NEAR EAST UNIVERSITY

INSTITUTE OF SOCIAL SCIENCE

DEPARTMENT OF ECONOMICS

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DETERMINANTS OF EXCHANGE RATE IN LIBYA FROM 1980 TO 2014

AISHA BAZINA

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Determinants of exchange rate in Libya

We certify the thesis is satisfactory for the award of degree of
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DECLARATION

I hereby declare that:

The work written herein represents my own ideas, that all used sources have been duly referenced and has not been submitted before for any degree, examination or any related qualifications at any university or institution.

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DEDICATION

This study is dedicated to my father and mother who have been a strong pillar of success and positive influence in my life. To them I say ‘I love you and that I am deeply honoured of your support.

ACKNOWLEGMENTS

Foremost, it is with honour that I acknowledge the wonderful assistance rendered and astonishing role played by my supervisor Assist Dr.Ergin Akalpler Deepest appreciation also goes to my colleagues in the department of economics as well as departmental staff for their support.

ABSTRACT

The study dwells on analysing the impact that is being posed by exchange rate determinants on major changes that are being observed in the Libyan Dinar-US dollar exchange rate. This follows substantial changes in Libya's macroeconomic indicators that included inflation, terms of trade, economic growth as well as oil prices which have posed huge effects on the value of the Libyan Dinar against the US dollar. The Autoregressive Distributed Lag (ARDL) Bounds test was employed to analyse time series data from the 1980-2014 and the results revealed that there is a long run cointegration between the value of the Libyan Dinar and inflation, terms of trade, economic growth and oil prices. Changes in terms of trade and oil prices were established to be having positive effects on the Dinar /US dollar exchange rate as opposed to inflation and economic growth.

Keywords: Exchange rate, Economic growth, Inflation, Terms of Trade, Oil Prices.

ŐZ

Çalışma, döviz kuru belirleyicilerinin Libya Dinarı-Amerikan doları döviz kurundaki büyük değişimler üzerindeki etkisinin analizine dayanmaktadır. Bu Libya'nın makroekonomik göstergelerindeki enflasyon, ekonomik refah, ekonomik büyüme ve petrol fiyatlarındaki önemli değişikliklerin ardından Libya Dininin / US doları karşısında büyük etkileri oluyor. 1980 ve 2014 arasındaki zaman serisi verilerini analiz etmek için Autoregressive Distributed Lag (ARDL) Sınırları testi kullanılmış ve sonuçlar, Libya Dininin değeri enflasyon, ticaret hadleri, ekonomik büyüme ve petrol fiyatları arasında uzun süren bir arada var olduğunu gösteriyor. Ticaret ve petrol fiyatlarındaki değişimler, Dinar / US doları döviz kuru üzerinde enflasyon ve ekonomik büyümenin aksine olumlu bir etki yaratacak şekilde oluşturulmuştur.

Anahtar sözcükler: Döviz kuru, Ekonomik büyüme, Enflasyon, Ticari iyilik, Petrol fiyatları.

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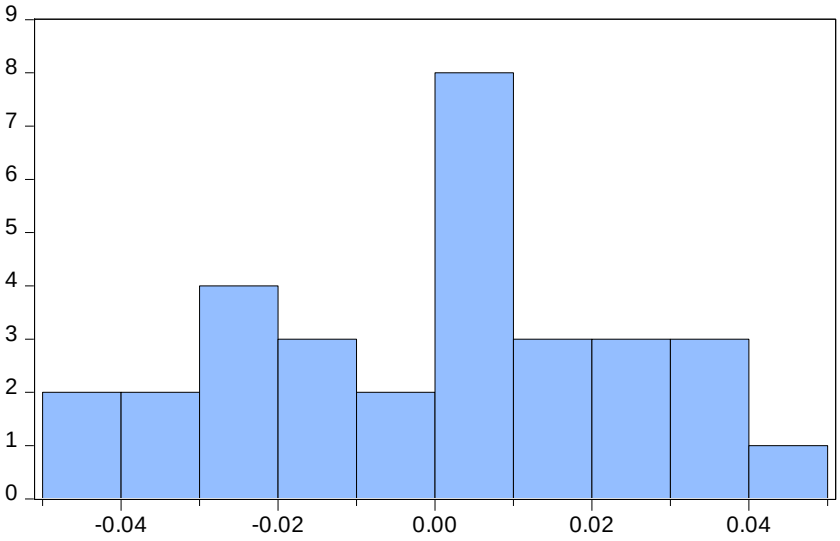

Series: Residuals
Sample 1984 2014
Observations 31

Mean	-4.59e-16
Median	0.003975
Maximum	0.043725
Minimum	-0.040751
Std. Dev.	0.025671
Skewness	-0.065758
Kurtosis	2.032362
Jarque-Bera	1.231759
Probability	0.540166

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LIST OF ABBREVIATIONS

ADF: Augmented Dickey Fuller

ARDL: Autoregressive Distributed Lag

CPI: Consumer Price Index

GDP: Gross Domestic Product

LCU: Local Currency Unit

OP: Oil Prices

PP: Phillips Perron

TOT: Terms of Trade

CHAPTER ONE

INTRODUCTION

1.1 Background to study

Most of Libya's economic woes have hugely manifested in the form of exchange rate instability and this is greatly hampering export initiatives. Export potential remains on a high note as resources such as oil, gypsum and natural gas though manufactured products are also exported to nations such as Turkey. The oil industry has however remained the top contributor to Libya's revenue inflows racking in 95% of the total revenue.

Though a series of challenges such inflation and economic collapse have been threatening the economy, chances are very high that the Libyan economy can still rebound its way to success. Proposed economic plans published by the IMF (2014) suggest that restructuring plans need to be availed in trade, financial sector, production and possibly ease government intervention in private sector activities.

With a decline in GDP still persisting in effects, it remains a concern that efforts must be put in place to spur economic growth towards the prosperity path (Putu et al., 2007). This encompasses efforts to ensure that more resources are expended to domestic production which confers the economy with substantial capacity to undertake numerous activities. Among such potential gain include boosting employment levels, increase domestic output which will raise per capita income, racking in huge revenue inflows, providing more goods for exports (Yadav & Dabhade, 2013). Thus the road to economic recovery lies in the ability of Libya's monetary authorities to institute economic policies that will boost domestic production.

Meanwhile there are various ideas have been given about the determinants of exchange rate and most researchers have placed attention on government debt, money supply, interest rates, foreign exchange reserves (Kumar, 2010; Siddiqui, Afridi & Mehmood, 1996; Papadopouls & Zis, 2000). When related to the Libyan dinar-US dollar exchange rate it can be noted that there are vast factors that are in play. This comers after the dinar recorded its highest market crash against the highly respectable US dollar. Information provided by the Libya Herald

(2016) revealed that the Libyan Dinar crashed heavily to exceed the 5 Dinar mark. This follows after it surged against the dollar from 4.80 to 5.30 dinars.

During the aftermath of the economic crisis, the Libyan Dinar-US dollar exchange rate has not managed to attain a favourable spot for many Libyans. The fall of the Dinar against the Dollar has been characterized by its trade on the black market and this entails that foreign currency is being allocated on the basis of who can pay a high price (Trading economics, 2017). This negatively affects domestic industries that rely on foreign currency for their trading activities. Such effects can also make the production and export of local products expensive and negative implications will be inflicted on trading partners.

Meanwhile, the Libya's monetary authorities have been instituting trade reforms with a goal to boost domestic activities. Such actions have witnessed an improvement in Libya's terms of trade (TOT) but this has failed to steer the economy towards the desired path (AFDB, 2012). In an economy where domestic consumption is very high and little is exported as compared to huge imports being made every single year, efforts to positively influence the Dinar against major currencies still continue to face huge stumbling blocks. In the midst of such dilemma, efforts therefore must be put on identifying factors that are surrounding changes in the value of the Dinar (Selden & Sowa, 2011). This study therefore attempts to analyse the underlying exchange rate determinants and how they are impacting the value of the Dinar especially against the US dollar.

1.2 Problem statement

Huge controversy about exchange determination lies in ideas that have been given surrounding the extent to which such determinants pose an effect on the exchange rate of the domestic economy against those of its counterparts. For instance, Papadopouls & Zis (2000) established that local factors have significant effect on exchange rate determination. Thus the effect of external factors is heavily under rated and Kumar (2010) outlined that external factors such as another country's economic performance also plays a considerable role on the determination of local exchange rate (Bazlul & Khondker, 2012). This has been augmented by ideas given by Rahman (2001) who contends that misalignments in one country can pose contagion effects which can negatively affect another country's exchange rate. However, Siddiqui, et al. (1996) dismissed such contentions citing that their effects are somehow negligible on insignificant. Such studies can therefore fail to clearly detail out the reasonable

causes behind Libya's falling exchange rate whose shifts are being characterized by a lot of factors. Economic ties between Libya and other nations need to be factored in especially when considering the fact that Libya relies on oil exports for economic performance. These studies do not consider such factors and this study therefore seeks to analyse the exchange rate determinants surrounding Libyan-US dollar exchange rate. As a result, the effect of factors such as inflation, changes in oil prices, economic growth and terms of trade on the Dinar has not yet been ascertained and it is unclear how changes in these factors has been impacting the Dinar.

1.3 Research objectives

The study is devoted to analysing exchange rate determinants that are surrounding major changes that are being observed in the Libyan Dinar-US dollar exchange rate. Subsequently, the study will also aim at identifying the nature of influence that is attributed to shifts in such exchange rate determinants. Moreover, emphasis will be placed on the attainment of the following secondary aims;

1. To ascertain the repercussions that have been posed by changes in oil prices on the Libyan Dinar-US dollar exchange rate.
2. To examine how changes in the Libyan Dinar-US dollar exchange rate determinants can mirror possible economic policies that can be devised to address Dinar-US dollar instabilities.

1.4 Research questions

With regards to the above mentioned aspirations, this study will therefore attempt to deliver answers to the following questions;

1. Which factors are surrounding major changes that are being observed in the Libyan Dinar-US dollar exchange rate?
2. What is the nature of influence is being posed by inflation on the Libyan Dinar-US dollar exchange rate?
3. What repercussions are being posed by changes in oil prices on the Libyan Dinar-US dollar exchange rate?

4. What are the possible economic policies that can be devised to address instabilities that are caused by changes in the Libyan Dinar-US dollar exchange rate determinants?

1.5 Research methodology

The study adopted the Autoregressive Distributed Lag Model (ARDL) to analyse how changes in oil prices, terms of trade and oil prices in Libya have been impacting the Libyan Dina-US dollar exchange rate. Such was accomplished using annual data from the period 1980-2014. The used variables had a mixed stationarity levels and are all stationary when first differenced, and this confines with one of the requirements of the ARDL model. The use of the ARDL model in this study has been supported by its ability to provide consistent estimators as well as allowing reliable long run estimations.

1.6 Significance of the study

Changes in international oil prices have impaired a lot of countries from attaining satisfactory economic performance. Though notable examples can be pointed to nations such as Iraq, it is essential that a nation like Libya well positioned to deal with the repercussions that are being posed by exchange rate changes. This can be attained by identifying possible root causes and devising possible economic policies to combat them. This study therefore offers insights to the possible factors that have possibly been neglected by many scholars as far as the notion of exchange rate determination is concerned. By identifying major drivers of the Dinar-US dollar exchange rate, it will also position Libyan economic policy holders with the power to address and combat future exchange rate instabilities that may desire to threaten the Libyan economy. Lastly but not least, this study will offer in-depth insights to many academic scholars as far as the notion of exchange rate determination is concerned and with regards to an oil producing economy.

1.7 Scope of the study

It can be noted that this study places emphasis on analysing exchange rate determinants by drawing insights and conclusions from Libya. This will be achieved by utilizing secondary data which ranged from the period 1980-2014. Much intention will be put on analysing how economic factors such as inflation, economic growth and exchange rate affect the Libyan

Dinar-US dollar exchange rate. Conclusions and recommendations will be drawn from results established from the ARDL model estimation.

1.8 Organization of the study

The undertaking of this study will follow a six chapter framework and the first chapter commences by looking at introductory elements that surround exchange rate determination in Libya and how they are possibly causing an effect on the Libyan Dinar-US dollar exchange rate. Theoretical and empirical aspects are covered in chapter two while the third chapter focuses on detailing factors, circumstances, effects surrounding changes in the Libyan Dinar-US dollar exchange rate and possible conclusions that can be drawn. Meanwhile the fourth chapter covers research methodology aspects of this study and the fifth chapter looks at the analysis and presentation of the obtained findings. Conclusions and recommendations drawn from this study are laid out in the last chapter.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is an outline of both theoretical and empirical constructs about exchange rate determination. Such will draw emphasis on establishing gaps and refinements that can be used to aid in proffering explanations about what is driving exchange rates changes in the Libyan economy.

2.2 Theories of exchange rate determination

An exchange can be defined as the movement of one currency against another country's currency (Mankiw, 1997). The notion of exchange rate determination has dominated both the academic and the international economics fraternity. Such a context in similar to the Libyan situation in which Libyan monetary authorities have been encountering severe challenges in maintaining the value of the Libyan Dinar against major currencies. Such efforts are applauded as failure to do has negative implications on international transactions, investments and prices (Brignall & Modell, 2000). Thus, in order to curb such effects, there are possible insights that is given by theoretical constructs to determine what drives exchange rates movements and possible measures to contain such movement within favourable ranges. This study will draw ideas given from a combination of the traditional approach, portfolio balance, monetary approach, purchasing power parity and balance of payments to formulate model variables that can be used to explain determinants of exchange rate in Libya. These theories are herein outlined as follows;

2.2.1 The traditional approach

Traditional approaches are built on the assertion that exchange rate movements as in consequence of changes in demand and supply of foreign currency. This implies that equilibrium is attained when foreign currency demand converges with foreign currency supply (Dornbusch, 2004). What it also implies that a surge in demand by Libyan nationals to import from other countries relative to the available supply of foreign currency will initiate a depreciation of the Libyan Dinar. This theory is centred on the assertion that exchange rate movements are triggered by changes in interest rates and income. When domestic income

increases, the demand by Libyan nationals is assumed by this theory to increase as well and vice versa. According to Heinrich (2012), the effects are to trigger exchange depreciation and appreciation respectively. On the other hand, an upward movement of interest rates in Libya will entail that it is profitable to invest in Libya. Hence, there will be an increase in demand for the Libyan Dinar by foreign investors. This will initiate an increase in value of the Libyan Dinar relative to other exchange rates. This theory does apply in the context of Libya in as far as the issues of domestic incomes is concerned. This is because interests are to relatively extent applying in Libya which is being affected by a political crisis which in now determine the shape of foreign direct investments inflows into Libya.

2.2.2 Portfolio balance approach

There are views that exchange rate changes are as a result of financial market transactions. Macdonald and Taylor (1992) postulate that changes in preferences for international financial assets relative to domestic financial assets is the main motivating factor behind changes in exchange rates. This theory offers deep insights about how financial market changes are influencing exchange rate changes in Libya. This is because the economy of Libya depends significantly of financial derivatives that are tied to petroleum products. With the fall of oil prices from USD$109.45 in 2012 To USD$39.33 in 2016this greatly plunged Libya's derivatives market (Statista, n.d). Further insights hinted by this theory established that movements in exchange rates are as a result of short run changes in demand and supply. According to CBN (1998) exchanges movements are not automatic in the short run and Dornbusch (1988) posits that traders do possess a portfolio choice of either foreign or domestic assets. Consequently, expected returns from those assets (bonds or money) are liable to arbitraging. Such acts of arbitraging are the ones that primarily determine how exchange rates behave. In line with what is happening in Libya, deductions can be made when oil prices fell dramatically during the oil price turmoil which commenced in 2015. As it stands the exchange rate of the Libyan Dinar against the USD is LYD1.425 per USD$1 from LYD1.267 in December 2012 (XE, 2016).

2.2.3 The monetary approach

The monetary approach is coined after efforts to rectify weaknesses of the portfolio approach. Thus arguments against the portfolio approach were based on the assertion that it fails to acknowledge the role that is played by money. Hence, Frankel (1978) contends that changes

in money stock have implications on other economic activities and the effects are reflected through changes in relevant economic indicators. Such indicators are presumed to include domestic output and inflation rate and it is these economic indicators that will also cause exchange rates to change. This is important in an economy such as Libya in which exchange rate movements are not only a functional of portfolio balances but of other economic activities.

Figure 2.1: Effects of money supply changes on exchange rate

Source: Frankel (1978)

Ideas given by the monetary approach also highlight that efforts to control money stock by the government will cause exchange rates disturbances. This by implication favours a flexible exchange rate system which is in contrary to what is transpiring in Libya where a fixed exchange system is in play (Hoontrakul, 1999).

Under a flexible exchange rate systems, the monetary approach approaches assumes that the determination of exchange rates is in two basic forms. The first case pertains to what is termed the asset market approach which deals with financial assets are presumed to be a major issue which determines exchange rate changes (Gail & Monacelli, 2005).

The other approach is known as the monetary approach and it postulates that money stock is an important element in determining exchange rate movements. Hence, the ability to control it without affecting the willingness of people to hold foreign currency will initiate an equilibrium position between one currency and another country's currency at a point where

stability is feasibly optimal. Obioma (2000) hinted that determinants of money supply and demand such as income play an important role in influencing how an exchange rate behaves.

The monetary approach thus contends that exchange rates are determined by interest differentials, income and money supply. In this context emphasis will be placed on how money supply in Libya determines exchange rate movements. Hoontrakul (1999) thus established that ideas behind the PPP imply that price differentials are the causes of exchange rate adjustments.

2.2.4 Purchasing Power Parity model (PPP)

The PPP assumes that exchange rates are proportional to relative prices between two countries. Thus, relative international prices between two countries will synonymously reflect the exchange rate between those countries (Samo &Valente, 2006). Of notable concern is the idea by the PPP that there exist 'the law of one price' in which similar products are contended to fetch the same price outside one nations' boarder. The PPP will be used to how the variable inflation causes movements in the Dinar.

