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OIL PRICE AND FINANCIAL STABILITY IN IRAQ  
FROM (2003-2015)



MASTER'S THESIS

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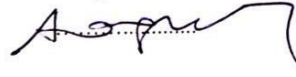
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## DECLARATION

The material include in this thesis has not been submitted wholly or part for any academic award or qualification other than that for which it is now submitted.

AYAD OMAR SULAIMAN



## ABSTRACT

The study examined the effect of oil prices on the financial stability in the Iraq economy for the period (2003-2015) by determining the most important factors that affect financial stability, as a function of the world price of the barrel, the parallel exchange rate, the money supply and inflation rates and GDP at constant prices. The study used the standard method of the least squares in the estimate. Applied study used the root of the unit tests to test the approved time series in this study at the root of the unit by Phillips-Perron test. Also sought to get a fixed time series on the level of integration determined by the tests, in order to identify and estimate a standard model to analyze the impact of the economic variables of the study on the financial lack in the Iraqi economy, in addition to some suggestions and recommendations that may help economic policies to use tools to achieve financial stability and then contribute In achieving economic growth. The study is based on the assumption that continued dominance of oil revenues over public revenues of the state will have serious negative reflection on the financial stability in Iraq due to the continuous fluctuation of crude oil prices in the global market for economic and political reasons. The study concludes with a number of conclusions and suggestions that have been drawn from the theoretical and quantitative aspects of the research, which may help to enhance financial stability in Iraq .With concern to the most important results, The hypothesis of the study that the relationship between the financial stability of the price of a barrel globally is a positive, when the rise in oil prices in the world, lead to increase oil revenues in the Iraqi economy, and the privacy of the economy profitability, it leads to increase public revenues within the economy and thus leads to Increase financial stability. The proposals are: for the purpose of alleviating the negative effects of international economic variables should the economy works to adopt economic policies that would reduce dependence on oil resources and the form in which it works to diversify the national income and the trend towards the development of the national economy and the search for other sources to obtain the financial resources of the state by taking advantage of the oil resources currently in the establishment of private local export industries to replace oil resources after the end of the oil era.

**Key world:** Oil price, Financial Stability, Iraq

## ÖZET

Bu çalışma, finansal istikrarı etkileyen en önemli faktörler olan paralel döviz kuru, para arzı, enflasyon oranları, ve sabit fiyatlarla GSYİH'yi dünya varil fiyatının fonksiyonu şeklinde inceleyerek petrol fiyatlarının Irak ekonomisinin 2003-2015 dönemindeki finansal istikrar üzerindeki etkisini ele almaktadır. Çalışmada En Küçük Kareler yöntemi uygulanmıştır. Uygulama kısmında bu çalışmadaki Philips-Perron testi ile onaylanmış zaman serileri birim kök testleri ile test edilmiştir. Ayrıca, ekonomi politikalarının finansal istikrarı sağlamak için bir takım araçlar kullanmalarına ve daha sonra ekonomik büyümeye katkıda bulunmasına yardımcı olabilecek bazı öneriler ve tavsiyelere ek olarak, çalışmadaki değişkenlerin Irak ekonomisindeki finansal eksiklik üzerindeki etkilerini standart bir model ile analiz etmek ve belirlemek için belirlenen entegrasyon düzeyi için sabit bir zaman serisi elde edilmeye çalışılmıştır. Bu çalışma, petrol gelirlerinin devletin kamusal gelirleri üzerinde seyretmesinin, ekonomik ve politik nedenlerle küresel pazardaki ham petrol fiyatlarının sürekli dalgalanması nedeniyle Irak'taki finansal istikrar üzerinde ciddi olumsuz yansımaları olacağı varsayımına dayanmaktadır. Çalışma, Irak'taki finansal istikrarın geliştirilmesine yardımcı olabilecek bu araştırmanın teorik ve niceliksel yönlerinden alınmış bazı sonuçlar ve önerilerle sonuçlandırılmıştır. Dünya petrol fiyatlarındaki yükselişin Irak ekonomisinde petrol gelirlerinin artmasına yol açması, küresel olarak bir varil fiyatının finansal istikrar arasındaki ilişkinin olumlu olduğunu gösteren çalışmanın hipotezi ve ekonominin kârlılığının gizliliği, ekonomideki kamu gelirlerini artırmaya ve dolayısıyla finansal istikrarı artırmaya yönlendirmesi, çalışmanın en önemli sonuçlarından. Öneriler şunlardır: Uluslararası ekonomik değişkenlerin olumsuz etkilerini hafifletmek amacıyla, petrol kaynaklarına bağımlılığı azaltacak ekonomi politikaları benimsemeye ve hali hazırdaki petrol kaynaklarının varlığı avantajından faydalanılarak ulusal geliri artırmaya ve kalkınmaya yönelik politikaları çeşitlendirmeye çalışılmalıdır. Devletin, petrol çağı sonrası için finansal kaynaklarını elinde tutmasını sağlamak amacıyla ulusal ekonominin geliştirilmesi ve başka kaynak arayışları gerekmektedir.

