample: 1970 2015

Included observations: 42

Q-statistic probabilities adjusted for 1 dynamic regressor

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	-0.050	-0.050	0.1112	0.739
. | . |	. | . |	2	-0.023	-0.026	0.1356	0.934
.*| . |	.*| . |	3	-0.197	-0.200	1.9774	0.577
.*| . |	.*| . |	4	-0.167	-0.197	3.3282	0.504
. |*. |	. |*. |	5	0.118	0.085	4.0186	0.547
.*| . |	.*| . |	6	-0.147	-0.200	5.1285	0.527
. |*. |	. | . |	7	0.111	0.024	5.7756	0.566
. |*. |	. |*. |	8	0.181	0.212	7.5513	0.478
.*| . |	.*| . |	9	-0.096	-0.129	8.0683	0.527
.*| . |	.*| . |	10	-0.066	-0.119	8.3195	0.598
.*| . |	. | . |	11	-0.188	-0.058	10.418	0.493
.*| . |	.*| . |	12	-0.068	-0.148	10.699	0.555
. |*. |	. | . |	13	0.159	0.064	12.311	0.502
.*| . |	.*| . |	14	-0.108	-0.120	13.074	0.521
. | . |	**| . |	15	-0.035	-0.225	13.159	0.590
.*| . |	**| . |	16	-0.163	-0.234	15.050	0.521
. | . |	.*| . |	17	-0.017	-0.090	15.071	0.590
. |*. |	. | . |	18	0.157	0.012	16.972	0.525
. |*. |	. |*. |	19	0.094	0.115	17.688	0.543
. | . |	.*| . |	20	0.037	-0.074	17.802	0.600

*Probabilities may not be valid for this equation specification.

APPENDIX E

BREUSCH-GODFREY SERIAL CORRELATION LM TEST

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.116203	Prob. F(2,23)	0.8908
Obs*R-squared	0.420147	Prob. Chi-Square(2)	0.8105

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 12/31/16 Time: 22:13
Sample: 1974 2015
Included observations: 42
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	0.101294	0.263527	0.384379	0.7042
LCPI	0.027686	0.270426	0.102381	0.9193
LCPI(-1)	-0.034864	0.274763	-0.126889	0.9001
LCPI(-2)	0.006314	0.193295	0.032664	0.9742
LFDI	0.010837	0.394609	0.027463	0.9783
LFDI(-1)	0.088929	0.468586	0.189781	0.8511
LMS	-0.236794	2.297509	-0.103065	0.9188
LMS(-1)	0.227663	2.250928	0.101142	0.9203
LMS(-2)	-0.207286	1.958009	-0.105866	0.9166
LMS(-3)	0.056648	1.739084	0.032574	0.9743
LMS(-4)	-0.088677	1.746463	-0.050775	0.9599
LOP	-0.055281	0.797999	-0.069275	0.9454
LOP(-1)	0.016117	0.776488	0.020756	0.9836
LOP(-2)	-0.062795	0.670455	-0.093660	0.9262
LOP(-3)	0.070699	0.693609	0.101929	0.9197
LOP(-4)	-0.172025	0.729643	-0.235766	0.8157
C	-0.743605	7.362755	-0.100996	0.9204
RESID(-1)	-0.161734	0.351711	-0.459849	0.6499
RESID(-2)	-0.085690	0.289021	-0.296483	0.7695

R-squared	0.010003	Mean dependent var	-1.17E-14
Adjusted R-squared	-0.764776	S.D. dependent var	1.351919
S.E. of regression	1.795956	Akaike info criterion	4.311538
Sum squared resid	74.18550	Schwarz criterion	5.097627
Log likelihood	-71.54230	Hannan-Quinn criter.	4.599671
F-statistic	0.012911	Durbin-Watson stat	2.035802
Prob(F-statistic)	1.000000		

APPENDIX F

HETEROSCEDASTICITY TEST BREUSCH-PAGAN-GODFREY

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.446785	Prob. F(16,25)	0.9510
Obs*R-squared	9.339130	Prob. Chi-Square(16)	0.8988
Scaled explained SS	2.737066	Prob. Chi-Square(16)	0.9999

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 12/31/16 Time: 22:11
Sample: 1974 2015
Included observations: 42