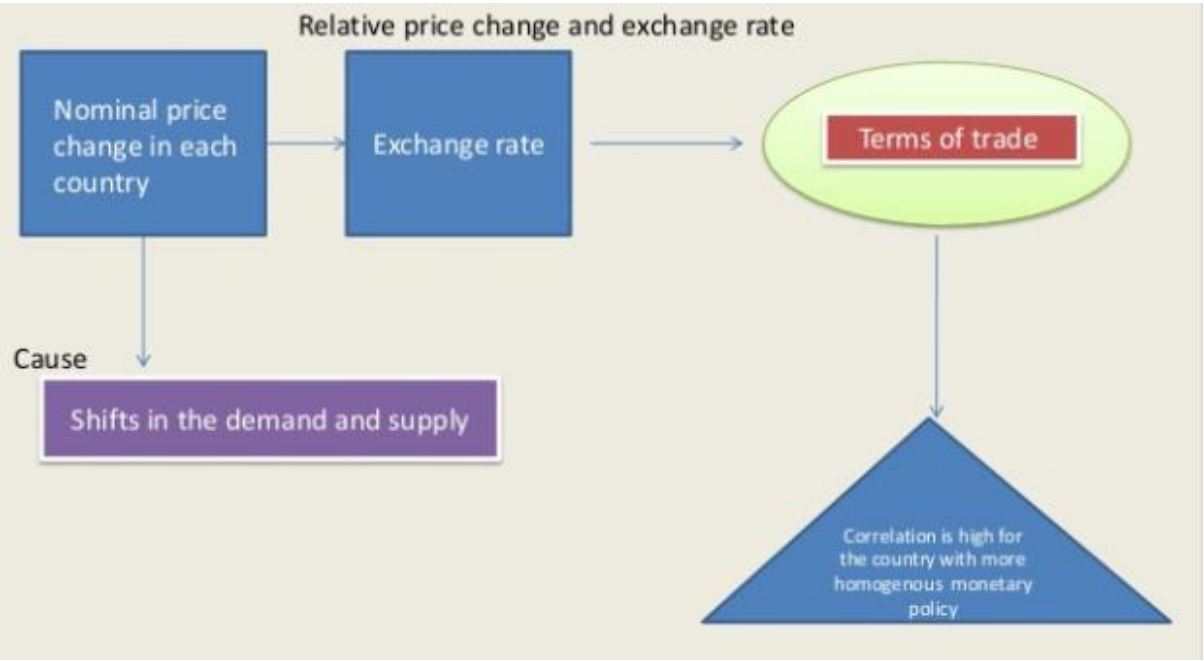

Figure 2.2: Effects of prices changes on exchange rate

Source: Van Thiel and Leeuw (2002).

Implications are that if there is one unique commodity and prevailing prices of the same commodity in different nations is the actual exchange rate between those countries. This rarely applies and differences in prices indicate how much of one country's currency is

required to purchase equivalent amount of another country's currency so as to effect payments (Van Thiel & Leeuw, 2002).

Criticisms that surround the PPP stem from the idea of substitutability being a mechanism that is used to realign domestic prices with internal prices of products whose prices are adjusted according to changes in exchange rates (Samo & Taylor, 2002). This usually feasible when commodities being traded are identical in which spatial arbitrage takes place but commodities can differ in quality, quantity and specifications which makes it very feasible for a high degree of arbitrage pricing.

The other criticism that is laid upon the PPP is of causation. There is a general agreement that changes in exchange rates is as a result of prices changes but there is evidenced that depreciation of a currency can stimulate inflationary pressure (Moosa, 1994).

Despite the level of criticisms levelled against the PPP, it still continues to serve as a valuable tool in economics and Lewis (1983) argues that a model must not be criticised on the bases of its assumptions but on its ability to explain situations at hand.

2.2.5 Balance of payment (BOP) approach

The BOP approach offer explanations which are deemed to be deviations from the PPP. Frenkel and Johnson (2013) postulates that the BOP approach differs from the PPP theory in the sense that the BOP approach is built on the notion that there exist internal and external equilibrium. The former assumes that there is full employment in the economy while the latter BOP is in equilibrium. External equilibrium thus deals with limitations of the PPP (Brignall & Modell, 2000).

Points to note are that the equilibrium rate of unemployment stabilizes wages which are assumed to be a major influence behind the demand for foreign products. Thus, increases in wages in Libya are presumed to stimulate an increase in demand for foreign products which are reflected in imports. Thus the supply of the Libyan Dinar will increase relative to demand causing the Dinar to depreciate.

Problems with this approach are that short term changes in exchange rates are difficult to determine since it mainly focus on long term determination of exchange rates (Johnson, 1972). In addition, it is difficult to determine the natural rate of unemployment which makes its difficult exact exchange rate movements (Brignall & Modell, 2000). This theory does offer sound explanations about the importance of BOP. For instance, if Libya is facing a BOP

deficit, it entails that its Dinar is likely to depreciate against other countries. This is because import demand is usually high as compared to exports and this reflects in differences between revenue from exports against import expenditure (Samo & Taylor, 2002).

2.3 Implications of exchange rate appreciation and depreciation

When the value of a currency appreciates it entails that the value of a currency has risen against the value of another currency. By implication an appreciation of the LYD against the USD will entail that more US products can be bought with few amounts of the Dinar (AFDB, 2012). Likewise, the depreciation of the Dinar will entail that more Libyan products will be bought for few US dollars. Appreciation is thus beneficial in terms of imports but hampers export demand whereas depreciation promotes exports growth and hampers import growth (Rodrick, 2008).

2.4 Exchange rate management systems

Differences by exchange rate systems are driven by different economic objectives of monetary authorities of a country. Thus the need to promote a free play of market forces is usually evident by a floating exchange rate whereas the need to promote social interests of the community are highly characterised by a fixed exchange rate system. Exchange rate management systems may encompass the following three systems;

- Adjustable fixed exchange rate: When an exchange rate is pegged to a major currency such as the US dollar or British pound but changes are made within reasonable bands. Problems can emanate with the use of an adjustable peg in periods of high instabilities such as economic and financial crisis in which high commitment is required. This can be evidenced by what transpired in Thailand and Mexico during the 1990's in which high capital mobility was enormous (Corden, 2001). Such a system is flexible in economies in situations where capital controls are very high such as China or when capital movement is very low.
- Target zones: A target zone or band is a band within which exchange rate movements are permitted to change (Obstfeld, 1996). The main characteristic of this systems is that it is a combination of a floating and fixed exchange rate systems. This is

advantageous in the notion that it allows more flexibility in the system and at the same time curbing extreme changes.

- Pegged exchange rates: This occurs when weights are assigned to currencies in which a country is a trading partner to and as such, the local currency is pegged to those currencies. This system does offer potential benefits and it has an ability to minimize exchange rate fluctuations which can help in promoting trade between countries involved in the peg (Sullivan, 2001). The inherent weaknesses are that when a peg is tied to a floating currency, the domestic currency will fluctuate according to the movements experienced in the floating system. Lastly, such movements may trigger movements that contradict with the domestic economy's macroeconomic targets.
- Crawling peg: Such an exchange rate system has common features of a fixed and flexible exchange rate systems. Under this system, the monetary authority fixes a peg which will be adjustments are made with regards to the rate of inflation differential between the concerned countries (Putu et al., 2007). Pegs are either active or passive in which future rates are announced in the former and the latter is made in line with previous rates of inflation. Though this system greatly accounts for the effects that are posed by inflation, it does leave the exchange rate prone to speculative attacks (Eichengreen, Rose & Wyplosz, 1994).

2.5 Decomposition of factors surrounding exchange rate determination

Determinants of exchange rate are vast and are not limited to domestic conditions but also on what is transpiring in other economies as well. Moreover, the nature and magnitude of impact posed by these variables tend to vary from one variable to the other. These determinants are herein discussed as follows;

2.2.1 Inflation

The impacts of inflation can be felt in most every sector of the economy and can impose effects on the value of a nation's currency. Notable inflationary effects in Libya have been emanating from imported inflation as the depreciation of the Dinar made imports more expensive (Reinhart and Rogoff, 2010). But there is no concrete evidence that a low level of inflation will warranty currency appreciation (Garcia & Restrepo, 2001). According to Garcia and Restrepo (2001) there are also views that inflation tends to lower the value of a currency thereby causing the value of its exports to decline. This has an effect on foreign currency inflows into Libya as more is sold at a lower price than before. Furthermore, it can be

contended that inflation has also been making Libya's domestic products to be more expensive on the international market leading to a decline in their demand and hence a depreciation of the Dinar.

2.2.2 Interest rate

Interest rates are often rewards made for investing in an activity be it in the form of a loan or capital injection. Thus, it offers an incentive to investors to invest in a particular activity. In the context of international trade, foreign investors are attracted to Libyan investments when they can obtain high interest rates on their funds. Which means that if interest rates are high in Libya, more foreign investments will be made leading to a high demand for the LYD. Dooley et al. (2004) contend that an increase in the demand of a currency following an increase in interest rates will cause an increase in the value of a currency. Expectations are therefore that increases in interest rates especially in Libya's petroleum sector will stimulate an appreciation of the Dinar.

2.2.3 Speculative activities

Speculative activities are activities centred on making profits on changes in the value of a currency (Cheung & Wong, 2000). Speculative activities can pose negative effects on a country's currency through changes in supply of the domestic currency on the foreign exchange market. When Libyan speculators expect the value of the Dinar to fall against the USD, they will acquire more USD by injecting more Dinars on the market. Hence, the value of the dinar will go down. Such effects are always high especially in economies where speculative activities can easily be undertaken and with a high number of speculators such as the likes of George Soros.

2.2.4 Current account balance

Under this notion, changes in exchange rates are presumed to effect changes on the current account balance. For instance, Reinhart and Rogoff (2010) established that the depreciation of a currency like the Dinar will result in a decline in foreign currency earnings as the value of exports plummet. The effect on the current account will emanate from the increase in exports while the decline in import demand will also reduce a current account deficit.

2.2.5 National debt

There are various channels through which national debt can influence an exchange rate. Foremost, when Libya's national debt is spent on productive sectors or on the acquisition of innovative technology that can boost the productive capacity of a nation, mass production is

more likely to take effect (Grindle et al., 1995). Mass production is usually accompanied by a reduction in costs of production which is will make it more favourable for Libya to export. This will result in an improvement in the competitiveness of domestic products on the international market. Hence, their demand will increase with the improvement in competitiveness. This can be augmented by ideas established by Reinhart and Rogoff (2010) which points that when a debt fails to stimulate domestic production, widespread economic effects can be felt within the economy which tend to have contagion effects on trade.

2.2.6 Cost of manufacture

Costs of production determine the competitiveness of the finished product on the international market. When Libya's products are cheaper and of high quality, they become more competitive on the international market (Burstein et al., 2003). As a result, the ability to reduce costs of production is vital to improving Libya's export competitiveness. Implications are that there is a high demand for more competitive products. When such demand is high, there is a corresponding increase in the respective value of that currency (Yadav & Dabhade, 2013).

2.2.7 Level of economic growth

Rodrick (2008) contends that an increase in economic performance has positive implications on the exchange rate. Such contention is based on the idea that an increase in productive capacity is usually associated with high quality products that are produced at a lower cost and can be sold at a lower price on the international market. Moreover, highly productive economies are sometimes associated with economic stability (Gail & Monacelli, 2005). Hence, improvements in Libya's economic performance can be said to have positive implications on the Dinar.

2.2.8 Political and economic stability

One of the major factors that has hampered economic development in Libya is political instability. Political instability can affect also the sectors of the economy and can actually put the whole economy to a halt. Glick and Hutchison (2005) outlined that economic indicators such as production output, employment, investment and exports are more prone to the effects on political instability. The value of a currency thus tends to depreciate during periods of political and economic instabilities. Economic instabilities such as financial crisis, depreciation, price crushes are major forces that can also put a twist to positive exchange rate

movements (Afonso et al., 2005). The value of the Dinar can thus said to be low during periods of political and economic turmoil.

2.2.9 Level of employment

The more factors of production are employed, the more output that can be produced. The level of employment is positively related to economic performance. Positive repercussions on the exchange rate can be observed when more output is produced at a lower cost. Thus the value of the Dinar can be established to be positively related with the level of employment in Libya.

2.2.10 Relative strength of other currencies

The relative strength of other currencies can actually render the value of other currencies low. Cheung and Wong (2000) established that highly performing or rated currencies can impose negative implications on the value of other currencies. The more other currencies rise in value the more difficult the Dinar will appreciate against them. Equal or approximate changes in value of these currencies can take place when the currencies are pegged together otherwise the Dinar will depreciate in value.

2.6 Managed floating exchange rates

Is fundamentally skimming in the outside trade advertises yet is liable to intercession every once in a while by the financial specialists, keeping in mind the end goal to oppose changes that they consider to be undesirable. Ordinarily the floats occur openly in the market - the esteem is controlled by the powers of free market activity for given money (Rodrick, 2008). Be that as it may, the legislature and additionally national bank of a nation may choose to utilize mediation in the cash showcase as a method for controlling its incentive to accomplish given macroeconomic goals (Obstfeld, 1996).

Table 2.1: Pros and cons of fixed exchange rate

Pros of fixed exchange rate	Cons of fixed exchange rates
• Certainty	• Economy cannot respond to shocks
• Lack of speculation	• Challenges with reserves
• Infringement on State policies	• Deflation
	• Policy conflicts

Table 2.2: Pros and cons of floating exchange rates

Pros of floating exchange rates	Cons of floating exchange rates
security from outside shocks	volatility
Inadequate policy constraints	No constraints on domestic policy
improvement of BOP deficits	Speculation

Observation made have shown that Libya does use a pegged exchanged rate but has strong elements or features of a managed exchange rate. This is because the Dinar is allowed to fluctuate within bands of the IMF's special drawing rights (AFDB, 2012). Hence, it can be said to have some features of a floating exchange rate buy the extent to which it fluctuates are regulated.

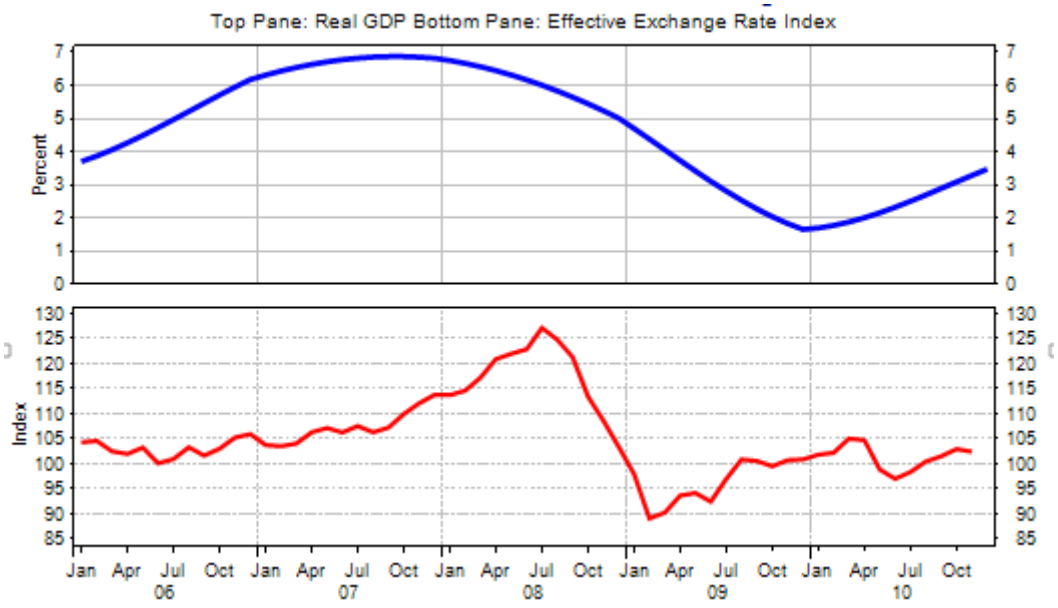

Figure 2.3: Effective exchange rate index of the Dinar

Source: (Trading Economics, 2011)

Much changes in the effective exchange rate are in response to the exchange rate index and it can be seen in figure 2.3 that upward changes in the effective exchange rate were also being reflected in upward movements in the index. Though the index rose to its highest level in 2008, the effective exchange rate registered its highest levels in august 2007.

2.6.1 Dirty float

Refers to an exchange rate state in which the nation's national bank once in a while intercedes to alter the course or the pace of progress of the nation's cash price. In many occasions, the mediation part of a dirty float framework is intended to go about as a cushion against an outside financial stun before its belongings turn out to be genuinely troublesome to the local economy. It's otherwise called an "overseen float. From 1946 until 1971, a hefty portion of the world's major industrialized countries took an interest in a settled conversion standard framework known as the Bretton Woods Agreement (Sullivan, 2001). This finished when President Richard Nixon took the United States off the highest quality level on Aug. 15, 1971; from that point forward, most major industrialized economies highlight exchange rates that float (AFDB, 2012).

Many third world countries try to secure their local businesses and exchange by utilizing a floating exchange rate in which the national bank intercedes to control the money (World Bank, 2012). The recurrence of such intercession shifts. For instance, Obstfeld (1996) contends that the Reserve Bank of India deals with the rupee nearly in an extremely limit band, while the Monetary Authority of Singapore enables the neighbourhood dollar to vacillate all the more openly in an unnamed group. There are a few reasons why the national bank mediates in a cash market that is normally permitted to floating.

2.6.2 Market Uncertainty

National keeps money with a dirty float at times mediates to fix the market now and again of far reaching monetary vulnerability (Yadav & Dabhade, 2013). The national banks of both Turkey and Indonesia interceded straightforwardly various circumstances amid 2014 and 2015 to battle cash shortcoming brought on by unsteadiness in developing markets around the world (World Bank, 2016). Some national banks incline toward not to openly recognize when they intercede in the money markets; for instance, Bank Negara Malaysia was broadly supposed to have mediated to bolster the ringgit amid a similar period, however the national bank has not recognized it (World Bank, 2016).

2.6.3 Speculative Attack

National banks intercede to bolster a cash that is under assault by a flexible investments or other examiner. For instance, a national bank may see that a flexible investments is assuming that its cash may devalue considerably, in this way the multifaceted investments is working

up theoretical short positions. The national bank can buy its very own lot cash so as to reduce the investment (Selden & Sowa, 2011).

A dirty float framework isn't thought to be a genuine coasting conversion scale on the grounds that, hypothetically, genuine floats frameworks don't take into account mediation. Be that as it may, the most well-known show-down between a theorist and a national bank occurred in September 1992, when George Soros constrained the Bank of England to remove the pound from the European Exchange Rate Mechanism (ERM), (Corden, 2001). The pound hypothetically floats unreservedly, however the BoE exhausted lots of money in an unsuccessful endeavour to safeguard the money value.