**Anahtar kelimeler:** Petrol fiyatı, Finansal İstikrar, Irak

## **DEDICATION**

This Research work was dedicated to Allah (S. W. A), for given me the opportunity to successfully completed this program without any hindrance. It was also dedicated to: the lovely messenger of Allah (Prophet Muhammad), peace and blessing be upon him, His family, His companion and those who follows his teaching up to the day of resurrection.



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## LIST OF ABBREVIATIONS

ADF	Augmented Dickey-Fuller
APEC	Asia-Pacific Economic Cooperation
B/D	barrel day
CBI	Central Bank of Iraq
CIA	Central Intelligence Agency
CPI	Consume Price Index
ER	Exchange rate
GDP	Gross domestic product
IEA	International Energy Agency
INFR	Inflation rate
IOFS	Index of financial stability
IQD	Currency of Iraq
J-J	Johansen Juselius
MS	Money supply
OAPEC	Organization of Arab Petroleum Exporting Countries
OLS	Ordinary Least Square
OPEC	Organization of the Petroleum Exporting Countries
POBG	Price of a barrel globally
PP	Phillips Perron
RE	RYSTAD Energy
UK	United Kingdom
USA	United State of America
VAR	Vector Auto-regression
VAR	Vectorial Autoregressive

# CHAPTER ONE: INTRODUCTION

## 1.1 INTRODUCTION

The international oil market is characterized by instability and frequent fluctuations of oil prices because they are affected by several factors. We know that oil is an international commodity in its range and a strategic commodity in its importance for all countries all over the world, whatever advanced they are all countries consume oil in different degrees while there are a limited group of countries which produce and export oil.

The difficulty of political and security climate, economy's exposure to shocks internally and externally, the weakness of economic structure and the international sanctions on Iraq during the past 30 years resulted in the great collapse to the economic aspect. In addition, although Iraq has one of the largest reserves of oil and gas all over the world, there are certain reserves that reached 143 billion gallons, and the costs of extracting oil are very low. The oil sector suffers from the collapse of infrastructure, which is required for benefiting from its natural resources. It is well known that Iraqi economy is inclined on the producing and exporting of raw oil. Oil exports from Iraq account for 65% of the Iraqi GDP and 90% of total revenues of the federal government in 2010.

The non-oil sectors (services, construction, transportation, agricultural and industrial sector) account for the residual percentage and depend greatly on governmental spending due to the limited direct effects of the oil sector. International oil companies operate oil sector, therefore, the prosperity and welfare of Iraq are dependent on sustaining raw oil production and rationalizing the use of its wealth generated. In order to find a huge and rapid source of income and wealth to correct economy flaws in Iraqi and develop it to levels which are consistent with the magnitude of its natural resources, the Iraqi government has to resort diversifying and developing the sources of oil extraction sector in Iraq.

Research Problems Iraq is a rentier state, which relies on a single depleting source, that is, oil. The previous practices of economic and oil policy in Iraq contributed to creating such rentier state through ignoring the diversification and liberation of the economy. In turn, this resulted in the fact that public budget is fully dependent on oil revenues and at a high percentage of 90%. As a result, the Iraqi economy has become subject to risks resulting from fluctuations in international oil prices. In addition, one of the results of these fluctuations is exaggerating economic and political problems of Iraq.

#### Goals of the study

This research aims to achieve the following:

- ▶ Determining how the financial system behaves toward the fluctuation of oil price.
- ▶ Investigate whether other variables (such as GDP, Inflation, Exchange rate, Money supply) have the impact on the financial system.
- ▶ Find out whether one variable can cause the other.

#### Importance of the study

- ▶ This research work will help the government of Iraq to device means that will improve the financial system of the country.
- ▶ It will also guide the foreign investors to determine when and by how much are they going to invest in Iraq.
- ▶ Moreover, it will serve as a starting point for other economics and financial researchers in the Universities, Higher Institution and Research Institute.

#### Research Question

- Is current oil fluctuation still affecting Iraq's financial system as it was affected it thirty (30) years ago?
- Can other variables (that is, inflation, exchange rate, money supply) also affect the financial system in Iraq?
- How significant can one variable cause the other? (That is, is there any causality among the variables).

### Research Hypothesis

- ◆ H<sub>0</sub>: Oil prices have no significant impact on the financial system.  
H<sub>1</sub>: Oil prices have the significant impact on financial system.
  
- ◆ H<sub>0</sub>: No other variable that has the significant impact on the financial system.  
H<sub>1</sub>: Some of the other variables have the significant impact on the financial system.
  
- ◆ H<sub>0</sub>: None of the variable that can cause the other.  
H<sub>1</sub>: Some of the variables can cause the other.