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.224746	9.742795	0.433628	0.6683
LGDP(-1)	-0.013375	0.227973	-0.058668	0.9537
LCPI	-0.511848	0.370839	-1.380242	0.1797
LCPI(-1)	0.397545	0.385076	1.032379	0.3118
LCPI(-2)	0.021130	0.281309	0.075115	0.9407
LFDI	-0.007954	0.515592	-0.015426	0.9878
LFDI(-1)	-0.209286	0.614361	-0.340657	0.7362
LMS	2.918608	3.156162	0.924733	0.3639
LMS(-1)	-1.804378	3.074913	-0.586806	0.5626
LMS(-2)	-3.690615	2.789831	-1.322881	0.1978
LMS(-3)	-1.122737	2.522006	-0.445176	0.6600
LMS(-4)	4.097915	2.508759	1.633443	0.1149
LOP	0.119598	1.136861	0.105200	0.9171
LOP(-1)	-0.324968	1.102089	-0.294865	0.7705
LOP(-2)	0.566419	0.960469	0.589731	0.5607
LOP(-3)	0.088916	0.982429	0.090506	0.9286
LOP(-4)	-0.271668	0.929285	-0.292341	0.7724

R-squared	0.222360	Mean dependent var	1.784169
Adjusted R-squared	-0.275329	S.D. dependent var	2.322643
S.E. of regression	2.622972	Akaike info criterion	5.057223
Sum squared resid	171.9996	Schwarz criterion	5.760566
Log likelihood	-89.20169	Hannan-Quinn criter.	5.315026
F-statistic	0.446785	Durbin-Watson stat	1.373464
Prob(F-statistic)	0.951004		

APPENDIX G

HETEROSCEDASTICITY TEST ARCH

Heteroskedasticity Test: ARCH

F-statistic	3.950008	Prob. F(1,39)	0.0539
Obs*R-squared	3.770670	Prob. Chi-Square(1)	0.0522

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 12/31/16 Time: 22:12

Sample (adjusted): 1975 2015

Included observations: 41 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.257989	0.449738	2.797164	0.0080
RESID^2(-1)	0.303869	0.152893	1.987463	0.0539

R-squared	0.091968	Mean dependent var	1.810743
Adjusted R-squared	0.068685	S.D. dependent var	2.345024
S.E. of regression	2.263058	Akaike info criterion	4.518862
Sum squared resid	199.7358	Schwarz criterion	4.602451
Log likelihood	-90.63666	Hannan-Quinn criter.	4.549300
F-statistic	3.950008	Durbin-Watson stat	1.910406
Prob(F-statistic)	0.053926		

APPENDIX H

RAMSEY RESET TEST

Ramsey RESET Test
Equation: UNTITLED
Specification: LGDP LCPI LFDI LMS LOP C
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	1.406073	40	0.1674
F-statistic	1.977042	(1, 40)	0.1674
Likelihood ratio	2.219196	1	0.1363

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	8.988791	1	8.988791
Restricted SSR	190.8523	41	4.654933
Unrestricted SSR	181.8635	40	4.546587

LR test summary:

	Value	Df
Restricted LogL	-97.99691	41
Unrestricted LogL	-96.88731	40

Unrestricted Test Equation:
Dependent Variable: LGDP
Method: Least Squares
Date: 12/31/16 Time: 22:35
Sample: 1970 2015
Included observations: 46

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPI	0.315417	0.330804	0.953487	0.3461
LFDI	0.948100	0.823516	1.151283	0.2565
LMS	-9.063838	7.580100	-1.195741	0.2388
LOP	-1.104045	1.018477	-1.084017	0.2848
C	8.101681	6.183193	1.310275	0.1976
FITTED^2	0.814648	0.579378	1.406073	0.1674

R-squared	0.122695	Mean dependent var	4.043734
Adjusted R-squared	0.013032	S.D. dependent var	2.146303
S.E. of regression	2.132273	Akaike info criterion	4.473361
Sum squared resid	181.8635	Schwarz criterion	4.711880

Log likelihood	-96.88731	Hannan-Quinn criter.	4.562712
F-statistic	1.118833	Durbin-Watson stat	1.927278
Prob(F-statistic)	0.365966		

APPENDIX I

RAMSEY RESET TEST

Ramsey RESET Test
Equation: UNTITLED
Specification: LGDP LCPI LFDI LMS LOP C
Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	1.406073	40	0.1674
F-statistic	1.977042	(1, 40)	0.1674
Likelihood ratio	2.219196	1	0.1363

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	8.988791	1	8.988791
Restricted SSR	190.8523	41	4.654933
Unrestricted SSR	181.8635	40	4.546587

LR test summary:

	Value	df
Restricted LogL	-97.99691	41
Unrestricted LogL	-96.88731	40

Unrestricted Test Equation:
Dependent Variable: LGDP
Method: Least Squares
Date: 12/31/16 Time: 22:35
Sample: 1970 2015
Included observations: 46