2.7 Empirical literature on exchange rate determinants

There is considerable amount of literature that address factors underlying changes in exchange rates. Such literature targets different aspects of such factors and this study will analyse them with a bid to identify other angles that can be used to explain the Libyan situation as well as provide support to the established results.

Modeste (1994) placed emphasis on the examination of the effects of income policy, exchange rate policy and a combination of both on exchange rate movements. The study showed that income policies have greater effects on exchange rate movements as opposed to exchange rate policies. However, a combination of an income policy and an exchange rate policy does help to contain significant exchange rate variations. This therefore implies that if Libya is to attain exchange rate stability, a proactive combination of an effective combination of income policy and exchange rate policy will provide the desired results.

Drine and Rault (2001) adopted a panel data analysis to analyse issues that are influencing exchange rates in the MENA region. After applying a combination of unit root and cointegration tests on trade openness, real interest rate differentials, government consumption, and per capita output, the study reveals that government expenditure that is not matched with an increase in output or improvement in productive capacity leads to an exchange rate depreciation. Favourable changes in per capita output and real interest rate were established to be favourable factors that promote an exchange rate appreciation. This is due to the fact that the production of more output signals high quality products that are produced at a low cost and hence their availability on the international market becomes

cheaper. Interest rate differential which are in favour of Libya will imply a high demand for the Libyan Dinar leading to its appreciation. This is also coupled by improvements in Libya's trade openness. Implications are therefore that if the Libyan Dinar is to attain a high and stable value against other currencies, then there is need to ensure that government consumption by the Libyan government is directed towards productive goods. This is to be reinforced by promoting financial sector development by giving it more room for expansion with little restrictions.

Mkenda (2001) did a study to assess exchange rate misalignments and the surrounding factors in Zambia. This was attained through the use of Johansen Cointegration using data from the periods 1971 to 1993 and augments were based on the idea that trade taxes, central bank reserves, GDP growth, investment, government consumption and trade openness have significant impact on exchange rate movements. The findings however revealed two distinct results. Foremost, it was discovered that the depreciation of a currency was surrounded by government consumption and trade openness elements while its appreciation was driven by favourable changes in trade taxes, central bank reserves, GDP growth and investment. This does to some extent apply in the Libya context in which trade taxes, central bank reserves, GDP growth and investment do play an important role in the Libyan economy and have been fluctuating a lot. Thus, focus may be placed on analysing these factors.

Aron et al. (1997) provided a macroeconomic analysis of long run and short run effects of exchanges in South Africa. Employing quarterly data over the periods 1970 to 1995, the results established that exchange rate depreciation is attributed to shifts in government expenditure, central bank reserves, capital flows, real dollar gold price, and terms of trade. The study results proved that all the variables were contributing to appreciation of the domestic currency and probable measures were to target these areas.

Zalduendo (2006) incorporated oil prices in the analysis of issues that drive exchange rate movements in Venezuela. The study also target the effects of exchange rate controls on influencing exchange rate stability. Exchange rate appreciation was thus discovered to be driven by interest rate and PPP oriented GDP differentials and a decline in UK Brent oil prices. With such in mind, expectations are that the decline in world oil prices will pose significant effects on the Libyan Dinar in which most economic activities are centred on productive changes in the petroleum industry.

Frankel (2007) employed econometrics precepts on quarterly data from 1981-2006 to examine movements surrounding the South African Rand. Using an ordinary least squares regression approach, the results exhibit that interest rate differentials, metal and mineral price index had positive implications on the movements of the Rand. Lessons can be drawn from this study that if high interest rate differentials are to favour Libya, then the LYD will appreciate as an increased influx of investments funds pour in. favourable changes in the prices of minerals as well as oil prices can also be expected to drive the value of the Dinar upwards.

Stanik and Cerge (2007) employed an AGARCH model to analyse factors driving exchange rate changes in Europe. It was established that trade openness is the major cause of exchange rate volatility in Europe. This was reinforced by study results established by Candelon et al. (2007) which showed that volatility in trade openness has huge implication on exchange rate movements. Such effects were however discovered to be as a resultant of a combination of inflation and productivity levels. Though this study is based on panel analysis, the effects of inflation can however be related to the Libyan context. This study will also place emphasis on analysing how inflation poses effects on the LYD exchange rate.

Guclu (2008) examined how exchange rate affect exchange rate movements using times series data from 1970-2006. Having employed an Ordered Probit model, the results showed exchange rate depreciation was triggered by capital account restriction, terms of trade, capital account openness, capital account to GDP ratioopenness, and GDP per capita.exchange rate appreciation and depreciation was also presumed to be triggered by money growth, trade and inflation. We can thus expect money growth, trade and inflation to trigger the same effects in Libya.

Shehu and Aliyu (2006) utilized quarterly data from the period 1984-2004 to determine long run changes in the Nigerian Naira. The study sought to determine a permanent equilibrium exchange rate and a behavioural equilibrium exchange rate of the Naira. The findings showed that long run behavioural changes in the Naira were driven by fiscal policy approach, monetary policy performance, crude oil volatility, terms of trade and real net foreign assets. Incidences of the undervaluation and overvaluation of the Naira are contended to have been common and triggered by government's mismanagement and poor fiscal indiscipline. Effects posed by the government's mismanagement and poor fiscal indiscipline were also proved to

possess significant negative effects on the value of the Naira as opposed to effects posed by crude oil volatility, terms of trade and real net foreign assets.

Agnès and Coeuré (2001) provided evidence of the effects posed by disinflation and other stabilization efforts on an exchange rate. The study highlights that such acts especially exchange rate regimes are associated with costs and financial fragility effects. However, a high degree of exchange rate flexibility was postulated to be dependent on the effectiveness of monetary policy and underlying structural factors in an economy. This was draw from evidenced produced through the study of panel data of 92 countries.

Jimoh (2006) employed the traditional theory of exchange rate determination to examine exchange rate movements in Nigeria from the period 1960-2000. The study used the Johansen cointegration techniques to estimate the relationship between exchange rate movements and trade liberalization and trade regime. The findings showed that shifts from trade regime had no meaningful on the value of the Naira while trade liberalization was established to have contributed to the huge downfall of the Naira by 13%.

Ajao and Igbekoyi (2013) made use of the GARCH model to analyse factors propelling exchange rate volatility. This was augmented by cointegration and error correction techniques and the lagged exchange rate, interest rate, government expenditure and trade openness have major influence on exchange rate movements.

Fida et al. (2012) adopted a framework by Stein (1985) to elucidate the effects of changes in the natural rate of unemployment of the stability of an exchange rate in Pakistan. The study found out that productivity, government expenditure and terms of trade were factors that were deriving the Rupee to appreciate. This study concurs with the study by Ajao and Igbekoyi (2013) and highlights the influence of government expenditure in determining future exchange values. Fida et al. (2012) however places much emphasis on productivity as the major element. Which implies that inability or lack of productivity among countries is the chief element that causes the value of their currencies to depreciate. When such notion is applied to Libya, the same sentiments can be expressed as political tensions have greatly affected the productivity of the Libyan economy. This has been followed by trends which were characterised by the depreciation of the LYD. Recommendations are therefore to boost the productivity capacity of the Libyan economy so as to stir positive changes in the value of the LYD.

Saeed et al. (2012) deployed ARDL precepts to examine the link age between the US dollar and the Rupee. Established findings showed that relative debt, forex reserves and relative money have downward pull effects on the Ruppe-dollar exchange rate. This received considerable contrasting arguments from a study by Fida et al. (2012) which undertook a similar analysis based on data from the period 1983-2008 while the former was based on data from the periods 1982-2010. Results by Fida et al. (2012) showed that government expenditure, terms of trade and productivity were associated with the appreciation of a currency and it also acknowledges the role that is played by productivity towards strengthen ing the value of a currency. Saeed et al. (2012) places significant attention on the role of inflation rate on exchange rate value.

There are a significant number of studies which exhibit the effects posed by exchange rate regimes on exchange rate movements. For instance, Devereux and Engel (1988) did an assessment of how exchange rate regimes are influenced by price settings. They established that attempt to manipulate prices has an effect of initiating high exchange rate volatility and efforts to curb such changes would be to allow peg the exchange to either the Yen or US dollar rather than allowing more floating features in price settings.

Devereux and Engel (2000) extended a study on the effects of exchange regimes on exchange rate stability. They presumed that distinct features of a fixed exchange rate and floating exchange rate regime had different effects on exchange rate stability. Thus, they sought to determine how stability can be attained in these different scenarios. They contention was based on the assertion that the way prices are determined either in the country of production or consumption does affect exchange rate movements. The results however showed strong support of a floating exchange rate system and arguments point to the idea that a floating exchange rate systems can help to guard against contagion effects.

Engel (2000) used sticky-price general models to determine the best exchange rate policy which can firms and household can curb uncertainty and optimize their decision making strategies. Their argument was based on the assertion that circumstances under which floating and fixed exchange rate systems can result in improvement in welfare are diverse and hinge on price stickiness. In addition, the study also shows that risk sharing opportunities do pose consequences on foreign exchange intervention strategies. Propositions were thus centred on ensuring that price setting are in line with a given exchange rate regime. Efforts to further

explain the effects of risk sharing opportunities are however considered to be inconclusive and under explored.

Amartya et al (2004) sought to determine the best suitable exchange rate regime in an economy where flexibility is assumed to be high. Their study was based on the assumption that asset markets are segmented and that the number of individuals who engage in the trading of financial assets is limited. This study contradicts with the study by Engel (2000) of sticky prices which contends that a fixed exchange rate regime is an effective tool of attaining exchange rate stability.

From the above analysis it can be deduced that major factors that significantly influence exchange rate movements in any country are economic performance, rate of inflation and trade openness. Issues of effectiveness by the government to properly manage economic activities through the interplay of fiscal and monetary policies has also been highlighted to be a major force to reckon on. Though a few studies have hinted the effects of oil prices on exchange rate movements, this study will strive to assess the effects of changes in oil prices on exchange rate movements in Libya. This is because the Libyan economy relies significantly on petroleum products and recently oil prices have plummeted. This study thus seeks to analyse how such fall in oil prices influences movements in the LYD.

CHAPTER THREE

OVERVIEW OF THE LIBYAN ECONOMY AND EXCHANGE RATE DETERMINANTS AND TRENDS

3.1 Economic overview of the Libya economy

The Libyan economy has been one of the fastest emerging economy but tragedy struck when it experienced severe cases of political instability that also most wrecked the optimistic economy. Much of Libya's economic potential lies in its vast oil reserves which have been catapulting economic performance to greater heights. In an economy were the Human Development Index averaged 0.724 with a whooping GDP of US$41.4 billion in 2014 (Atlas Media, 2016).

Libya has in the past enjoyed from economic success which was being attributed from its huge possession of petroleum products. Gas and oil have given Libya the economic urge it needed to boost its productive capacity. Economic Outlook (2012) outlines that gas and oil proceeds have been financing 80% of Libya's domestic needs implying that there was little room for borrowing from the international community. In addition, such proceeds generated huge foreign currency inflows which generated reserves that were being utilised to provide support to the Dinar against other currencies.

In 2011, economic growth contracted by 41.8% following acts of political instabilities that took place in Libya (World Bank, 2016). Despite the continued influx of international companies in Libya, domestic production has remained choked as oil production is fixed at 1.47 million bpd by OPEC (Economic Outlook, 2012).

Major reforms have also be undertaken by the Libyan government to promote economic activities. Among such, is reconstruction activities which are being directed towards building infrastructure that was destroyed during periods of political turmoil. A portion of gas and oil proceeds is being diverted towards reconstruction of infrastructure. Investment policies have to some extent amended and this has allowed a bit of flexibilities for international companies. This can be pointed towards the maintaining of a flat tax rate on investments, corporations and individuals.

3.2 Macroeconomic policy environment

3.2.1 Fiscal policy initiatives

With the application of the portfolio balance theory deductions can be made that oil trade has a significant influence on Libya's exchange rate. This can be reinforced by the fact that 90% of Libya's budget is financed by oil proceeds (Economic Outlook, 2012). During periods of economic stability, high oil proceeds were the major reason behind the huge budget surplus experienced in Libya and this was accompanied by prudent spending by the government.

The decline in oil production had contagion effects on exports and consequently the plunged the budget into a deficit was equivalent to 17.1% of GDP (Economic Outlook, 2012). Contentions are very high that a huge balance of the budget will be devoted towards reconstruction projects. This entails that current oil production and sales will be inadequate to meet high expenditure demands. As a result, alternative forms of finance have to be sourced. In this regard, debt financing has been and is currently being used to finance such initiatives.

Taxes collected by the government were mainly from external trade and this had an impact of making Libyan exports dearer. This came in the wake when flat taxes were introduced with 20% be levied on corporations and 10% on individuals (AFDB, 2012).

3.2.2 Monetary policy initiatives

Monetary policy initiatives were mainly targeted at addressing inflationary concerns and this follows after widespread concern over the inflationary pressure in which the inflation rate soared from 2.5% in 2010 to 11.4% in 2011 (AFDB,2016). This was driven by enormous increases in food prices and price soaring on the international market. The continued injection of subsidies by the government have purportedly eased upward pressure on prices.

There was a huge decline in Central Bank liquidity following a decrease in foreign assets of the Central Bank from US$150 billion in 2010 (Economic Outlook, 2012). Liquidity improvements were witnessed in 2011 following an injection of US$120 billion of assets that were frozen by the United Nations Security Council.

3.2.3 Regional integration and trade

Efforts to boost regional integration have been greatly welcomed by the international community and Libya is currently engaged with Greater Arab free Trade Area (GAFTA) and

huge strides have been made by affiliating with Sahel-Saharan States. Major reforms also included the removal of tariffs on some commodities and improvements in clearing procedures so as to facilitate more business activities to and from Libya. Trade reforms are being conducted in line with reforms made by the World Trade Organization (WTO). Limitations are however be observed on discriminatory taxes that have been raised on an immediate notice (AFDB, 2012).

3.2.4 Exchange rate policy

Libya is currently operating under a pegged exchange rate system. The LYD is currently pegged to the IMF's special drawing rights. Such a move has resulted in stability of the LYD against other currencies. Problems are however still visible with Libya's exchange rate policy as considerable amounts of black market activities in which the Dinar is being traded against other currencies have been rising considerably. One major disadvantage of pegging to SDR is that it restricts the use of monetary policy. Libya as of to date does to a little extent have an influence of the Dinar and major foreign currency reserves that were used to support the value of the dinar have not yet been released by UN Security Council. The World Bank (2016) contends that there are billions of dollars to meet foreign exchange reserves to support the LYD

During the prime days of the Libyan exchange rate, its introduction was firstly under what is known as the Libyan pound in 1952 with a value of US$2.80 (Economic Outlook, 2012). This value of the Libyan currency was in that period also weighed to gold reserves. In 1967 the value of the pound to which the Dinar was pegged declined by 7.8% but that of the Dinar remained unchanged ((Economic Outlook, 2012). Thus special drawing rights (SDR) through which the Dinar was pegged declined to US1.08 for every one SDR from on is to one equivalency.

Changes in Libya's exchange polices were also observed when it shifted its peg systems from the pound towards the American dollar in 1973 in which the Dinar was pegged to the USD at 1.2967. Consequently, this implied that the value of the Dinar determined by the value of the USD against other international currencies. Such is a common element with currency peg systems. Room was however created that the Dinar would fluctuate within the ± 7.5% band and any rates above that would require that SDR be used to control such deviations.

This is considered to be a major problem with currency peg because irrespective of whether the economy is doing well, when the value of the currency to which the domestic currency is pegged to fall, that of the domestic currency will also fall (Drine & Rault, 2003). The rate of SDR 2.6046 was considered to be the lower bound within which the Dinar was not allowed to go below. Movements of the Dinar against the USD are shown in table 3.1.

Table 3.1: Movements of the Libya Dinar

Year	**Value of the Dinar/US$**
1996	0.3651
1997	0.3891
1998	0.3785
1999	0.4616
2000	0.5081
2001	0.5101

Source: Economic Outlook (2012).

Table 3.3 shows that there has been an improvement in the value of the Dinar from the period 1996 and such can be attributed to a bit of flexibility in the exchange rate. Such flexibilities have been observed to favour both individuals and businesses to undertake foreign currency transactions.

However, to show that have been inconsistencies with Libya's exchange rate system, the peg was always constantly changed several times with little reference being paid to the Libyan economic indicators (Economic Outlook, 2012). However, these were done in line with Libya's banking law which highlights that the value of the Dinar be changed in response to monetary and economic developments. In 1941 a floor was opened for banks to trade foreign currency without restrictions but prices were determined by the central bank of Libya. This was known as the declared special exchange rate was utilised as an alternative to the official exchange rate. According to the Economic Outlook (2012), major objectives of the new exchange rate policy that was imposed during 1994 were mainly targeted at;

- To allow rationality in the trading of foreign currency by removing restrictions that individual encountered in trading foreign currency whether for personal of business motives.
- To propel upwards movement of the Dinar of the black market.

- To reinforce purchasing power support mechanisms of the Dinar.
- Instil stability in the parallel market and thereby cause a downward shift in the prices of basic commodities matching prevailing economic indicators and resources.

Major obstacles in Libya's exchange rate came into existence when restrictions were passed concerning foreign currency remittances and credit which was previously characterised by a lot of discriminations. Such came into effect in 2003 when Libya confirmed its acceptance of the IMF's Article VIII. Thus the acquisition of foreign currency by corporations and individuals was to attract 15% tax in line with the requirements of the Man Made River (Economic Outlook, 2012).

3.3 Major factors behind the movement of the LYD

Despite its ability to rebound as successful economic powerhouse, the Libyan economy has been surrounded by vast obstacles which weighed down the number of opportunities the Arabian country can reap from. The interplay of economic events transpiring in the Libyan economy can be outlined to be;

3.3.1 Political effects

The political environment in Libya is strongly believed to have hampered efforts to boost the productivity capacity of the Arabian economy. The World Bank (2016) posits that political events have further plunged Libya into another recession for the third consecutive period. This is because oil production facilities are presumed to be operating below their normal capacities with productive capacities of 400 000 barrels a day. As a result its supply capacity declined by 10% in 2015 (World Bank, 2016). This has posed serious effects on non-hydrocarbon economic activities which have been constricted by disruptions in foreign and domestic supplies of materials. The political atmosphere in Libya has made the availability of funding to support economic activities and imports of core inputs inaccessible. This has consequently surged food prices by 13.7% and thus drove inflation upwards by 9.2% in 2015. Most products in Libya are now been sold on the black market and all these in being blamed on the political atmosphere.