### Research methodology

- The Theoretical Study:

The research uses the empirical review to examine how financial system of Iraq behaves in the past as prices of oil fluctuate internationally. Some kinds of literature and other researchers about oil prices and financial system of Iraq were studied in order to see the findings.

- The study process:

Ministry of Planning and Development Cooperation, Ministry of Finance, Ministry of Oil, data and economic reports, Central Bank of Iraq, reports of global energy organization and the reports of OPEC; were the sources of data for this research, and it was analyzed by using Eviews 9 program.

### The limitations of study

This study conducted within the following limits:

- Spatial boundaries have been specified field of application of the study in Iraq as the Cubs extensive and in-depth study on the impact of the fluctuation of global oil prices on the Iraq budget.
- Time limits: data collection process limited to the semi-annual period (2003-2015) as it long enough to achieve the objectives of the research, the aim of choosing this period is the changes that have occurred in Iraq after the 2003 changes in financial and economic policies.

Summary of the Chapter: This chapter plan to give an insight into this study, which contains the following:

Introduction: this gives a short and precise explanation of financial system and prices of oil in Iraq, by examining the history and the relationship between them. Though, this research cover from 2003 to 2015 but it try to look how financial system of Iraq behaves with the fluctuation of oil prices in many years ago (that is, in the period before 2003).

Research problem: This explains the problems that Iraq is facing whenever there is the fluctuation of oil prices. The country solely depends on crude oil, which causes the country to suffer a lot in its economy when there is fall of oil prices.

The Goal of the study: Due to high dependency on crude oil, this research sets three goals, which were stated in this chapter in order to see whether there are changes occurred in the period that this research covered.

The Importance of the research: This states how findings of this research can be helpful to the society. The findings can be used for economic planning, economics analysis, economic decision, as well as political planning.

Research questions Are the question under study, it asks what researcher want to find at the end of the research. From the research questions, the hypothesis is built.

Research methodology: This explains the process and techniques used by the researcher in order to achieve the stated goals. The researcher obtains data from various sources and analyzes using appropriate statistical tools.

Limitation of the study: This explains the area and the duration that this research will cover. This research touches any area that has the impact on the financial system of Iraq (that is, money supply, exchange rate, inflation, prices of oil per barrel) and the duration is from 2003 to 2015.



## CHAPTER TWO: THE LITERATURE REVIEW

This section presents the different studies done, the method used, the countries of research and results obtained, with a view to providing a conceptual framework and convenient policy recommendations. With a view to providing a conceptual framework and convenient policy recommendations in this study, it is important to present a theoretical framework which bolsters this study, in addition to the various theories that will be discussed in this chapter, empirical literature is also presented. The goal of presenting empirical literature is to explore work done by others and kind of methods of research applied in this field with a view to determining any existing gaps in the literature.

### 2.1 Empirical literature Review

Mehrara (2008) estimated the asymmetric effects of oil revenues on output growth in 13 oil exporting economies, namely; Colombia, Algeria, Ecuador, Qatar, Indonesia, Libya, Iran, Kuwait, Mexico, United Arab Emirates, Nigeria, Saudi Arabia and Venezuela using annual data during the period 1965 to 2004 and applying two different oil shocks measures and a dynamic panel framework, the researcher concluded that positive oil shocks were dominated by negative shocks. The adverse effects of oil bust on economic growth were more long lasting while a limited role was played by oil booms in stimulating economic growth.

In the case of Venezuela, Mendoza and Vera (2010) following Hamilton (2003), Lee et al. (1995) and Mork (1989) investigated the asymmetric effects of oil price shocks on output growth using (Generalized Autoregressive Conditional Heteroscedasticity) GARCH model during the period 1984 to 2008. The results showed a significant positive effect of oil price shocks on economic growth. Moreover, the results suggested that the economy of Venezuela was more responsive to positive oil price shocks as compared to negative shocks.

Berument, Ceylan and Dogan (2010) investigated the impact of oil shocks on economic growth in the selected Middle East and North African (MENA) economies and used Vector Autoregressive (VAR) model. As MENA is composed of both oil importing and oil exporting countries, it was found that positive oil shocks had significant positive impact on economic growth of the oil exporting economies (Algeria, Iraq, Iran, Kuwait, Oman, Libya, Syria, Qatar, and the United Arab Emirates) and vice versa. Whereas, there have been no significant effect of oil price shock on economic growth of oil importing countries (Bahrain, Egypt, Djibouti, Jordan, Israel, Tunisia and Morocco). For finding the effect of oil shocks on latter set of countries, the positive oil shocks were further decomposed to oil supply and oil demand shocks. It was suggested that output decreased with positive oil supply shocks while the output increased with positive oil demand shocks. When the exercise was repeated for oil exporting countries, these countries output increased regardless of whether oil price increases were associated with oil supply shocks or oil demand shocks.