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCPI	0.315417	0.330804	0.953487	0.3461
LFDI	0.948100	0.823516	1.151283	0.2565
LMS	-9.063838	7.580100	-1.195741	0.2388
LOP	-1.104045	1.018477	-1.084017	0.2848
C	8.101681	6.183193	1.310275	0.1976
FITTED^2	0.814648	0.579378	1.406073	0.1674

R-squared	0.122695	Mean dependent var	4.043734
Adjusted R-squared	0.013032	S.D. dependent var	2.146303
S.E. of regression	2.132273	Akaike info criterion	4.473361
Sum squared resid	181.8635	Schwarz criterion	4.711880

Log likelihood	-96.88731	Hannan-Quinn criter.	4.562712
F-statistic	1.118833	Durbin-Watson stat	1.927278
Prob(F-statistic)	0.365966		

APPENDIX J

BREUSCH-GODFREY SERIAL CORRELATION LM TEST

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.116203	Prob. F(2,23)	0.8908
Obs*R-squared	0.420147	Prob. Chi-Square(2)	0.8105

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 12/31/16 Time: 22:13
Sample: 1974 2015
Included observations: 42
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	0.101294	0.263527	0.384379	0.7042
LCPI	0.027686	0.270426	0.102381	0.9193
LCPI(-1)	-0.034864	0.274763	-0.126889	0.9001
LCPI(-2)	0.006314	0.193295	0.032664	0.9742
LFDI	0.010837	0.394609	0.027463	0.9783
LFDI(-1)	0.088929	0.468586	0.189781	0.8511
LMS	-0.236794	2.297509	-0.103065	0.9188
LMS(-1)	0.227663	2.250928	0.101142	0.9203
LMS(-2)	-0.207286	1.958009	-0.105866	0.9166
LMS(-3)	0.056648	1.739084	0.032574	0.9743
LMS(-4)	-0.088677	1.746463	-0.050775	0.9599
LOP	-0.055281	0.797999	-0.069275	0.9454
LOP(-1)	0.016117	0.776488	0.020756	0.9836
LOP(-2)	-0.062795	0.670455	-0.093660	0.9262
LOP(-3)	0.070699	0.693609	0.101929	0.9197
LOP(-4)	-0.172025	0.729643	-0.235766	0.8157
C	-0.743605	7.362755	-0.100996	0.9204
RESID(-1)	-0.161734	0.351711	-0.459849	0.6499
RESID(-2)	-0.085690	0.289021	-0.296483	0.7695

R-squared	0.010003	Mean dependent var	-1.17E-14
Adjusted R-squared	-0.764776	S.D. dependent var	1.351919
S.E. of regression	1.795956	Akaike info criterion	4.311538
Sum squared resid	74.18550	Schwarz criterion	5.097627
Log likelihood	-71.54230	Hannan-Quinn criter.	4.599671
F-statistic	0.012911	Durbin-Watson stat	2.035802
Prob(F-statistic)	1.000000		

APPENDIX K
ARDL COINTEGRATING & LONG RUN FORM

ARDL Cointegrating And Long Run Form

Dependent Variable: LGDP

Selected Model: ARDL(1, 2, 1, 4, 4)

Date: 12/31/16 Time: 22:16

Sample: 1970 2015

Included observations: 42

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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D(LMS(-3))	5.238810	1.655915	3.163695	0.0041
D(LOP)	-1.160538	0.750389	-1.546582	0.1345
D(LOP(-1))	1.042189	0.633961	1.643933	0.1127
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D(LOP(-3))	0.987176	0.613378	1.609408	0.1201
CointEq(-1)	-0.583913	0.150474	-3.880493	0.0007

Cointeq = LGDP - (-1.1140*LCPI -0.5071*LFDI -2.9958*LMS + 0.7356*LOP + 25.8614)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
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LMS	-2.995759	2.549069	-1.175236	0.2510
LOP	0.735551	1.235202	0.595491	0.5569
C	25.861364	13.172539	1.963279	0.0608

Near East Univrsity

Graduate School of Social Sciences

Economics Master Program

Thesis Defence

THE RELATIONSHIP AMONG FOREIGN DIRECT INVESTMENT INFLATION AND ECONOMIC GROWTH AN ARDL CO-INTEGRATION APPROACH FOR LIBYA

We certify the thesis is satisfactory for the award of degree of Masters in Economics

Prepared By: MARIAM ALSABR

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