3.3.2 Low international oil prices

The economic potency of Libya rests on the petroleum sector which drives more than 80% of economic activities. Financial sector activities in Libya are also determined by petroleum sector activities and outcomes. Thus most financial products sold on the financial market in Libya are financial derivatives. Oil revenue and other sources of income from hydrocarbon sales are major sources of income financing the Libyan budget and the fall in international oil prices greatly undermined the ability of the Libyan government to finance future economic activities. Reports established by AFDB (2012) showed that wage bills chunked an estimated percentage of 59.7% of the Libyan government's budget. This is aggravated by the idea that investments into the Arabian economy have been on a downward path as well and this has led to the deteriorating of sanitation services, water, electricity, education and the provision of health services. This is currently impossible to overturn as Libya's budget deficit spurred to 75% in 2015 from 43% in 2014.

3.3.3 Deteriorating of the balance of payments

Libya's balance of payment is greatly influenced by oil sales revenue and hence the fall in international oil prices severely thrusted the Libyan economy into a turmoil. In 2015, Libya's oil sales are believed to have underperformed the 2012 target by 15% (Economic Outlook, 2012). This is in the wake of a high and rising consumption denominated imports. Consequently, foreign reserves have been utilized to finance such deficits and this implied a reduction in funds used to support the value of the LYD against other currencies. It is estimated that in 2015 the value of the LYD against the US dollar plummeted by 9% but on the parallel market the fall was pegged at 160% as a result of regulations imposed by the Central Bank of Libya (World Bank, 2012).

3.3.4 Endorsement by the House of Representatives of the Government of National Accord (GNA)

Libya's economic fortunes are 'tied in the hands' of the GNA which is tasked with a daunting task of initially restoring security status and this will be followed by initiatives to rebuild social and economic amenities. With such efforts in the pipeline, daily oil production are estimated to total 1 million barrels a day while GDP growth is estimated to surge by 22% by the end of 2016 (AFDB, 2012). This however, will not be capable of curbing budget deficits

which are being attributed to high import consumption expenditure. Thus, economic projections are currently positing that current account and budget deficits will chunk 70% and 60% of GDP respectively. This should be able to ease pressure on the LYD but more still remains to be undertaken if the trading of the LYD from the black market is to be alleviated.

3.3.5 The future of oil price production as an economic growth and development tool

A positive turnaround in oil prices was observed in the year 2012 as oil production soared up and such a recovery was considered to have emanated at the right time when the economy needed a 'life light' (Economic Outlook, 2012). There was a dramatic rise in oil production from the 0.5mbd witnessed in 2011 to 1.4mbd in 2012 and such has also been characterised with a huge positive change in GDP (Economic Outlook, 2012). This positive change was also presumed to have caused positive shifts in the entire4 economy. For instance, an USD$81 billion nominal GDP was attained and this was also linked to positive changes in non-oil GDP which recorded to have grown by 44% (Economic Outlook, 2012).

However, reports by Economic Outlook (2012) showed that such positivism were cut short in 2013 when oil production declined to 0.3mbd and the dampened optimisms that economic growth was going to rise by a magnitude of 5% and this extend to encompass export levels as well and which went below the USD$13 billion mark. This further shows the impact oil prices have on the Libyan economy and it is imperative that much been done in the oil and gas industry in order to stir up economic activities. This can be drawn from the idea that oil prices have a huge responsiveness effect on economic growth and such effects tend to cover other sectors of the economy as well.

Hopes are still blinks among oil producing economies such as Libya on whether oil prices are to rebound or not. This is because up awards changes in oil prices have repercussive effects on the entire economy in which the financial sector as well is foundationally laid on petroleum products. This goes with assertions that improvements in oil production will also drag along with them improvements in other sectors on the economy being it labour related, export, retail or transport (Babusiaux & Lescaroux, 2006).

3.4 Collapse of the Libyan Dinar exchange rate crisis

Amidst the misery felt by Libyan nationals as a result of administration disappointment, division between the east and the west and among corporations such as National Oil Corporation and Central Bank and Libyans went into an economic turmoil as all costs rose overnight (World Bank, 2012).

Costs soared, even that of vegetables and were not linkied changes in the US Dollar and this included strategic items which are highly an important part of foreign made (Economic Outlook, 2012). Thus costs soared without any breaking points precedent in the history of the Libyan economy. Reasons were given and many thought of avocations, rebuking rival groups for the conditions the nation is experiencing, desperate living which is shaded in blood as opposed to expectation, development and persevering (World Bank, 2016).

Requests were also made that dread and frenzy control agents and dealers, and in addition the Central Bank which is attempting, by issuing arrangement of choices, to open the stifling rope around the national Libyan economy (World Bank, 2016). The main rescuer is to determine issues blocking oil exports, and to re-establish past creations levels, and this is just part of the arrangement and might take long time, others allude to the need of decreasing administrative consumptions, uncommonly that spending deficiency came to, amid concerns that 40 billion, or more what is spent by the Central Bank (Economic Outlook, 2012).

Obviously, unnecessary surge in spending and expansion in the general spending plan with substantial costs were observed which were contrasting with that of 2011, resulted in an abundance of liquidity that outweighed the Libyan economy's absorptive limit. Also that more than 25% of the cash was kept outside the banking system, as vendors and individuals want to keep cash outside banks, particularly with the troubles confronted when obtaining money, might be not a direct result of deficiencies, as nearby liquidity is accessible (Putu et al., 2007). However, because of challenges to convey cash to a few banks, alongside that banks are not propelled to get cash because of laws restricting managing bank premiums. Thus banks took points of interest of deposits by purchasing Investment Certificates from the Central Bank and some notorious Libyan banks were dealing with their operations from international branches relying upon unlawful techniques yet expecting to ensure high positioning authorities, but shielding the bank itself from theft and snatchings (Trading economics, 2017).

Such falling apart monetary circumstance constrain everybody to trade Dollars with Dinars out due to the crumple of the dinar, along these lines needed an increase in foreign currency reserves. Subsequently, the Dinar's value would withdraw outside that of the financial sector structure (Drine & Rault, 2003).

What compounds the situation is the move made by the GNC to utilize money electives for products support, and doling out the Central Bank to exchange remittances straight forwardly to residents accounts by means of characterized structure, which when gone inside troublesome conditions and may raise costs of fundamental merchandise and open the entryway for imposing business model by a few brokers (AFDB, 2012). However such things can be settled by prohibiting syndication, the selection of a system for rivalry through the foundation of an opposition chamber, so that any ware will have numerous providers, next to the initiation of rivalry and antitrust laws (Atlas Media, 2016).

What is postured by the Central Bank to determine the crumbling of dinar swapping scale in in the informal market, through characterizing distinctive costs for cash deal and establishing limits for the purchase of the dollar obtaining, may be productive in enhancing trade rates however won't be sufficient by any stretch of the imagination, as we need first; compromise and solidarity of financial and money related choice, second; far reaching survey and characterized course of events to diminish the crevice between the two costs, third; monetary bundle to raise with national economy, compose imports, immovably control state outlets (Atlas Media, 2016).

Viable reconnaissance for electronic cards, credits and exchange operations require endeavours to revise the awkwardness being used, which is viewed as one of the apparatuses utilized for craftiness to get remote money back to underground market (Wholey, 2007).

The Central Bank ought to reactivate trade workplaces to purchase cash through day by day offering procedures, and afterward offer them back to residents and merchants. In any case, such recommendation would make it troublesome, and may gain out of power, particularly inside the present conditions that need precision, immovability and more comprehensive strides to determine issues instead of opening new entryways that the Central Bank cannot take after (Drine & Rault, 2003).

The Central Bank can also draw a lot of remote cash in the market that will ingest abundant liquidity and save costs in the informal market. Adcroft and Willis (2005) recommend that hypothetically this will slam into the powerlessness of the Central Bank to proceed in this

matter for a period because of nonappearance of new incomes that encourage Central Bank accounts because of suspension of oil deals and debilitated ability to supply outside cash from abroad in light of challenges like theft and failure of insurance agencies to secure imports.

According to Heinrich (2012), the greater question is will the Central Bank desperately address such deformity? What's more, if the matter is close to a route by the individuals who control informal market to accomplish political picks up on the cost of the opposite side, and if the coming solidarity government has any part to play in settling this situation?

The issue is substantially more profound than many might suspect. Numerous gold brokers purchase utilized gold with shoddy costs at that point swing it to ingots, at that point transport it to Turkey and Dubai and offer it with worldwide costs, at that point purchase Dollar in the nearby market with neighbourhood costs, therefore add to upset and weight nearby money, also loss of individuals gold investment funds (AFDB, 2012).

According to the World Bank (2012), the Central Bank and the coming government, have part in settling such circumstance, yet we require monetary approaches that incorporate fiscal, exchange and money related arrangements to determine the exacerbating financial circumstance in Libya inside medium and long haul, next to putting precise projects to raise with the economy, all segments of the monetary strategies influence Dollar conversion scale not just the fiscal one.

What should be possible on a critical premise, is to apply "stun arrangement", which the Central Bank and Ministry of Finance ought to attempt by retaining overabundance liquidity through (Longenecker & Nykodym, 1996).:

To start with; furnish money related instruments with tempting income as checks and securities for nationals, ventures and banks to pull in overabundance liquidity in the market. Such checks and securities would be re-put resources into subsidizing change and foundation programs. Adjacent to, give a lot of hard money with little costs than that of the bootleg market, continuously decreasing costs until it achieves adequate levels which could be 2 Dinars for one Dollar inside a month from now (Atlas Media, 2016).

- Second; issuance of remote cash adjust that precisely indicates objects of use in hard money with the official cost, and permit shippers, who need to exchange outside

spending things, to manage diverse costs higher than the official one, as 30% higher (Selden & Sowa, 2011).

- Third; put composed component to control deal and buy of remote money for subjects that ensures equity and straightforwardness (Economic Outlook, 2012).
- Fourth; put plane to pull in liquidity outside banks by pulling back more established variants of money (Brignall & Modell, 2000).

All gatherings need to bring together endeavours, put clear projects, nobody ought to stop watching this emergency raging the national economy, genuine firm strides ought to be taken to ensure enhancements in living conditions and end crumbling in the estimation of the national money

3.5 The economics of a rentier state

The rentier state idea is based on the concept of oil export development and how politics interferes with resources allocation which may be reflected through economic development (Drine & Rault, 2003). The view of a rentier state is that governments are incapable of establishing institutions that are responsible for the efficient allocation and distribution of resources (Babusiaux & Lescaroux, 2006). Thus in the event of economic distortions, the institution will be capable of addressing such distortions. Some of the distortions that have been observed in Libya include the politically manipulated price mechanisms, ineffective regulatory systems and the Dutch disease (AFDB, 2012).

There is a lot of literature which has been put forward to aid in explaining this situation in relation to what has been happening in Libya. Foremost, it can be noted that the level of institutional development in Libya has to a greater extent very low with some studies showing that institutional development did not even manifest in Libya (World Bank, 2012). Economic Outlook (2012) contends that some of the rentier states such a Libya have a high degree of open political systems and institutional deficiencies. Other studies have shown that the need to exploit resources must be accompanied with complementary effects (Sullivan, 2001). Such has been observed in developing economies where information, legal and fiscal systems (institution systems) have come into effect as a result of the extraction of resources and has also been in response to the change in the State's economic structure (Obstfeld, 1996).

Indeed, institutional representation, development and the iron triangle have not been witnessed in Libya but instead a gradual degradation of institutional structures has been observed. Libya has to a greater extent failed to diversify its institutions but however this has reduced efforts to specify property rights (Corden, 2001). The government has however created structures that can minimise transaction costs and can boost tax revenues.

Cases whereby individuals in Libya have been influencing public agencies have been relatively high and this is because oil revenue has been very low and public policy has to a greater extent being manipulated towards maximising individual material advantages (Rodrick, 2008).

Problems are still prevalent in revenue collection as rent taking behaviour is still a common among Libyan citizens and in most cases gains from growth and trade have not been adequately and effectively captured by the government. Rentier classes are as a result of explicit and implicit social contracts by the Libyan government's bureaucracies (Adcroft & Willis, 2005). As a result, individual Libyan have not been contributing to wealth creation as personal interests have been dominating group interests.

In addition, the Libyan government has been spending a significant amount of resources towards oil exporting but this has not been available for the public' scrutiny. Thus investment and economic decisions in Libya are not easily made or exposed to the public and this is often regarded as a controlling strategy (Babusiaux & Lescaroux, 2006). Hence, there are a lot of informalities in economic activities. This can be noted by high levels of informal markets for foreign currency and other commodities with the motive to make huge gains.

Gains from the informal market are always higher compared to the official market where forces of demand and supply are in control and regulate prices in response to changes in what the market is offering and what the people need (World Bank, 2012). This can be evidenced by the trading of the Dinar against major currencies on informal markets where prices differences of the Dinar and other currencies are assumed to be higher than what the official financial system is offering. For example, reports have shown that exchange rates on the official market are usually lucrative by 5-20% more compared to the financial system (Rodrick, 2008).

The ability of the Libyan government to effect sound and meaningful economic growth policies and activities has thus been greatly tied to its ability to manage support coalitions and distribution of oil resources. As a result, little is being done to affect economic reforms that

have been made to been effected in response to changes in economic forces during oil slumps and booms (Sullivan, 2001).

Due to unsuccessful reforms that have been witnessed during 1980, it remain undoubtedly that institutional distortions were actually affecting economic reforms and thus deeper economic orientation was strongly needed. Little has however been done to determine major causes the led to the failure of these economic reforms.

The failure of economic reforms is usually perceived to be as a result of structural flaws of the economy (Obstfeld, 1996) but Atlas Media (2016) considers it to be as a result of policy flaws in which political and social will of the both the people and the government plays a huge importance towards contributing to the effectiveness of policy reforms. However, as noted a by a study by Mkenda (2001), which showed that economic reforms are doomed to fail because of governance and institutional issues, observations have also been made that Libya has been having poorly governed and weak institutions.

Despite the failure to institute economic reforms in Libya, privatisation and deregulation aspects were clearly neglected in these reforms only to emerge in the 90s were the government began to step up efforts to move from a socialist economy towards a capitalist economy. This has resulted in huger privatisation of some of the State's facilities and organisation with some of the economic activities being deregulated (Frankel, 2007).

Cases like what Libya went through the period of economic reform failures desires effective solutions in order to successfully implement such reforms. Thus according to Frankel (2007) nations like Libya have to;

a. Improve governance roles (Selden & Sowa, 2011),
b. Improve economic supervision (Wholey, 2007),
c. Offer economic incentives to Libya's economic agents and players,
d. Put necessary economic and social safety nets and,
e. Promote transparency in its role as an owner and distributor of resources (World Bank, 2012).

However, literature on institution economics also showed that it was insignificant for economies like Libya to rest entire efforts on privatisation and deregulation (Frankel, 2007; Stanik & Cerge, 2007; Zalduendo 2006). Stanik and Cerge (2007) contends that there is

greater need to promote transparency in its role as an owner and distributor of resources, put necessary economic and social safety nets and offer economic incentives to Libya's economic agents and players. On the other hand, Zalduendo (2006) posits the need to improve economic supervision and governance while Frankel (2007) emphasises on the need to offer economic incentives to Libya's economic agents and players, put necessary economic and social safety nets, improve economic supervision and governance at the same time.

The financial qualities of oil exporters laid out above, rapidly and plainly became visible in Libya after the primary offers of oil in 1961. At the point when Colonel Gadhafi came into control, the nation as of now displayed all the attributes of an oil exporter; various other wasteful divisions and organizations still utilized most of the Libyan populace and a dualistic economy (Economic Outlook, 2012).

In 1969, in spite of the fact that per capita salary at $2,168 had enhanced drastically from the subsistence level toward the start of the government, the expansion was exclusively because of oil revenues. At the point when the initial speculative and wary mandates for the nation's economy developed in March 1970, they were set apart by a doubt (World Bank, 2012).

When the initial speculative and mindful orders for the nation's economy risen in March 1970, they were set apart by a doubt of the part of the private division, and intended to bring the non-oil segments also under state control. The nation's history of colleague free enterprise amid the government had started much outrage among the individuals who had driven the overthrow, and they plainly viewed as private business suspect (AFDB, 2012).

The private segment was, in any event briefly, held, however confining to the new declarations plainly expressed that it could not encroach upon or repudiate the monetary strategies of the administration. It was likewise evident that holding the private part was an arrangement the administration expected to right when it was in a position to do as such. When oil crisis emerged in 1973, Libya displayed mill monetary and political features of a non-profitable and allocative condition, (World Bank, 2012);

- Regulatory defects
- High levels of rent-seeking activities
- Poor economic regulation
- A dualistic economy
- Inconsistent economic policies

- Too much control of the economy by the State
- High intermediation and patronage
- Too much bureaucratic powers by the government
- Division of the society (World Bank, 2012).

The monetary strategies adopted by Libya came at a time when oil costs were rising considerably. It is troublesome in such manner to think little of the quick and long haul effect of the Green Book that were observed in the 1970s (AFDB, 2012). The Green Book's financial orders prompted a further debilitating of whatever administrative systems the nation had at the time, and it prompted a more decided push to dig out organizations that were intended to give intelligibility and direction to monetary planning (Gail & Monacelli, 2005). It is during this process that various subordinate institutions like an effective and straightforward legitimate framework that supported them were given due attention in policy decisions (AFDB, 2012). In a few instances, this included physical demolition, the deserting of government services, research focuses and organising institutions. Their operational capacity was subjected to the Revolutionary Committees' orders that reinforced transformation and, their soundness was significantly decreased,

As compared to highly developed economies where the state creates and calibrates an arrangement of administrative, extractive and distributive components to direct monetary advancement over stretches of time, the Libyan government reduced and undermined this transformative procedure was through stipulations made by the Green Book (AFDB, 2012). Thus, innovative contemplations, coupled with power managed by huge inflows of capital delivered an inquisitive case of a midway impromptu State disorders in which political, financial and social difficulties exceeded its capacities and its potential to deal with them. Subsequently, intermediation, high patronage, "extreme administration" and broad support and turned into a predominant component that characterised economic events (Van Thiel & Leeuw, 2002).