In case of Iran, Mehrara, Maki and Tavakolian (2010) examined the asymmetric effects of oil revenues and economic growth during the period 1959 to 2007 applying the threshold error correction approach. The authors concluded that output growth was more responsive to low oil revenue regimes than to high oil revenue regimes. The threshold of oil revenues was 37%, in a way that when growth rate of oil revenue was less than 37% (in regimes of low or moderate oil revenues), the economic growth was positively affected by oil revenue, but when growth rate of oil revenue was greater than 37% (in regimes of high oil revenues), there was no significant impact of oil revenues on output growth.

Mehrara & Rezazadehkarsalari (2011), Haghiri, and Behrooznia (2013) estimated the asymmetric impacts of oil shocks on economic growth. Mehrara (2011) using Gregory and Hansen Cointegration test during the period 1960- 2006 concluded that the long run estimations results indicated a negative relationship between oil revenue and production level and the findings were in line with resource curse or Dutch disease in countries that are highly dependent on natural resources. While, the short run estimations results indicated that oil shocks have had a significant effect on economic growth, but the impact of negative oil shocks were found to be more long lasting and much stronger as compared to the impact of positive oil price shocks.

In addition, negative oil shocks had adverse effects on output growth while a limited role was played by positive oil shocks in stimulating economic growth. Moreover, the output growth was more responsive to negative oil shocks than to positive oil shocks. Similarly, Rezazadehkarsalari, Haghiri, and Behrooznia (2013) using Rodrick Prescott filtering to separate negative shocks from positive shocks during the period 1960 to 2010. Their short run estimation results were identical to that of the former study; that economic growth was significantly affected by oil shocks, however; the effects of negative shocks were found much stronger than positive shocks.

In case of Nigeria, Adedokun (2012) studied the effect of oil export revenue and the output growth over the period 1975 - 2009 using Error Correction Model (ECM). The researcher found a significant positive effect of oil revenue on economic growth not only in the short term, but also in the long term. Monjazebe, Souri and Shahabi (2013) studied the link between oil price shocks and output growth of oil exporting economies using the annual data during the period of 1990 to 2009 for 26 oil exporting countries, namely; America, Australia, Bangladesh, Belgium, Brazil, Britain, Canada, Denmark, Egypt, Germany, France, Indonesia, India, Italy, Iran, Japan, Kenya, Kazakhstan, Malaysia, Norway, Mexico, Netherlands, Sweden, Singapore, Thailand and Venezuela applying the panel data regression model with both random and fixed method. The result indicated that positive oil price shocks have had a significant positive impact on GDP growth of oil exporting countries and vice versa while the fixed effects was different for the countries selected.

In case of Russia, Ito (2008) and Ito (2010) investigated the effect of oil prices on real GDP and the inflation level. In former study the author used Vector Autoregressive (VAR) model over the period 1995 to 2007 and concluded that the real GDP and inflation responded positively to increase in oil price. In later study, over the period 1997 - 2007 and using Vector Error Correction (VEC) approach the author came up with identical result; that the real GDP responds by 0.25% while inflation responds by 0.36% to a 1% oil prices increase over the next 12 quarters.

Samimi and Shahryar (2009) studied the effect of oil shocks on inflation and output in six OPEC members, namely Iran, Nigeria, Venezuela, Saudi Arabia, Indonesia and Kuwait using yearly data from 1970 to 2005 and applying structural vector autoregressive (SVAR) method. The results indicated that in long run, the impact of oil shocks on the real GDP growth was positive for all the economies, but not Kuwait. In Kuwait, this impact was negative in the long run, but positive in the short run. The real GDP was positively affected by supply side shocks in all countries and for Iran, Saudi Arabia and Kuwait; in long run, this impact was more permanent as compared to others. In long run, there was a more positive and permanent impact of demand side shock on inflation as compared to supply side shocks.

In case of Nigeria, Arinze (2011) estimated the effect of oil price on economy using simple regression analysis to find the impact of oil price on inflation rate. The study implied a significant positive effect of petroleum price and inflation. In case of Malaysia, Shaari, Hussain and Abdullah (2012) studied the relationship between oil shocks on inflation using monthly data over the period 2005- 2011 and applying Granger Causality and VAR-VECM model. The results indicated that inflation was affected by crude oil prices. Changes in crude oil price had led to changes in inflation.

Nikbakht (2010) using monthly panel of seven OPEC economies namely, Indonesia, Algeria, Nigeria, Kuwait, Iran, Venezuela and Saudi Arabia over the period 2000 - 2007 found the real oil prices as the main cause of real exchange rate movements. Moreover, there was a long run relationship between real exchange rates and real oil prices.

Nigeria, Mordi and Adebisi (2010) estimated the effect of oil shocks on output and inflation using monthly data during the period 1999 to 2008 and applying structural VAR model. The results of the study indicated that there was an asymmetric effect of oil shocks on output, exchange rate and price. And these variables were more responsive to negative oil price shocks than to positive oil price shocks.