Efforts to promote the minor hover of trust by the most noteworthy basic leadership gave mind boggling ways to distributive targets and financial largesse whilst monetary foundations, administrative and lawful limits of the State which were highly debilitated by the underlying government's rebuilding ways depicted above, remained ineffective and wasteful as noted by (Eichengreen, Rose & Wyplosz, 1994).

The state's sporadic physical obliteration of records, absence of monetary information and bureaucratic workplaces in Libya, resulted in severe problems that undermined the capacity to properly place an effective value to the existing property rights issues and these were all strong signs of administrative shortcomings. Thus, the Libyan economy developed in an economically impossible environment as a result of revenue acquisition strategies that were adopted by the government (AFDB, 2012).

The inquiries that were raised in the mi9dst of the development of a political framework were truly less squeezing to the Libyan government of income generation strategies, what affects the government's ability to raise funds, the type of institutional capacities the government needed in order to attain such targets, and the extent to which these courses of action mirrored the government and the public's interests (Eichengreen, Rose & Wyplosz, 1994). This resulted in the rise of an express State that was apparently profoundly self-governing but which lacked much administrative capacity with triggered and heightened economic problems which affected the government's capacity to attain its targets as well as its administrative capacities.

Economic reforms took place in 1987, mid 90s, and after 2003 with efforts that were primarily targeted at developing financial institutions upon which modern present day monetary and other economic foundations for financial administration would be centred on. Endeavours at supported monetary reforms around the world demonstrated that advancing toward business sectors, with no profound historical background, needs a cautious and more prominent controlling by the government (Wholey, 2007). This suggests that not everything should be allowed to be influenced by the market but rather in any event a more noteworthy requirement of the government to undertake regulation initiatives (Adcroft & Willis, 2005).

Suggestions that firmly connected economic management to economic growth and development, Libya in most cases purposely ventured over from this direction and making or keeping up governmental institutions that are capable of controlling economic activities. It offers clarification on why an apparently capable economy such as Libya, equipped to manage its nationals' welfare, failed, as this study will contend underneath, has the ability to effectively actualize changes toward the late 1980s and amid the mid-1990s (Van Thiel & Leeuw, 2002). Furthermore, it likewise explains why the desired changes kept on imposing limitations after 2003 (Brignall & Modell, 2000). The explanations unmistakably exist in Libya's more extensive political and social structures in which the economy is built.

According to Heinrich (2012), a nation's parastatals, regularly made as immediate reaction to universal financial challenges amid oil blasts, seemed unyielding and incapable to manage financial emergencies that debilitated past distribution strategies. The Libyan economy is faced with an economic crisis, economic reforms and a decline in the number of oil exporters, and subsequently the government has a tendency to keep away from such policies (Gelb et al., 2002)

In outline, revue from oil sales created a standard Libyan rentier economy which with problems that were worsened by the Green Book exacerbated while over centralization of financial power, absence of enhancement, high wasteful aspects, low and conflicting control by the Libyan government, broad support, Dutch Disease, (Selden & Sowa, 2011). Such adverse advancements were uplifted significantly by a request that modern State organizations were unseemly and ought to be surrendered. Longenecker and Nykodym (1996) contend that State intervention in the economy was inescapable however unnecessary and that it affected insurance, banking, retail trade, domestic small firms, agricultural imports and manufacturing firms and in addition service activities. State exchanging organizations were responsible for all mechanical, fabricating and farming imports. The government later stepped in through value control of merchandise, subsidies, state spending, and interest free credit, and. By the end of 1987, an estimated 75 percent of the government employees comprised of Libyans.

3.6 Early economic reforms

Libya began embarking on a series of reforms after the US imposed sanctions in 1987 and these changes focused on the presentation of Tashrukiyya (self-management) undertakings that promotes the establishment of cooperatives regardless of the prior directives disclosed by the Green Book against private institutions (World Bank, 2012). Around 140 medium-and small scale businesses were established and at any rate on a basic in the future were not delighted by government’s endowments (AFDB, 2012). At the same time, the boycott against the retail exchange was lifted and this necessitated the re-opening private shops. The government’s syndication on exports and imports was relinquished including wheat, salt, flour and tea subsidies however reluctantly endured amid the revolution, was reintroduced. Experts were permitted to initiate private operations, despite the fact that the legislature kept up its part in setting prices.

Measures that were taken in the mid-90s were intended to strengthen and augment initial economic reforms. Private companies were also allowed to assume public institution duties and operations. Thus the newly imposed directives recommended the end of unfruitful state undertakings; impose higher charges for state-if administrations such as electricity and water and cutting down the public sector's duty roster (Longenecker & Nykodym, 1996). Due to the view that some Libyans were additionally capable of inciting de-politicization, a common emerged that decentralization would help in shifting the managerial weights and costs to smaller regulatory groups in charge of their own financial plans from the major seaside urban areas. The nation's assembly at the same time embraced various laws that accommodated business entities, making the capacity to open remote money accounts and to get import licenses for privately owned businesses. As a result, various state and business banks were made. Efforts to tap into a portion of the capital streams that managed the black market resulted in the introduction of exceptional laws that were passed to safeguard reinvested capital (Yadav & Dabhade, 2013).

According to the Economic Outlook (2012), the subsequent phases of reforms were introduced during the 1993 summer and spring and concentrated on endeavours to advance tourism – planning to benefit from the nation's archaeological destinations and to give more prominent assurances to international investors. Exchange rate of the Libyan dinar was supervised by the GPC but it however stayed unaddressed.

Apparently scope of measures proposed made by the embraced enactment was capable of making the Libyan revolution (infitah) a standout amongst the most significant event in the Arabian history of financial changes amid the 1990s. Modell, (2001) posits that it would likewise have drastically changed the state's position inside the economy and by suggestion, changed the way through which financial support could be utilized to attain political goals. The GPC procedures incorporated a wide cluster of directions intended to accelerate economic reforms in mid-1988, (World Bank, 2012).

The truth, notwithstanding, stood out strongly from the proposed goals. The majority of the embraced laws were never executed albeit some private merchants were reluctant to resume operations. An insignificant number of private firms demonstrated willingness to go out on a limb in the midst of the rest of the instabilities and flightiness of financial and political strife. They selected rather for little scale financial exercises more often than not of an

administration nature that conveyed required minimal private investments and had low risks (Afonso et al., 2005). Evidence remained lacking that the new Tashrukiyya endeavours at any point worked as imagined.

There was correspondingly lacking confirmation genuine withdrawal of the government had occurred. Albeit a few appropriations were brought down, suggestions for expanded charges for government administrations could not be executed. Whichever reductions occurred were imposed on foreign labour whilst safeguarding domestic customers. The World Bank (2012). Outlined that throughout 1989, the Libyan economy reliably faced exchange deficiencies that were just pivoted by rising oil costs and when the nation's present record moved yet again downwards, conveying its global reserves to $5.8 billion. In spite of the reported changes in the nation's account framework, the Jamahiriya's business banks could not function and could only be resuscitated after 15 years. Banks as a rule bolstered open ventures at the command of the services to where private undertakings were entrusted and accordingly in a roundabout way at the prudence of the legislature. As a result, progression's effect may be depicted as a subterfuge characterised by a wavering, recently made private institutions which were permitted to give and disseminate what the government as a result of wasteful appropriation arrangement of state parastatals couldn't convey to Libyan residents, thus allowing the government to be accountable for the management and supervision of welfare arrangements (Putu et al., 2007). Subsequently, Libya was provided afresh with the sort of commodities it had appreciated before the progressive decade. Gelb, et al. (2002) posit that the absence of trust in the economy, in any case, was exhibited by the way that for most trade in the US dollar had turned into a basic or standard money of decision.

Huge endeavours improve the Libyan economy were observed in 2011 but were fundamentally surrounded by governmental issues associated with the administration process. The Libyan economy wound up at an essential intersection. From one perspective, it could also have adopted a state-driven showcase change that depended on collaboration between the various business coalitions and the state (Humphrey et al., 1993). On the other hand, it was feasible to seek after financial advancement and change, and move far from what one could close as a support driven and patrimonial arrangement of the past.

Since 2002 as of now, Libya reported its expectation to expand the economy and to pull in foreign cash-flows into the nation. For such a reason, pegging the Libyan dinar to the IMF's Special Drawing Rights became the best notable course of action, basically by downgrading

the nation's authentic conversion scale by at least 50% as a major aspect of a methodology towards promoting multi-level efforts (informal and official market, and business) international trade framework (AFDB, 2012). The devaluation was likewise intended to expand the intensity of domestic firms and to help draw in foreign ventures into the nation. That month Libya reduced customs duties by half on imports, planning to counterbalance the impacts of its exchange rate problems.

In 2003, the General People's Congress embraced enactment intended to foreshadow the nation's third endeavour towards reforms, progression and change. It incorporated an approval to privatize countless nations' state-claimed financial institutions. In June, the administration conceded that Libya's public sector had fizzled and ought to be cancelled, and privatized as part of the nation's oil division. The World Bank (2012) reports that observations have been made that this undertaking was expelling but at an advanced stage much could be expected, the wasteful aspects that the state-controlled economy had made in the earlier decades coulsd also be reduced. The Libyan National Oil Company arranged the arrival of ConocoPhillips, Amerada Hess and Marathon Oil to , and) to Zueitina and Waha concessions, a move that was intended to send consoling signs to different US oil organizations (AFDB, 2012).

3.7 Economic reforms after 2003

Following quite a while of keeping away from the exhortation of worldwide financial instutions, in October 2003 Libya additionally acknowledged its commitments under the IMF's Articles of Agreement and discharged the subtle elements of the IMF's initially Article IV discussions which encompassed a lot of concerns, wide basic changes, enhanced macroeconomic administration, and the expulsion of subsidies and trade limitations (AFDB, 2012). Reports showed that to there was efforts that was put towards working on initiatives that were called for by the General People's Congress in March 2004 (World Bank, 2012). That month a rundown of 360 government institutions were deemed feasible for privatized or disposal were disclosed.

More than 20 years of authorizations, the mix of the nation's financial inheritance of a generally saw a wastefully state-run economy, political hardships and together with monetary defects caused by sunctions, had expanded interior challenges from a blossoming more youthful populace with insufficient conceivable outcomes of important work. In 2003, Libya's unemployment was evaluated at 30% and 862,000 Libyans still relied on upon the state for their survival (World Bank, 2012). Libya required international funding, new oil and flammable gas mining projects, and for re-establishing a portion of the oil business' modern and oil foundation which the LNOC promptly conceded to be obsolete.

In March 2004, the reasonable strategies that were meant to reinforce new procedures were embraced by the General People's Congress. Notwithstanding the 360 organizations which were listed and required to be privatized, new strategies thus incorporated broad management of the financial sector and the establishment of private banks (World Bank, 2012). The proposition additionally enveloped stock exchange establishment, taxation changes, recently casual principles for international organizations which desire to plough resources into Libya, and an arrangement to advance the nation's practically non-functioning tourism industry (Rubinfeld, 1987).

The IMF’s specialized dialect of the report at the time condensed the difficulties Libya was deemed to confront as it set out upon the proposed changes. "Thus the major issue confronting the experts in medium and long haul is to accomplish feasible high rates of monetary development to boost employment and foster a quickly developing work compel (Grindle et al., 1995). The IMF concurred that was very difficult to attain this objective without an exceptional lessening in the overwhelming part of public sector. Thus the IMF requested that Libya advances towards more prominent spending straightforwardness and to cast the nation's financial plan inside a planned medium-term structure that would consider the non-inexhaustible feature of hydrocarbon assets in Libya.

Despite the fact that the new changes requested more noteworthy broadening of the Libya economy, the hydrocarbon division would yet again be called upon to inject the fundamental incomes. According to the AFDB (2012), less than 25% of Libya’s region had been truly

explored for oil and, aside from the western seaside territory which permitted just a single region for seaward boring. Both global oil organizations and the Libyan government believed that the nation's reserves could without much of a stretch be raised to 130 billion barrels from 30 billion barrels, plainly allowing Libya to be one of the most lucrative oil investment destination.

Libya exported approximately 1.5 million bpd, fundamentally not as much as its 1970 creation in 2003. The LNOC needed to expand creation to 3 million bpd which was the likeness its 1970 generation however conceded that huge amounts FDI were required to execute such tasks by 2010 (AFDB, 2012). Moreover, arrangements were created to widely investigate the nation's colossal flammable gas reserves which would boost daily production by more than 50 billion cubic meters and provide a boost to the nation's Liquefied Natural Gas foundation which was situated at Marsa al-Burayqa (World Bank, 2012).

Keeping in mind the end goal to empower interest in the hydrocarbon division, Libya painstakingly composed a couple set of Exploration and Production Sharing Agreements which demonstrated yet again the engaging quality of Libyan oil (Economic Outlook, 2012). In January 2005, the granting of the EPSA concessions uncovered Libya's needs and 11 oil licenses were given to US organizations that included Chevron Texaco, Hess, Occidental, and Amerada (World Bank, 2012).

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter is an outline of the methodological procedures that will be followed in order to arrive at a model that will be used to analyse the determinants of exchange rates in Libya. Such will include the Autoregressive distributed-lag model (ARDL) estimation, stationarity and cointegration tests and definition of variables. The use of the ARDL in this study is backed by ideas that obtained estimators are consistent and that reliable estimations can be made from long run results (Passaran & Shin, 1991).

4.2 Estimation procedure

ARDL is an estimation technique that is used to determine the long run association between variables whose integration is of the order I(I) (Passaran & Shin, 1991). The ARDL can be employed to variables whose order of integration is mixed, that is I(O) and I(I) but not I(2).This study will employ third to estimate the long run association between the variables LYD/US (LCU) and its determinants. The use of the ARDL for this study is based on the obtained order of integration which have been established to be of different order. In addition, the use of the ARDL in this study is reinforced by the idea that it is easy to implement.

In this study, the determinants of exchange the LYD exchange have been presumed to be economic growth, inflation, terms of trade and oil prices. This can be expressed in a functional form of the following nature;

LYD/US (LCU) = F (economic growth (GDP), inflation (INF), terms of trade (TOT) and oil prices (OP)…… (1)

In mathematical form the above can be expressed as follows;

LYD/US (LCU) = F (GDP, INF, TOT, OP)…… (2)

Expression (2) can also be expressed in a regression form and its nature will be;

$LYD/US\ (LCU) = \beta_0 + \beta_1 GDP_1 + \beta_2 INF_2, + \beta_3 TOT_3 + \beta_4\ OP_4 + \mu$........................... (3)

Estimated parameters are denoted by $\beta_{0\text{-}4}$ while the error term is denoted by μ. The ARDL can therefore be made as an extension to expression (3) by introducing an unrestricted error-correction model to the following basic ARDL model of the following nature.

$y_t = \beta_0 + \beta_1 y_{t-1} + ...+ \beta_k y_{t-p} + \alpha 0xt + \alpha_1 x_{t-1} + \alpha 2xt\text{-}2 + ... + \alpha_q x_{t-q} + \varepsilon_t$ ....(4)

In which the error terms is denoted by $\varepsilon_t$and combing expression (4) with error correct term φz_{t-1}will produce a long run cointegration estimations of the ARDL in which both short run and long results of the determinants of the LYD will be established. In this study, the ARDL will be based on the following estimations;

$\Delta LLCU_t = \beta_0 + \sum^n{}_{i=1}\lambda 1i\Delta LGDP_{t-1} + \sum^n{}_{i=1}\ \beta 1i\Delta LINF_{t-1} + \sum^n{}_{i=1}\ \beta_2 1i\Delta LTOT_{t-1} + \sum^n{}_{i=1}\ \beta_3 1i\Delta LOP_{t-1} + \sum^n{}_{i=1}\lambda 1i\Delta Y_{t-1} + \lambda_1 ECTM_{t-1} + \mu_t$.. (5)

In the final model, the selected model will have a lowest Alkaike value and long run cointegration is determined when the F-statistic at *K*value exceeds both the lower and upper bounds values. Long run estimations are made following the establishment of cointegration.

4.3 Stationarity tests

Stationarity tests aim to determine there exist a unit root in the data and the presence of a unit root signifies that the data is non-stationary (Im, Pesaran & Shin, 2003). By stationarity, implications are that both the mean and the variance are steady and vice versa for non-stationarity. Contends that stationarity tests are mainly employed to determine the presence of shocks and their duration. There are basically tow tests that can be used to test for stationarity and these are the Augmented Dickey Fuller (ADF) and the Phillips Perron (PP).

Given an autoregressive model $y_t = \theta y_{t-1} + \mu_t$, a null hypothesis can formulated that the data has a unit root and an alternative hypothesis that the data has not unit root. These formulations can be expressed as follows;

- **H_0:** $\theta = 1$
- **H_1:** $\theta < 1$.

Values below 0.05 will result in the rejection of **H_0** and values above 0.05 will cause **H_0** to be accepted at 5%.The PP is based on attempt to rectify autocorrelations tests made by the ADF using HAC standard errors (Phillips & Perron, 1988). Just as the same as the ADF, the PP strives to determine if the variables are integrated at I(I). The PP however makes use of more lags as opposed to the ADF.

4.4 Definition and justification of variables

4.4.1 Exchange rate (LCU)

LCU measures the exchange rate between the Libyan Dinar and the United States dollar. The use of the LYD/USD exchange rate is based on the idea that the USD is the major trading currency in the world and most international transactions conducted in Libya are conducted in USD. The LCU data that was used is from the period 1980-2014 and figure 4.1 shows variation of the LYD against the USD.

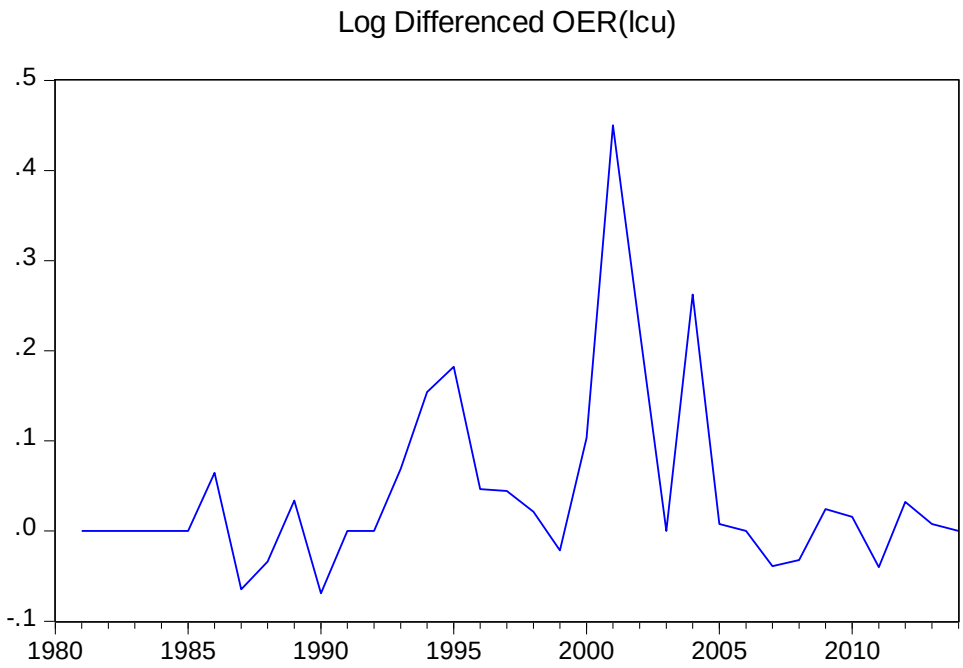

Figure 4.1: LCU trend from 1980-2014

Source: Established by Author

Observations can be made the LYD has been depreciating against the USD since 1992 but huge loss in value of the LYD commenced from 1993 and ever since the depreciation rate has been rising. The study will determine factors behind the changes in the LYD during the period in question.

As noted from the established literature, improvement in the value of the Dinar against major international currencies will have reflective effects on the Libyan economy. Rodrick (2008) contends that an exchange appreciation results in more foreign currency inflows. The idea is based on the concept that much is obtained for the same amount of resources. This is important to an economy such as Libya because it results in the injection of the much needed foreign currency which is a huge source of economy development. Such funds are expended to the production of other goods and even used to finance other domestic activities. The above figure depicts that exchange rate movements have not been on a steady part and this as noted will have effects on economic growth. Consequently, it can thus be deduced that there is a positive relationship that exist between the Dinar/USD exchange rate and economic growth (Rodriguez & Rodrik, 2001). This study therefore expects a positive relationship between Dinar/USD exchange rate and Libya's economic growth.

4.4.2 Oil prices (OIL)

The Libyan economy relies significantly on petroleum products and estimations are that 80% of Libya's budget is financed by oil proceeds (Babusiaux and Lescaroux, 2006). This implies that trade in petroleum products will have a huge influence on trade as well as the movement of the LYD against other currencies. Oil prices used in this study related to international oil prices and the data was retrieved from Statista.

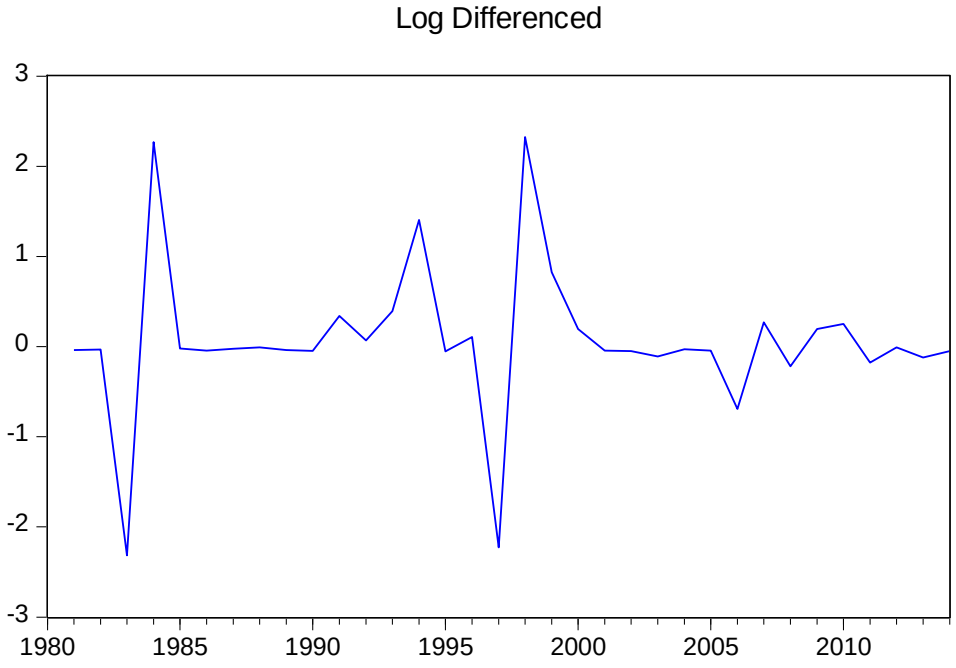

Figure 4.2: Changes in oil prices from 1980-2014

Source: Established by Author

Oil has been a major tool that has been catapulting Libya's economic progress with 98% and 96% of revenue and exports composition being accounted for by gas and oil products respectively (Economic Outlook, 2012). This therefore provides strong indication that any volatility in oil prices and production is more likely to pose a huge influence on economic outcomes. Such has been however been prevalent in Libya as international oil prices tumbled from the all high of US$108.00/barrel in 2014 to US$38.50 in 2016 (Statista, n.d). Such has caused a severe blow to efforts to rebuild and further strengthen economic growth and development initiatives in Libya. Thus the fall in oil prices is strongly presumed to have dragged economic growth in the same avenue.

What made matters worse is the decline in Libya's oil production and this goes along with the assertion given by Rodrick (2008) which showed that unilateral linkages between economic growth and oil prices are more likely to deepen on the account that oil production falls as well. This was attributed to major destruction in oil in fractures during the period of political turmoil that rocked Libya as it went through a period of transition following the changeover of government from Ghadaffi. In 2010, oil production in Libya has been resounding and standing at 1.7 million bpd but in 2011 it plummeted to below 0.5mbd (Economic Outlook (2012). This provides a strong indication of the effects oil prices has been posing on the Libya economy. One can argue that in an economy where total reliance is placed on oil and gas production, any down swing ion economic activities especially in petroleum products will have huge repercussion on the economy (Rodrick, 2008). This can also be tied to the idea that oil and gas production or activities are more and highly linked to other sectors of the economy. Hence, contagion effects are resultant effects of such changes. Thus, it can be deduced that the down swing in oil prices and production had negatively affected other sectors such as the banking and services sector in which securities and other derivatives were mainly denominated by oil products. This can be evidenced by a huge decline in GDP by 52% as a result of the fall in oil prices while real GDP fell by 62% and in 2010, the monetary effects of such events led to a decline to USD$35 billion from an all high USD$75 billion.

From the above assertions it can thus be noted that oil as an independent variable has huge effects on economic growth. Such effects are however dependent on the movement of oil prices. Implying that an increase in oil prices will lead to an increase in economic growth. The opposite can be said to be true as well (Babusiaux and Lescaroux, 2006). Thus this study expects positive changes in oil prices to be positively linked to improvements in economic growth as noted by an increase in GDP.

4.4.3 Economic growth (GDP)

Economic growth which is the economic progress of a nation was measured using real gross domestic product (GDP) which takes into account of inflation. Rodrick (2008) posits that economic growth can negatively linked with positive changes in an exchange rate when it is highly financed by imports which are not contributing to the productive capacity of the economy. Thus expectations are high that an improvement in the value of the Dinar against the USD will cause major changes in GDP. The following table shows changes in Libya's economic performance since the period 1980-2014.

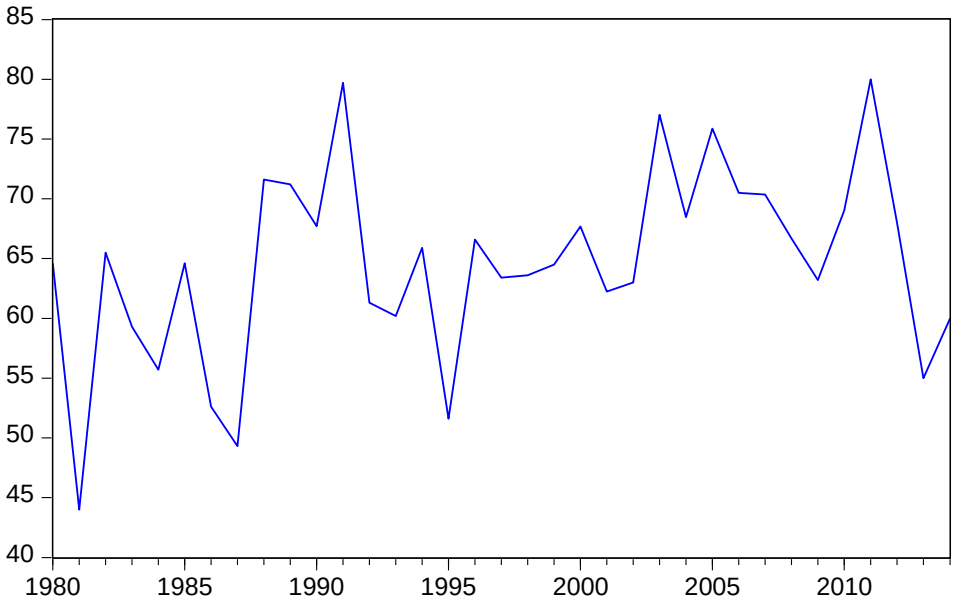

Figure 4.3: Libya's economic performance since the period 1980-2014.

Source: Developed by Author

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The adoption of economic growth in this study stems from ideas which have economic growth is an important aspect of any nation and hence efforts and policies are developed towards promoting its growth and development (Sullivan, 2001). The other reason for the adoption of this variable is that other sectors be it health, infrastructure, agriculture, political or social sectors, they all revolve on what transpires within the economic sector. Rodriguez and Rodrik, (2001) established that living conditions as well as standard of living are hinged to what transpires in the economy fraternity. Thus the economic sector provides life to other activities that occur within a nation and it is an engine for development. This also evidenced

by ideas that Millennium Development Goals (MDGs) whose other main targets are among others are to promote development, social improvements.

Within the context of the Libyan economy, all the sectors are almost productively down and that means efforts to resuscitate the Libyan economy will results in an entire shifty of the entire economy. The capacity to produce and export and enjoy from such activities rests on policies and efforts that are put on addressing economic challenges. This study therefore seeks to examine how changes in oil prices, consumer price index, Dinar exchange rate and terms of trade will affect Libya's economic growth.

4.4.4 Inflation (CPI)

Inflation was measured using the consumer price index (CPI) and was based on annual time series data from the period 1980-2014. With huge changes in the CPI being witnessed in Libya, the price of exports sold from Libya has resultantly become expensive to produce while imports had become expensive to import. This implied that inflation causes less of imports to be bought at a high cost while more imports are sold at lower revenue inflow projection. CPI changes from 1980-2014 in Libya were based on the following characteristics.

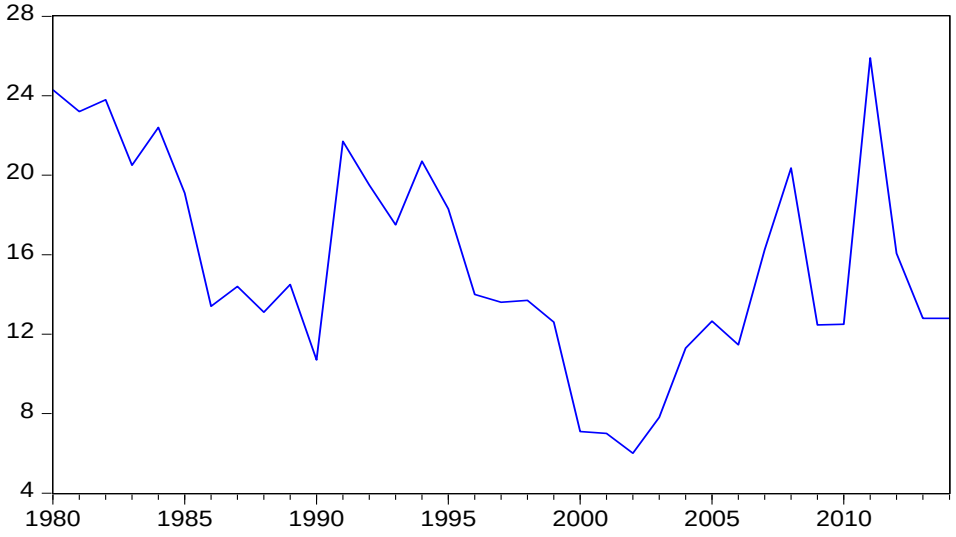


Figure 4.4: CPI changes from 1980-2014

Source: Developed by Author

There have been significant changes in CPI as evidenced by figure 4.4 but the highest CPI was recorded in 1980 and it stood at 24.3%. It later declined to 5.9% in 2002 but went up to

stand at 12.8% in 2014. The above figure provides a strong indication that changes in general prices in Libya have been volatile. Several studies have been conducted to establish the effects of inflation on economic growth and established ideas have shown that the effects of inflation on economic growth can be either negative or positive. For instance, Reinhart and Rogoff (2010) established that there is a negative relationship between GDP and CPI. This follows the notion that inflation impairs economic growth and hence needs to be dealt with.

Other studies have shown that inflation can actually have a positive effect on economic growth. For instance, Sullivan (2001) outlined that there is a certain low level of inflation that is needed to stir up economic growth. Such rate has been established to range or revolve with in the 3% mark and above that inflation is foreseen to have negative effects on GDP (Rodrik 2008). Other studies have shown that a rate above 7% -10% inflation will huge negative effects on GDP.

Irrespective of the various ideas that have been developed concerning the effects on inflation on GDP, there is a common adage that inflation is a 'bad economic outcome' and that is must be controlled to stay within the 'safe band'. This study therefore expects inflation to be negatively interlinked with GDP as noted by Reinhart and Rogoff (2010).

4.4.5 Terms of trade (TOT)

Rodriguez and Rodrik (2001) posit that favourable changes in terms of trade between economies will result in an increase in demand for local products which will translate to an increase in demand for its foreign currency. Terms of trade in this study synonymously refers to the relative measure of export prices in relation to import prices.

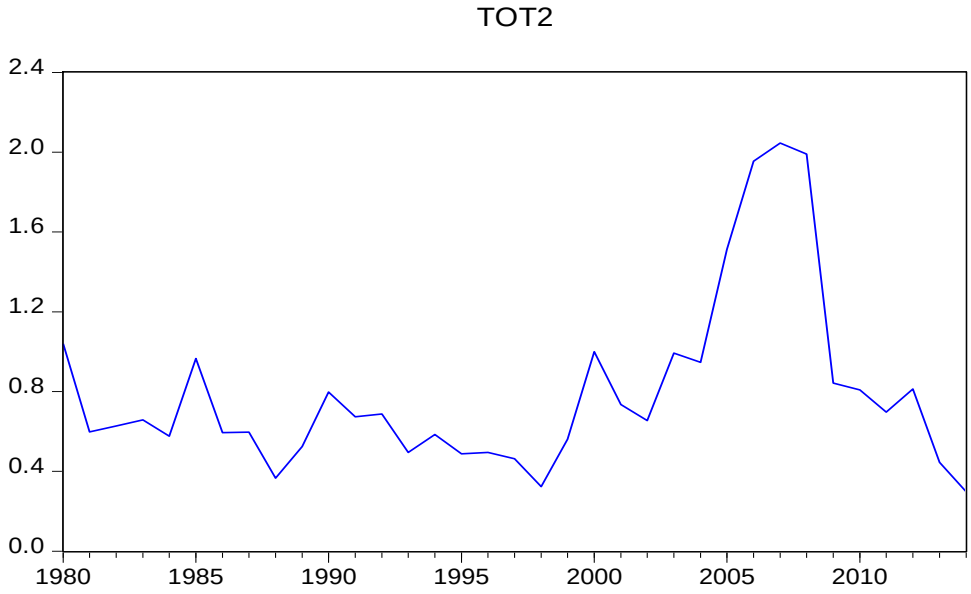


Figure 4.5: Libya's TOT variations

Source: Developed by Author

There were constant variations in TOT during the period 1984-1999 with huge increases being observed in in the year 2007. Expected results are in line with the study by Rodriguez and Rodrik (2001) which posits a bilateral relationship between the TOT and GDP.

4.5 Descriptive statistics

Table 4.1: Descriptive statistics

	LLCU	LOIL	LTOT	LGDP	LCPI
Mean	-0.5757	1.7997	-03444	4.0650	2.5340
Min	-1.2700	-1.8971	-1.2139	0.6523	-1.5977
Max	0.2700	3.5701	0.7158	5.1269	3.2542
Std. Dev	0.6616	1.4466	0.4659	0.6348	0.8923
Skewness	0.3232	-0.4798	0.6341	-4.4905	-3.4324

The highest mean growth observed during the period 1980-2014 is 4.065 which can be considered to be a relatively high growth pace. The minimum CPI rate is 1.598 and the highest rate is 3.25 which can to some extent show that the inflation rate has to a low extent been less responsive to changes in the macroeconomic environment. Huge variations were mainly in the area of OIL in which a high standard deviation of 1.45 was recorded. Which

implies that OIL prices were more responsive to changes in macroeconomic environment. Economic growth was more inclined to the negative side or periods of economic decline.

CHAPTER FIVE

ANALYSIS AND PRESENTATION OF RESULTS

5.1 Introduction

Having employed the ARDL on time series data ranging from 1980-2014, this chapter presents the obtained findings and their interpretation. It also outlines the methodological steps that were undertaken to arrive at conclusions which can be utilized to proffer policy recommendations. Such procedures are herein discussed as follows;

5.2 Stationarity tests

Stationarity tests were conducted using the Phillips Perron (PP) and the Augmented Dickey Fuller test (ADF). The main purpose behind the use of these stationarity tests is to determine whether the data has a unit root or not. The presence of a unit root signifies that the variable will affect the properties and behaviour of the model variables (Levin et al., 2002). These tests are outlined as follows;

Table 5.1: PP stationarity test at level

	PP at level	
Variable	**At level (intercept)**	**Trend and Intercept**
LCU	-3.54849 (0.8768)	-3.54849 (0.6009)
OIL	-2.95113 (0.5058)	-3.54849 (0.6556)
TOT	-2.95113 (0.2903)	-3.54849 (0.5690)

CPI	-2.95113*** (0.0888)	-3.54849 (0.2347)
GDP	-2.95113* (0.0000)	-3.54849* (0.0000)

** indicates stationary at 1% and 10% respectively*

The ARDL requires that some of the variables to be I(I) and others to be I(O) and from table 5.1, it can be discovered that the variables LCU, OIL, TOT and CPI are not I(O) whilst GDP is I(O). This satisfies the initial requirement of the ARDL. Table 5.2 shows results that were obtained in determining if the second condition of the ARDL is fulfilled.