Lorde, Jackman and Thomas (2009) investigated the impacts of oil price changes in case of Trinidad and Tobago. Applying Vector Autoregressive (VAR) model, the results indicated a significant positive effect of positive oil shocks on output, price level, exchange rate, government revenue and gross investment. The exchange rate appreciation was indicative of Dutch disease.

Garkaz, Azma and Jafari (2012) investigated the impact of oil revenues in government expenditure in Iran over the period 1996 to 2007 applying Wavelet analysis approach. During long term period, a strong positive and significant relationship was reported.

Olomola (2006) examined the effect of oil shock in Nigeria on the aggregate economic activity, namely inflation, output, money supply and the real exchange rate using quarterly data over the period 1970 - 2003 and applying Vector Autoregressive (VAR) method. Contrary to previous research findings, the results of this study indicated that there had been no effect of oil price shocks on inflation and output in Nigeria while a significant relationship existed between the real exchange rate and the oil price shocks. Moreover, oil price shock was considered as a significant determinant of real exchange rates and in long run the money supply, while it was not the oil price itself but rather the money supply that affected Nigerian output growth. Therefore, this finding supported the previous researches that monetary policy responds to the oil shocks. In addition, Umar and AbdulHakeem (2010) examined the impact of oil price shocks on four macroeconomic indicators, namely, the real GDP, money supply, unemployment and consumer price index using Vector Autoregressive (VAR) model. The results indicated significant effect of oil shocks on all the variables, with the exception of consumer price index.

Bouchaour and Al-Zeaud (2012) studied the effect of oil price fluctuations on Algerian macroeconomics applying a Vector Error Correction Model (VECM) during the period 1980-2011. The key results that emerged from the study were (a) the short term results indicated no significant effect of oil prices on most of the variables, with the exception that they had a negative effect on the real effective exchange rate and a positive effect on inflation rate. (b) The long term results indicated a significant positive effect of oil prices on real GDP and inflation while there was a negative impact of oil prices on unemployment and the real effective exchange rate. (c) Oil prices had no impact on money supply.

Eltejaei and Afzali (2012) in Iran, estimated the asymmetric effects of oil price and revenues on growth rates of Gross Domestic Product (GDP), Consumer Price Index (CPI), Government Capital and Current Expenditures using Structural VAR model on quarterly data during the period 1990 to 2008 and found that the effects of positive shocks which increased economic growth had been much weaker than the effects of negative shocks that decreased economic growth. In addition, growth rate of Government current and capital expenditures, and inflation showed an asymmetric response to both negative and positive shocks.

On the other hand, Farzanegan and Markwardt (2009) examined the asymmetric impacts of oil shocks on Inflation, Industrial growth rate, the real effective exchange rate and real government expenditure using Vector Autoregressive (VAR) approach. The key findings that emerged from this paper were: (1) both negative and positive oil price shocks significantly increased inflation. (2) Positive oil shocks led to appreciation of exchange rate which indicated the “Dutch Disease” syndrome while negative oil shocks led to depreciation of exchange rate. (3)

Industrial growth rate (real output) responds negatively to negative oil shocks. (4) Only a marginal effect of oil price fluctuations on real government expenditures was found. The findings from literature review indicate that there is huge amount of work done on the relationship between oil price shocks and macroeconomic variables for individual oil exporting countries. Since very limited studies yet exist on effects of oil price shocks on macroeconomic variables for a group of oil exporting countries. To fill this gap, this research tends to analyze the link between oil shocks and key macroeconomic variables for six members of Organization of the Petroleum Exporting Countries (OPEC). The next section describes the methodology of the study.

Ahmed (2011) investigate Impact of Oil Revenues Fluctuations on Macroeconomic Indicators and Financial Markets Performance of Arab-Gulf Countries. It finds that Oil returns have a positive effect on the performance of the financial and Gulf markets. The rise in crude oil prices and its revenues have a positive impact on macroeconomic variables.

Rouidjaa (2013) “Historical Development of Oil Prices and its Impact on the Algerian Economy”. The findings are: Rapid fluctuations in oil prices in recent years are not necessarily due to supply shortages, but to other factors, such as speculation in global stock markets and panic, during political problems, wars, climate change, and disasters. The fluctuation of oil prices is one of the main determinants of the state of national economy imbalance or balance, as confirmed by the crisis of 1986, which transferred many economic indicators from the state of surplus or balance to the deficit, which is the same for the 1998 crisis.

Freetown (2008) investigates the effect of oil price fluctuations on inflation and the fiscal deficit in the ECOWAS Member States, in order to give the policy effects of fluctuations and recommendation. The findings are: Firstly, increases in the domestic price of petroleum products, raise the cost of many intermediate inputs, and as a result leads to higher costs of production. Consequently, firms may reduce their labor demand, investment and consequently a fall in output becomes an inevitable outcome. Second, as the short-run demand for oil is highly inelastic, consumers are forced to reduce their consumption of other goods and services (the substitution effect) to pay for higher energy bills. Thirdly, net oil-importing countries face balance of payment constraints, as they must secure additional resources to pay for the higher oil import bill. Governments also face tighter budget constraints, which can affect their capacity to finance social programs.