Table 5.2: PP at first difference 1980-2014

	PP at first difference	
Variable	**At level (intercept)**	**Trend and Intercept**
LCU	-2.95402* (0.0004)	-3.55300* (0.0027)
OIL	-2.95402* (0.0003)	-3.513075* (0.0005)
TOT	-2.95402* (0.0000)	-3.55297* (0.0003)
CPI	-2.95402* (0.0000)	-3.55297* (0.0000)
GDP	-2.95402* (0.0001)	-3.55297* (0.0000)

** indicates stationary at 1%*

The second condition of the ARDL requires that the variables to be I(I) and not I(2) and the above table evidence that all of the variables are I(I). Thus, it satisfies the second condition of the ARDL. The same procedures were followed to determine if the results concur with the ADF test. The results are shown in table 5.3 and 5.4.

Table 5.3: ADF test at level

	ADF at Level	
Variable	**At level (intercept)**	**Trend and Intercept**
LCU	-2.95113 (0.8914)	-3.54849 (0.6530)
OIL	-2.95113 (0.5346)	-3.54849 (0.7576)
TOT	-2.95113 (0.2903)	-3.54849 (0.5690)
CPI	-2.95113*** (0.0720)	-3.55297 (0.2048)
GDP	-2.95113* (0.0000)	-3.55297* (0.0000)

** indicates stationary at 1% and 10% respectively*

The above results augment the PP results which showed that the variablesLCU, OIL, TOT and CPI are not I(O) whilst GDP is I(O). This satisfies the initial requirement of the ARDL. Hence, the first condition is sufficiently met.

Table 5.4: ADF at first difference

	ADF at first difference	
Variable	**At level (intercept)**	**Trend and Intercept**
LCU	-2.95402* (0.0004)	-3.55297* (0.0027)
OIL	-2.95402* (0.0003)	-3.55297* (0.0017)
TOT	-2.954021	-3.55297*

	(0.0000)	(0.0003)
CPI	-2.95711* (0.0000)	-3.55776* (0.0002)
GDP	-2.95711* (0.0000)	-3.55776* (0.0000)

** indicates stationary at 1%*

From the above table, it is evident that all the variables are I(I) hence the second requirement of the ARDL is also met. The study will thus proceed to conduct the diagnostic tests.

5.3 Diagnostics tests

Diagnostic tests were conducted in the area of normality, heteroscedasticity and serial correlation and the null hypotheses are that the data is normal, there is no heteroscedasticity and there is no serial correlation respectively. The results are shown in table 5.5.

Table 5.5: Diagnostics tests

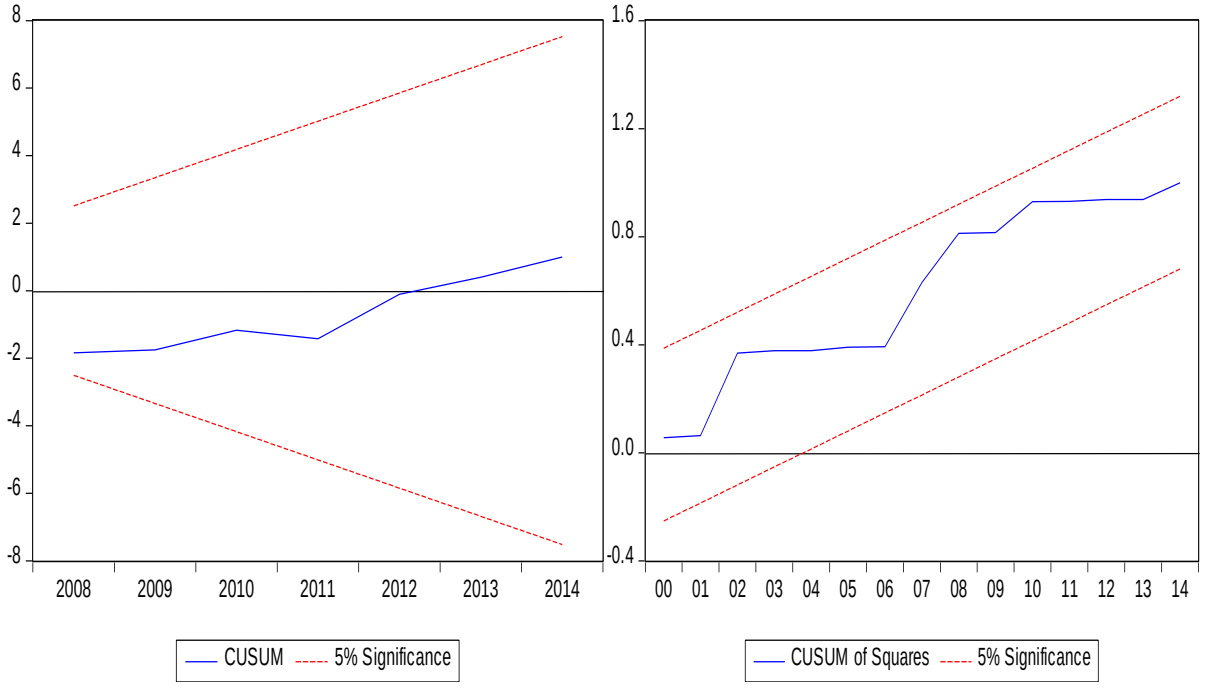
Test	Normality test	Heteroscedasticity	Serial correlation
P-value	0.691286	-	-
Breusch-Pagan Go.	-	1.0000	-
Arch test	-	0.3438	-
LM test	-	-	0.0515

It can be established using table 5.5 that all the null hypothesis are accepted at 5% since their respective p-values are greater than 5%. Thus it can be concluded that the variables are normal, do not suffer from heteroscedasticity and serial correlation problems. This therefore implies that the properties and behaviour of the variables will not affect the reliability of the estimated model.

5.4 Structural stability tests

Structural stability tests were conducted so as to determine if the model can be utilized for policy making. In this regard, a structurally stable model will imply that the model can be utilized for policy making. Structural stability tests focused on recursive cusum test and cusum of squares test. The results are shown in figure 5.1 below.

Figure 5.1: Cusum test and cusum of squares test



It can be established from figure 5.1 that the model is stable and hence it can be utilized for policy making.

5.5 Bounds estimation

ARDL bounds estimation was conducted to determine if there exist a long run relationship between the determinants of exchange rate and the movement of the exchange rate itself.

Table 5.6: Bounds estimation

Significance	I0 Bound	I1 Bound
10%	2.2	3.09

5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37
F-statistic 5.605866, k 4 Null hypothesis: No long run relationship		

The existence of a long run relationship is signified by the existence of an F-statistic which exceeds the critical values. The null hypothesis is rejected since the obtained F-statistic of 5.605866 exceeds both the lower and upper bounds values. Thus, it can be concluded that there exists a long run relation between the LYD exchange rate and its determinants. Hence short run and long run estimations can be undertaken. The selected ARDL model will be based on the model that possesses the lowest Alkaike values. Figure 5.2 denotes that the model ARDL (4, 4, 4, 4,) has the lowest Alkaike value hence it will be used to estimate the ARDL model.

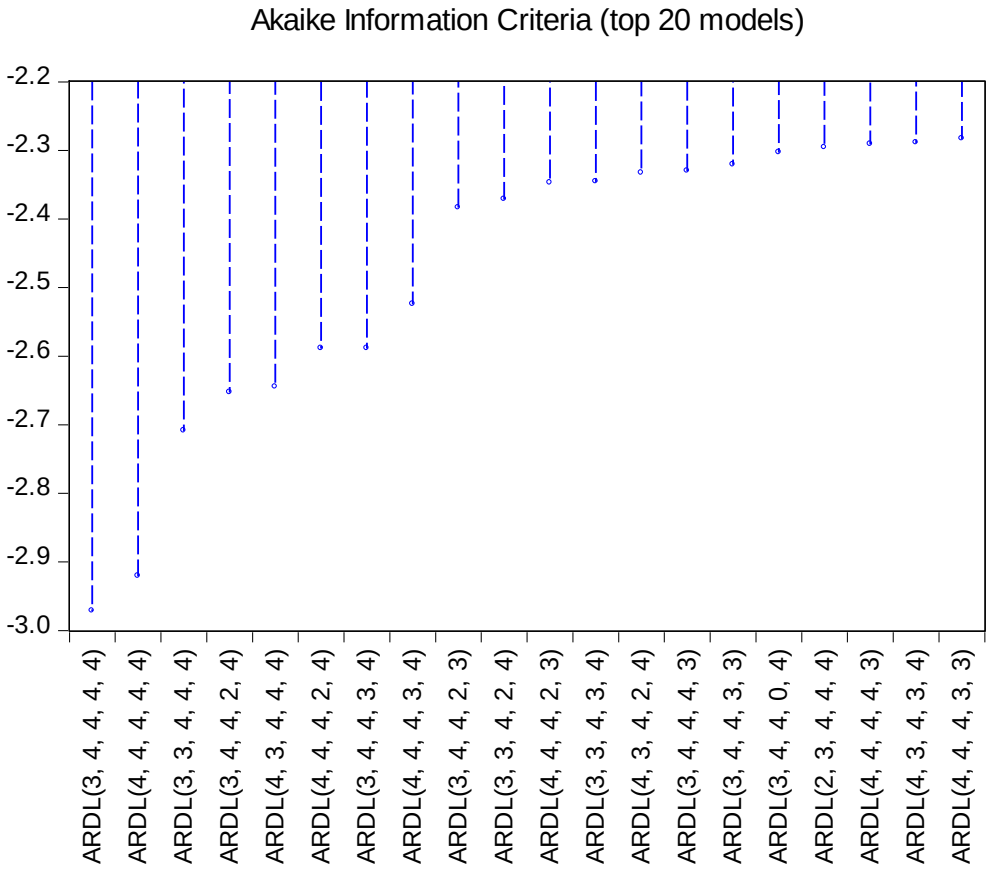


Figure 5.2: Model selection

Source: Developed by Author

5.5 Short run estimation

Table 5.7 shows the short run ARDL bound estimation results that were obtained from the modelled time series data.

Table 5.7: Short run estimation 1980-2014

Variable	Coefficient	Std. Error	T-Statistic	Prob.
LLCU(-1)	0.5249	0.246244	2.1750	0.0661***
LLCU(-2)	0.4230	0.3318	1.2748	0.2430
LLCU(-3)	-0.5813	0.1999	-2.9087	0.0227**
LOIL	0.0069	0.0224	0.3062	0.7683
LOIL(-1)	0.0513	0.02332	2.2013	0.0636***
LOIL(-2)	-0.0200	0.0334	-0.5991	0.5680
LOIL(3)	0.0265	0.0228	1.1623	0.2832
LOIL(4)	0.1049	0.0282	3.7122	0.0075*
LTOT	0.0408	0.0581	0.7031	0.5047
LTOT(-1)	0.0631	0.0588	1.0748	0.3181
LTOT(-2)	0.2114	0.0754	2.8047	0.0263**
LTOT(-3)	-0.0474	0.0720	-0.6577	0.5318
LTOT(-4)	0.1255	0.0632	1.9875	0.0872***
LGDP	-0.0685	0.0155	-2.8717	0.0239**
LGDP(1)	-0.1058	0.0148	-3.6507	0.0082*
LGDP(-2)	-0.1176	0.0976	-2.9965	0.0200**
LGDP(-3)	-0.1016	0.0253	-2.0341	0.0814***
LGDP(-4)	0.2942	0.0404	1.6464	0.1437
LCPI	-0.1073	0.0263	-4.0802	0.0047*
LCPI(-1)	-0.0564	0.0431	-1.3076	0.2323

LCPI(-2)	0.0823	0.0420	1.9583	0.0910***
LCPI(-3)	-0.0199	0.0185	-1.0744	0.3182
LCPI(-4)	-0.0505	0.0188	-2.6795	0.0319
C	0.2482	0.9126	0.2720	0.7935

, **, * indicates stationary at 1%, 5% and 10%, Dependent variable LCU*

The net effects of changes in LCU are negative though negative changes in LCU can be observed at third difference. It can also be noted that an increase in oil prices is having positive effects on the LYD/US exchange rate which change into negative effects in the 1st, 3rd and 4th lags. Possible reasons can be that possible investments are being directed towards oil; production at the expense of other sectors. This has been established by Rodrick (2008) which showed that a major rise in economic dominance in one sector always follows that more resources are spent towards that activity. Other sectors such as agriculture can suffer at the expense of oil and has industries as more resources are spent towards boosting oil production. This can also be attributed that rising oil prices provides a huge incentive for governments to inject more resources towards oil production (Babusiaux and Lescaroux, 2006).

The net effects posed by GDP and CPI are negative while that posed by TOT and OIL on the exchange rate are positive. It can thus be concluded that increases in oil prices and terms of trade have positive effects on the LYD exchange rate while GDP and CPI have negative effects on the LYD exchange rate in the short run. This is in line with assertions made there is a low rate of inflation that is necessary for economic growth. Hence we can conclude that this lowest rate of inflation in necessary to provide incentives for firms and governments to engage in productive activities.

5.6 Long run estimation

The study employed the ARDL bounds test to determine the long run relationship between the Libyan Dina/USD exchange rate and oil prices, terms of trade, economic growth and inflation. The results are presented in table 5.8 below.

Table 5.8: Long run estimation 1980-2014

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.391867	1.352182	0.289803	0.7804
LOIL	0.267827	0.034435	7.777830	0.0001*
LTOT	0.621274	0.086530	7.179845	0.0002*
LGDP	-0.156661	0364822	-0.429418	0.6805
LCPI	-0.239521	0.085882	-2.788942	0.0269**

** and ** Significant at 1% and 5% respectively, Dependent variable LCU*

It can be deduced from the results presented in table 5.7 that there is a positive relationship between oil prices and the LYD exchange rate. This supports results given by Babusiaux and Lescaroux (2006) which showed that oil prices are unilaterally related with an exchange rate. This is because an increase in international oil prices by US$1 will result in an appreciation of the LYD against the US dollar by 0.2678LYD. This is because increases in oil prices will result in an influx of foreign currency revenue which can be to further boost oil production and other productive activities which will result in mass production of more goods at relatively low prices. This is also supported by propositions made by both the portfolio balance approach and the balance of payment approach. Thus, domestic goods will become cheaper and competitive on the international market leading to an increase in demand of the LYD by international customers so as to acquire Libyan goods.

The results show that an improvement in Libya's terms of trade has a positive effect on its exchange rate against the US dollar. An improvement in TOT by 1% causes an appreciation of the LYD/US$ exchange rate by 0. 6213LYD. this is augmented by study results established by Rodriguez and Rodrik (2001) which showed that TOT can impose positive effects on the movement of an exchange rate. The same ideas are also supported by the traditional approach which contends that an increase in the demand of exports will be reflected by an increase in TOT which leads to an appreciation of the Dinar. This is because Libya's productive capacity is currently very on an upward path and much of the products that are produced domestically are being exported. Hence, an improvement in TOT is causing a huge out flux of exports. This puts a huge demand for the Dinar as opposed to the USD. The LYD appreciates as more USD is made available or supplied on the market.

Positive changes in GDP have a negative influence of the LYD/USD exchange rate. An increase in GDP by 1% will result in a decrease in the value of the LYD against the USD by LYD1. 1567. This is evident by results established by Rodrick (2008) which contended that

an increase an economic growth will result in an unfavourable change in a country's exchange rate. This is based on the improvement in the productive capacity of the economy which is not accompanied by improvements in the productive capacity and an increase in the costs of production. These two elements are the ones that make domestic products less competitive on the international market. As the competitiveness of these products decreases, their demand also decreases leading to the depreciation of the value of the LYD.

Changes in inflation are negatively related with the value of an exchange rate as can be noted from the long run estimated results. The results show that an increase in the inflation rate by 1% will result in a decline in the value of the LYD by LYD0. 2395. This supports findings by Reinhart and Rogoff (2010) which contend that inflation reduces the value of a currency. Reasons are based on the idea that domestic exports will become more expensive to sale to international buyers while imports will also become expensive as well. In addition, such support can be related to the monetary approach which contends that an increase in inflation will result in the depreciation of the local currency. Especially considering that domestic importers are now buying less products for more LYDs. The long run estimated equation can thus be expressed as follows.

$$LCU = 0.3919 + 0.\ 2678LOIL + 0.6213*LTOT - 0.1567*LGDP - 0.2395LCPI$$

5.7 Cointegration form

The main emphasis behind cointegration is to determine whether the variables are cointegrated in the long run. The existence of cointegration therefore implies that there is a long run association between the Libyan Dina/US$ exchange rate and oil prices, terms of trade, economic growth and inflation. Such can be attained when the cointegration coefficient is negative and significant.

Table 5.9: Cointegration results

Variable	Coefficient	Std. Error	T-Statistic	Prob.
CoinEq	-0.633436	0.0834419	-7.59344	0.0001*

Observations can be made that the cointegration coefficient (-0. 6334) is negative and significant at 1%. This therefore provides strong evidenced of the existence of cointegration. Thus conclusions can be made that the Libyan Dina/US$ exchange rate and oil prices, terms of trade, economic growth and inflation are cointegrated and have a long run association.

At the point of cointegration, both movements in LCU have positive lagged effects on LCU itself implying that the future value of LCU was determined by the previous LCU value and it was impossible for LCU to increase when its previous value was falling. The lagged changes have effects of -0.158364 and 0.581332 for lag 1 and 2 respectively.

First lagged change in oil prices has a negative effect on LLCU of -0.114, -0.1315 and -0.1049 which are insignificant at 1%. In levels TOT has positive effects on LLCU with insignificant effect. GDP can be observed to have significant negative effects on LLCU with coefficients of 0.0685, -0.07751, -0.1926 and -0.2942 in level and first, second and third lags respectively. At the point of cointegration, inflation will have significant negative effects on LLCU of 0.1073.