Husseiny (2013) investigate the relationship between the world financial crisis and fluctuations of world oil prices and its effects on the Iraqi government's budget. It is concluded that the fluctuations in the international oil prices, causes the inability of the real budget in Iraq. This causes several changes in the general budget. As a result, the Iraqi government did not get any flexibility to respond the global financial crisis.

Baghirov (2014) examine indirect effects of the oil price shocks that might come from the business relations with major trading partners in Lithuania. It is occluded that, sudden

increases in oil prices have negative effects on the economic growth of oil-importing countries; other shocks may also affect the economy indirectly through commercial ties with main trading partners.

Basha (2014) Measures the impact of crude oil on financial performance of pharmaceutical Company. The findings are: at significance level ( $\alpha = 0.05$ ), crude oil prices have the significant effect on Pharmaceutical Company. Increases of crude oil prices, cause the equity percentage of Pharmaceutical Company to be increased. Increase in crude oil prices causes the net profit sidelines of Pharmaceuticals Company.

Akpan (2014) analyzes the dynamic relationship between oil price shocks and macroeconomic key variables in Nigeria through the application of VAR approach and finds upward trend sharply in the crude oil prices in recent years as index reached the highest level in the mid of 2008. This led to an increase of macroeconomic effects, either abroad or in Nigeria because Nigerian economy is vulnerable to the fluctuations of oil prices. There is a strong need for policy makers to concentrate on policies that will achieve stability in the macroeconomic structure of the Nigerian economy with a special focus on alternative sources of government income (to reduce dependence on oil revenues), and reduction of liquefaction.

## **CHAPTER THREE: THE THEORITICAL FRAMEWORK FOR OIL PRICE**

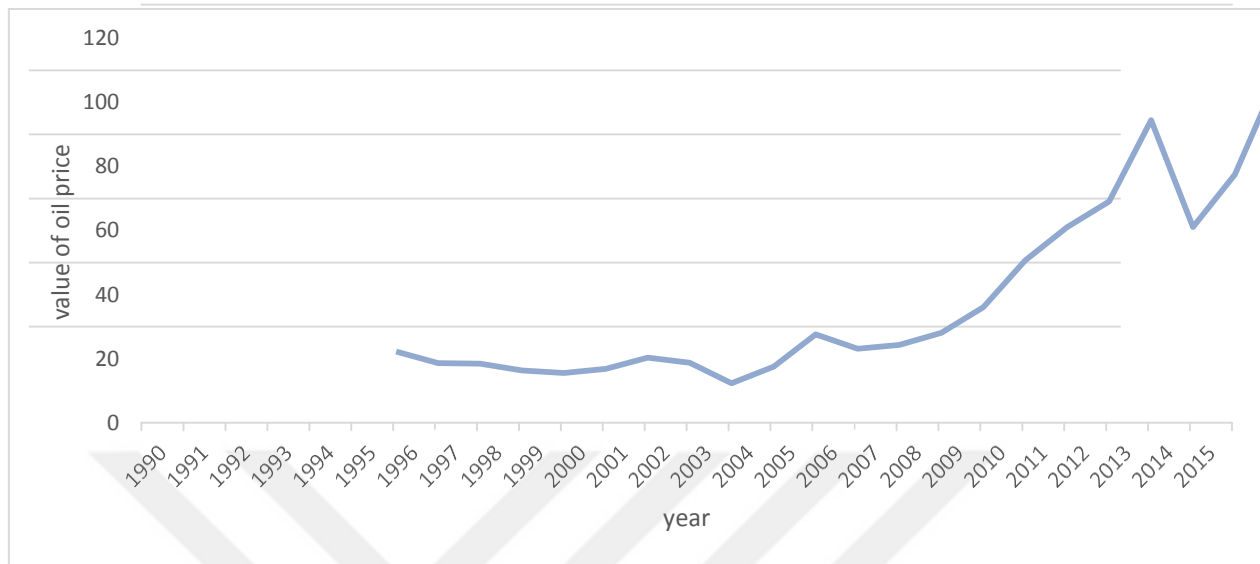
### **3.1 The historical development of crude oil prices**

A few companies have controlled the petroleum industry since the discovery of oil, a small number of companies, so the oil market is been characterized oligopolistic (Rouidjaa, 2013), It has been the supply of crude oil during that period which does not fit with the decline in domestic demand, where the contribution ratio among energy sources make up 1%, and wood and coal, which forms each of them up to 82.5% and 16.5% respectively.

Many investors both individual and institutional are racing in order to invest their money in new wells for the extraction of oil it should be noted that the first commercial crude oil price appeared in 1860 in Pennsylvania and the price of one barrel range of \$ 9.59, due to the extremely limited usage of crude oil as well as the entry of a large number of manufacturers in the industry resulted in a decline in oil prices to approximately 0.49% per barrel and lasted price to fluctuate between \$0.95 per barrel and \$1.29 for the duration of 1880 the year which saw the beginning of the list prices for crude oil system to the year 1899, and in 1900 where it was the oil price \$1.19 but it dropped in the years the other even arrived around \$0.61 per barrel in the beginning of 1911.

As a result of World War I in 1914 crude oil prices increased by 244% to the growing global demand for it, where oil has become strategic commodity that solved to replace coal as a new source of energy, has led to an high price per barrel of \$1.98 at the end of the First WW to \$3.07 in 1920, after the Sykes-Picot Treaty concluded between the major Western countries in 1916, And in the late forties and during the fifties the image that in the oil industry changed and it had become in the forefront of those independent companies with the nationality of the US, while other independent companies Europe and Japan did not enter the field of oil, but 1959, on the impact of the reductions conducted by the companies big oil on oil prices by one and without consulting producing governments, Namely those the reductions carried out by the big companies stated the price in 1959 and 1960, which caused a loss nearly 15% producer governments Income, in particular, the reduction of prices that occurred in 1960 and which became the first spark of for the appearance of anti-strength of the OPEC, Venezuela was first to call for the necessity of the establishment the oil producing diameters gathered to meet the cartel of oil companies.

Especially after the cartel isolating Venezuelan oil meeting took place in Baghdad on 14 September 1960 resulted in the establishment of Petroleum Exporting Countries Organization was established a direct response to the manipulation of monopolistic oil companies, crude oil prices without consulting the legitimate owners and directed OPEC in 1963's first appeal to the major oil companies to reconsider the prices of oil started, as well as oil revenues.



**Figure 1:** work of the researcher based on the OPEC data (1990-2015).

The price of the barrel in 1990 to almost \$19.99 per barrel. However crude oil (expressed as a price for immediate barrels of OPEC basket) declined from almost \$18.62 per barrel in 1991 to around \$18.53 per barrel in 1994,(Yahiya, 2005), Price has made rebound during 1996 to reach about \$20.299 a barrel, and dropped to \$18.68 per barrel in 1997, and took to collapsed since October 1997 that reached about \$12.28 per barrel in 1998 and this drop in price of oil is due to increase oil production to countries outside the OPEC, such as the Caspian Sea States and the Arab countries outside of OPEC, and the OPEC for the first time in four years agree to increase production.

With the aim of maintaining market share, and this led to the continued decline in prices to reach about \$9 per barrel in 1999, the lowest level of prices during the nineties. During the year 2000 OPEC has succeeded in the efforts to meet the growth in global demand for oil effort to calm oil markets and lower prices and alleviating the volume of speculation that dominated the markets for future, After OPEC basket price arrived around \$27.6 per barrel, and Brent crude oil to around 28.44 a barrel and West Texas Intermediate to \$30.37 per barrel(yahya, 2015),while oil prices declined during 2001 by \$4.5 per barrel, which represents 16.3 % from the year 2000 standards as a result of the economic slowdown witnessed by the world and incidents in 11 Sept.(Brahim, 2013).The United States of America, with the start of military operations in Iraq in 2003. and low oil stocks for the US and increase its oil demand in the US and increasing Asian demand rates at a rapid pace, which can be lost in productivity strata in Iraq and Venezuela, the oil average prices recorded \$31 a barrel, but the significant and major oil price increases began in 2004 as a reaction to the rapid growth of oil demand rates, and additional bonus for the price of the crude oil has accompanied the oil refining issues in US refineries following the Hurricane (Katrina in 2005). All these factors were largely are responsible for the increases in price in period 2003 -2005 in the ranges of between (40-50) dollars per barrel, and



oil prices continued to heights beyond \$75 per barrel in the middle of 2006, and then lower to \$60 a barrel during the first half of 2007 registered then rises continuously and rapidly during 2008 to record its highest level in June 2008 to \$148 per barrel and actually some Forum Leaders comfort in Price rises in so long to factors including decline in oil reserves and concern relating to oil the peak and political tensions in the Middle East and then speculative oil prices(Ahmed, 2011), the global recession has led to a decline prices of crude oil to 61 dollars per barrel in 2009, but prices rebounded in 2010 to reach (77.4). (Janabi, 2011).

### **3.2 Economic factors affecting the price of oil**

### **3.3 The impact of oil demand in the fluctuations of oil rate**

Oil prices are subject to fluctuating fluctuations as a result of a number of factors and influences that contribute in one way or another to changes in prices, including supply, demand, political and climatic factors, etc. The US economy is one of the biggest oil consuming economies in the world which makes the US demand for oil prominent impact in increasing global oil demand As much as America's consuming 18,949.2 million barrels /day in 2011 and grew up 19,403.8 million barrels/day in 2015. The Chinese economy comes after the US economy in terms of the size of the demand for crude oil, which had an increase in the oil size of consumption of 9,409.9 million barrels/day years 2011 to 10,832.0 million barrels/day a year 2015.