Table 5.10: Cointegrating equation 1980-2014

Variable	Coefficient	Std. Error	T-Statistic	Prob.
D(LOIL)	0.00687	0.0143	0.4802	0.6457
D(LTOT)	0.0408	0.0325	1.2566	0.2492
D(LGDP)	0.0685	0.0136	-5.0237	0.0015*
D(LCPI)	-0.1073	0.0164	-6.5222	0.0003*
CoinEq	-0.6334	0.0834	-7.5934	0.0001*

**, Significant at 1%, Dependent variable LCU*

Table 5.11: Summary of empirical findings

Author(s)	Variable	Expected results	Obtained findings
Babusiaux and Lescaroux (2006)	OIL	(+)	(+)
Rodriguez and Rodrik (2001)	TOT	(+)	(+)
Reinhart and Rogoff (2010)	CPI	(-)	(-)
Rodrick (2008)	DGP	(+/-)	(-)

Table 5.11 shows that there are significantly similar results that Have been obtained in comparisons to previous studies that have been undertaken before. This therefore confirms that propositions made by economic theories concerning the determinants of exchange rates is to a large extent to similar in most economies around the world including Libya.

CHAPTER SIX

CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE STUDIES

6.1 Conclusions

The study dwelt on examining the factors that are influencing the Libyan dinar exchange rate and this emanated from wide spread concerns that had been put forward against the value of the Dinar which has been tumbling against major currencies. Despite being pegged to the IMF SDR, the dinar still continued to plummet. This study therefore established that major factors that wee surrounding changes in the value of the Dinar were mainly related to changes in international oil prices, Libya's terms of trade, economic growth and its inflation rate.

Conclusions can thus be made that increases in inflation are causing a depreciation of the Dinar especially against the US dollar. This is because the inflationary environment is making exports expensive and the effects of imported inflation are also setting causing the value of the Dinar to depreciate.

Changes in Libya's terms of trade can also be concluded to have positive effects on the exchange rate. Improvements in TOT can only yield positive changes in the value of the Dinar on the condition that more domestic activities are being conducted and in retrospect the level of production in Libya has been low and most of the output that is consumed is being imported.

Oil prices can be concluded to be the major source of income that is financing Libya's budget and hence an increase in oil process will greatly enhance its capability to finance other economic activities as well as reconstruction efforts. Hence, it can thus be concluded that changes in oil prices have a significant bearing on the value of the Dinar and other domestic activities especially productive activities.

The most important conclusion that can be made is that if the Dinar is to rise in value against major currencies then an improvement in economic growth will have profound effect on the value of the Dinar. This is concluded to be mainly centred on productive capacity which will see mass production setting in and production costs falling leading to an increase in the competitiveness of Libyan exports on the internal market.

Ultimately, political effects, low international oil prices, deteriorating balance of payments and endorsement by the House of Representatives of the Government of National Accord do play an important role in the economic recovery process of Libya.

6.2 Recommendations

- Recommendations are made in line with the obtained results. Foremost, it can be recommended that there is greater need for the Libyan government to hedge against falling oil prices. This is because falling oil prices are hampering economic projects as revenue inflows required to finance the budget plummet. Such problems are compounded by the fact that the financial sector is also centred on petroleum derivatives. Thus diversification efforts can also be used to curb such problems and this can be accomplished by promoting the production of other products which may as well stimulate economic growth. Such activities include agriculture and manufacturing activities.
- Economic policies must be targeted at promoting economic growth and this can be achieved by utilizing a combination of foreign direct investment, tax and unemployment policies to draw domestic consumption from imports to domestically produced goods. But this can be attained when the level of domestic production is so high and competitive to domestic consumers.
- Monetary and fiscal policies must also be used to regulate the inflationary pressure which is affecting export and import levels. Thus, they must be designed to curb import inflation and make the price of exports more competitive on the international market.
- Terms of trade must be used to influence trade under predetermined conditions, foremost, it must be noted that it can yield desired outcomes when the country strives to promote its exports. However, the value and magnitude of Libyan exports has decline lately and much of Libya's consumption is being met by imports. In such, TOT will only make it feasible to consume more exports at the expense of domestically produced. The need to use TOT can also be effective on the condition that technology is imported or more strategic commodities required to boost domestic production are acquired. Thus recommendations can be made that the use of TOT to influence must be matched with Libya's productive situation.

- Pegging the Dinar to SDR needs to be supported especially by using foreign currency reserves so as to support the value of the Dinar against major currencies. This requires reinforcing by effective exchange rate management measures which may assume a more flexible form.
- Other measures however do pertain to promoting foreign direct investments by creating a conducive atmosphere for investment and ensuring that investor's funds will be protected through an investment funds protection scheme.

6.3 Suggestions for future studies

The study focused on the determinants of exchange in Libya and adopted an ARDL model to estimate the effects of these determinants on the Dinar. Other estimation procedures such as Garch and Arch estimation methods can also be used. In addition, the study can be applied on much wider scale by looking at panel study cases such as MENA, Euro zone etc.

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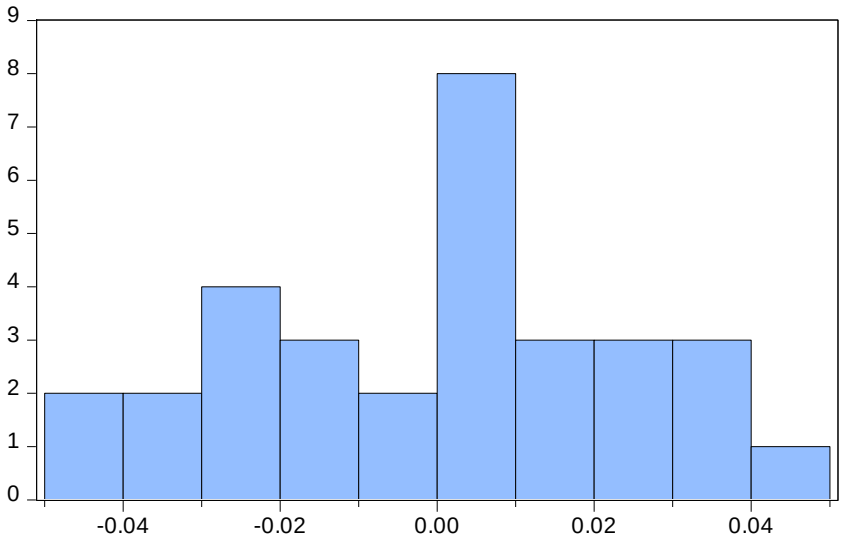
LIST OF APPENDICES

Appendix I: Normality test



Series: Residuals	
Sample 1984 2014	
Observations 31	
Mean	-4.59e-16
Median	0.003975
Maximum	0.043725
Minimum	-0.040751
Std. Dev.	0.025671
Skewness	-0.065758
Kurtosis	2.032362
Jarque-Bera	1.231759
Probability	0.540166

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.183089	Prob. F(2,10)	0.3458
Obs*R-squared	5.931623	Prob. Chi-Square(2)	0.0515

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 01/12/17 Time: 09:41
Sample: 1984 2014
Included observations: 31
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LLCU(-1)	-0.075066	0.249268	-0.301147	0.7695
LLCU(-2)	0.049923	0.215731	0.231414	0.8217
LLCU(-3)	0.000127	0.082092	0.001546	0.9988
LGDP	0.009029	0.016584	0.544406	0.5981
LGDP(-1)	0.009429	0.016534	0.570272	0.5811
LGDP(-2)	0.001638	0.015439	0.106099	0.9176
LGDP(-3)	-0.002765	0.014763	-0.187291	0.8552
LGDP(-4)	0.031331	0.102874	0.304554	0.7669
LCPI	0.020806	0.028461	0.731054	0.4815
LCPI(-1)	-0.007758	0.041934	-0.184996	0.8569
LOIL	0.003122	0.018885	0.165290	0.8720
LOIL(-1)	0.014627	0.024750	0.591003	0.5676
LOIL(-2)	0.013048	0.024038	0.542809	0.5991
LOIL(-3)	-0.000659	0.020974	-0.031418	0.9756
LOIL(-4)	-0.010663	0.020965	-0.508599	0.6221
LTOT	-0.006920	0.025638	-0.269905	0.7927
LTOT(-1)	-0.004568	0.015011	-0.304296	0.7671
LTOT(-2)	0.011305	0.015632	0.723170	0.4861
C	-0.282628	0.447505	-0.631564	0.5418
RESID(-1)	-0.259778	0.415829	-0.624722	0.5461
RESID(-2)	-0.626344	0.411323	-1.522757	0.1588

R-squared	0.191343	Mean dependent var	-4.15E-16
Adjusted R-squared	-1.425972	S.D. dependent var	0.029201
S.E. of regression	0.045482	Akaike info criterion	-3.119544
Sum squared resid	0.020687	Schwarz criterion	-2.148133
Log likelihood	69.35293	Hannan-Quinn criter.	-2.802888
F-statistic	0.118309	Durbin-Watson stat	2.118575
Prob(F-statistic)	0.999969		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.538267	Prob. F(23,7)	0.8761
Obs*R-squared	19.80297	Prob. Chi-Square(23)	0.6538
Scaled explained SS	0.521201	Prob. Chi-Square(23)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/20/17 Time: 16:07
Sample: 1984 2014
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.005640	0.014073	-0.400770	0.7005
LLCU(-1)	-0.001963	0.003722	-0.527377	0.6142
LLCU(-2)	-0.000659	0.005116	-0.128806	0.9011
LLCU(-3)	0.000849	0.003082	0.275400	0.7910
LOIL	0.000187	0.000346	0.539555	0.6062
LOIL(-1)	7.86E-05	0.000360	0.218620	0.8332
LOIL(-2)	-5.17E-05	0.000516	-0.100168	0.9230
LOIL(-3)	0.000447	0.000352	1.267752	0.2454
LOIL(-4)	1.35E-05	0.000436	0.030860	0.9762
LTOT	-0.000498	0.000896	-0.556376	0.5953
LTOT(-1)	0.000510	0.000906	0.563322	0.5908
LTOT(-2)	-0.000851	0.001162	-0.732080	0.4879
LTOT(-3)	0.000387	0.001111	0.348114	0.7380
LTOT(-4)	0.001158	0.000974	1.189262	0.2731
LGDP	0.000471	0.000368	1.282310	0.2406
LGDP(-1)	0.000435	0.000447	0.973035	0.3630
LGDP(-2)	0.000321	0.000605	0.531059	0.6118
LGDP(-3)	4.76E-05	0.000770	0.061851	0.9524
LGDP(-4)	-0.000210	0.002756	-0.076259	0.9413
LCPI	0.000107	0.000405	0.264276	0.7992
LCPI(-1)	-0.000173	0.000665	-0.259995	0.8023
LCPI(-2)	0.000118	0.000648	0.182688	0.8602
LCPI(-3)	-3.42E-05	0.000285	-0.119962	0.9079
LCPI(-4)	-1.44E-05	0.000290	-0.049446	0.9619

R-squared	0.638805	Mean dependent var	0.000638
Adjusted R-squared	-0.547977	S.D. dependent var	0.000659
S.E. of regression	0.000820	Akaike info criterion	-11.31539
Sum squared resid	4.70E-06	Schwarz criterion	-10.20521
Log likelihood	199.3886	Hannan-Quinn criter.	-10.95350
F-statistic	0.538267	Durbin-Watson stat	1.802016
Prob(F-statistic)	0.876063		

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LLCU)
Selected Model: ARDL(3, 4, 4, 4, 4)
Case 2: Restricted Constant and No Trend
Date: 06/20/17 Time: 16:08
Sample: 1980 2014
Included observations: 31

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.248223	0.912618	0.271990	0.7935
LLCU(-1)*	-0.633436	0.198419	-3.192413	0.0152
LOIL(-1)	0.169651	0.069528	2.440033	0.0448
LTOT(-1)	0.393538	0.149467	2.632938	0.0338
LGDP(-1)	-0.099235	0.255374	-0.388587	0.7091
LCPI(-1)	-0.151721	0.036326	-4.176647	0.0042
D(LLCU(-1))	0.158364	0.209996	0.754128	0.4754
D(LLCU(-2))	0.581332	0.199860	2.908695	0.0227
D(LOIL)	0.006870	0.022434	0.306241	0.7683
D(LOIL(-1))	-0.111440	0.055801	-1.997115	0.0860
D(LOIL(-2))	-0.131473	0.037677	-3.489500	0.0101
D(LOIL(-3))	-0.104923	0.028265	-3.712175	0.0075
D(LTOT)	0.040846	0.058091	0.703130	0.5047
D(LTOT(-1))	-0.289542	0.106988	-2.706310	0.0304
D(LTOT(-2))	-0.078175	0.077749	-1.005470	0.3482
D(LTOT(-3))	-0.125542	0.063167	-1.987468	0.0872
D(LGDP)	-0.068470	0.023843	-2.871701	0.0239
D(LGDP(-1))	-0.075061	0.230534	-0.325597	0.7542
D(LGDP(-2))	-0.192646	0.206469	-0.933053	0.3818
D(LGDP(-3))	-0.294203	0.178695	-1.646397	0.1437
D(LCPI)	-0.107281	0.026293	-4.080191	0.0047
D(LCPI(-1))	-0.011950	0.043698	-0.273468	0.7924
D(LCPI(-2))	0.070314	0.022030	3.191704	0.0152
D(LCPI(-3))	0.050463	0.018833	2.679520	0.0316

* p-value incompatible with t-Bounds distribution.

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOIL	0.267827	0.034435	7.777830	0.0001
LTOT	0.621274	0.086530	7.179845	0.0002
LGDP	-0.156661	0.364822	-0.429418	0.6805
LCPI	-0.239521	0.085882	-2.788942	0.0269
C	0.391867	1.352182	0.289803	0.7804

EC = LLCU - (0.2678*LOIL + 0.6213*LTOT -0.1567*LGDP -0.2395*LCPI + 0.3919)

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	5.605866	10%	2.2	3.09
k	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Dependent Variable: LLCU
Method: ARDL
Date: 06/20/17 Time: 16:11
Sample (adjusted): 1984 2014
Included observations: 31 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): LOIL LTOT LGDP LCPI
Fixed regressors: C
Number of models evalulated: 2500
Selected Model: ARDL(3, 4, 4, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LLCU(-1)	0.524927	0.241343	2.175022	0.0661
LLCU(-2)	0.422968	0.331781	1.274842	0.2430
LLCU(-3)	-0.581332	0.199860	-2.908695	0.0227
LOIL	0.006870	0.022434	0.306241	0.7683
LOIL(-1)	0.051341	0.023323	2.201340	0.0636
LOIL(-2)	-0.020033	0.033438	-0.599094	0.5680
LOIL(-3)	0.026549	0.022842	1.162312	0.2832
LOIL(-4)	0.104923	0.028265	3.712175	0.0075
LTOT	0.040846	0.058091	0.703130	0.5047
LTOT(-1)	0.063149	0.058755	1.074787	0.3181
LTOT(-2)	0.211368	0.075363	2.804679	0.0263
LTOT(-3)	-0.047367	0.072024	-0.657661	0.5318
LTOT(-4)	0.125542	0.063167	1.987468	0.0872
LGDP	-0.068470	0.023843	-2.871701	0.0239
LGDP(-1)	-0.105826	0.028988	-3.650724	0.0082
LGDP(-2)	-0.117585	0.039241	-2.996469	0.0200
LGDP(-3)	-0.101557	0.049926	-2.034130	0.0814
LGDP(-4)	0.294203	0.178695	1.646397	0.1437
LCPI	-0.107281	0.026293	-4.080191	0.0047
LCPI(-1)	-0.056390	0.043124	-1.307612	0.2323
LCPI(-2)	0.082264	0.042007	1.958338	0.0910
LCPI(-3)	-0.019851	0.018475	-1.074465	0.3182
LCPI(-4)	-0.050463	0.018833	-2.679520	0.0316
C	0.248223	0.912618	0.271990	0.7935

R-squared	0.998491	Mean dependent var	-0.494642
Adjusted R-squared	0.993533	S.D. dependent var	0.660836
S.E. of regression	0.053144	Akaike info criterion	-2.971320
Sum squared resid	0.019770	Schwarz criterion	-1.861136
Log likelihood	70.05546	Hannan-Quinn criter.	-2.609428
F-statistic	201.3814	Durbin-Watson stat	2.320886
Prob(F-statistic)	0.000000		

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

ARDL Error Correction Regression
Dependent Variable: D(LLCU)
Selected Model: ARDL(3, 4, 4, 4, 4)
Case 2: Restricted Constant and No Trend
Date: 06/20/17 Time: 16:10
Sample: 1980 2014
Included observations: 31

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LLCU(-1))	0.158364	0.140421	1.127780	0.2966
D(LLCU(-2))	0.581332	0.103844	5.598154	0.0008
D(LOIL)	0.006870	0.014305	0.480249	0.6457
D(LOIL(-1))	-0.111440	0.019516	-5.710050	0.0007
D(LOIL(-2))	-0.131473	0.022065	-5.958511	0.0006
D(LOIL(-3))	-0.104923	0.017288	-6.069031	0.0005
D(LTOT)	0.040846	0.032504	1.256618	0.2492
D(LTOT(-1))	-0.289542	0.046116	-6.278499	0.0004
D(LTOT(-2))	-0.078175	0.040682	-1.921590	0.0961
D(LTOT(-3))	-0.125542	0.045152	-2.780445	0.0273
D(LGDP)	-0.068470	0.013629	-5.023700	0.0015
D(LGDP(-1))	-0.075061	0.022020	-3.408776	0.0113
D(LGDP(-2))	-0.192646	0.032247	-5.974160	0.0006
D(LGDP(-3))	-0.294203	0.046142	-6.376069	0.0004
D(LCPI)	-0.107281	0.016449	-6.522166	0.0003
D(LCPI(-1))	-0.011950	0.023436	-0.509894	0.6258
D(LCPI(-2))	0.070314	0.015224	4.618635	0.0024
D(LCPI(-3))	0.050463	0.013221	3.816851	0.0066
CointEq(-1)*	-0.633436	0.083419	-7.593440	0.0001

R-squared	0.967159	Mean dependent var	0.046548
Adjusted R-squared	0.917896	S.D. dependent var	0.141654
S.E. of regression	0.040589	Akaike info criterion	-3.293900
Sum squared resid	0.019770	Schwarz criterion	-2.415005
Log likelihood	70.05546	Hannan-Quinn criter.	-3.007403
Durbin-Watson stat	2.320886		

* p-value incompatible with t-Bounds distribution.