Such statistic indicates the high degree of dependence on crude oil and petroleum products as a primary source of energy, and this demonstrates the important fact that the growth in the global oil demand remains increasing as a general rule and a drop in demand only represents unexpected happens and that the increase in world energy demand is the reason for the direction of demand for crude oil rates also some increase, The oil demand reached 221.4 million barrels of crude oil in 2007. This increase was accounted for by a group of countries. The share of the industrialized countries was 50.2% compared to 9.3% for the rest of the country's 50.2% compared to 9.3% in transition countries. And 40.5% for the rest of the countries. And the form of the demand for oil 32.6% of the overall world energy demand whereas coal demand comprised 28.6%, and the demand for natural gas accounted for 23.8% and electricity by 6.4% and nuclear energy rose 5.6%. The rate of growth is influenced by the global demand for oil by several factors, with different effects, including economic growth rates, especially the continuing growth rates in the United States, which is the main consumer of oil, and the continuing increase in global demand for oil resulting in the increase in the price of crude oil. Prices of various petroleum products. (Salhi, 2011).

Industrialized Countries Demand for industrialized countries rose by about 400,000 barrels/day in 2015, or 0.9% compared to last year to reach 46.2 million barrels/day. North America's demand for oil risen by 400,000 barrels/day to 24.6 million barrels/day during the year. Demand for Western European countries rose by 200,000 barrels/day to 13.6 million barrels/day. In contrast, demand from industrialized Pacific countries fell by about 200,000

barrels/day to 8 million barrels/day, Developments in the US economy are the most important factor in global oil consumption.

Oil consumption in the United States, which currently accounts for about 21.3% of total world oil consumption, has been on an upward trend since the second half of 2014, Transport, especially gasoline in light of the significant decline in world oil prices and the rise in the exchange rate of the US dollar against other major currencies and accelerated US economic growth and the improvement in the labor market and the high level of consumer confidence in the United States.

For the industrial countries of Europe, despite the weak pattern of consumption experienced by the countries of the region for previous years. As a result of the sovereign debt crisis in the euro area which had already started at the end of 2009 and worsened by the beginning of 2011, which has greatly affected Europe's industrial economies. The sharp drop in global oil prices since the second half of 2014 has spurred Europe's demand for oil, which saw positive growth in 2015, especially in the industrial and transport sectors in the region during the year.

With regard to the development of industrialized countries' demand for oil on a quarterly basis in 2015, the OPEC region estimates that after the decline of about 100 thousand barrels / day in the demand of the group countries in the first quarter of the year compared to the fourth quarter of the previous year to reach 46.5 million barrels / On the other hand, the second quarter saw a decline of 100,000 barrels/day compared to the first quarter. The Group's demand in the third quarter stabilized at the same levels of the second quarter. However, it rose again by 200 thousand barrels/day to reach 46.6 million barrels/Fourth year of 2015. (OPEC, 2015).

Developing countries demand (including China) has increased by more than 1 million barrels/day during 2014 compared to previous year reaching about an unprecedented 40.2 million b/d with a growth rate of 2.8 compared to the previous year. It is worth mentioning that developing countries demand is considered the main driver for the main drive for global oil demand. Oil demand in these countries has witnessed an increase of 4.7 million barrels/day in 2014 compared to its level in 2010. Within this grouping, demand has risen in MENA region by about 400,000 barrels/day reaching 11.8 million barrels/day. Arab countries demand has claimed 6.7 million barrels/day (a share of 50% of the region's demand and 18.2% of total increase in developing countries oil demand). The increase is largely attributed to increases in OPEC member countries consumption which reached 5.8 million barrels/day during the year (an increase of 3.6% compared to previous year). Diesel was the most used product in these countries, especially in transportation and industry sector. As for other Arab countries, the demand has maintained the previous year's rates of 0.9 million barrels/day. Other MENA region countries, demand has increased by about 300,000 barrels/day to reach 5.1 million barrels/day during the year.

Asian developing countries demand has risen by 500,000 barrels/day to reach 21.7 million barrels/day in 2014. In spite of the slowdown in the Chinese economic growth, China's demand, which is the main drive for economic development and the vehicle for the said market recovery claiming 48% of this grouping demand, has dominated by 60% of the increases in Asian countries demand and 27.3% of the total demand of all developing countries with an increase of 300,000 barrels/day to reach 10.4 million barrels/day in 2014.

Increasing demand for petrochemicals raw material and the slight increase in transport fuel needs have contributed to supporting crude oil demand increase in China.

It is worth mentioning that following its drop in the first quarter of 2014 compared to fourth quarter of the previous year, Chinese demand for oil has increased in the second quarter but then dropped again in the third quarter then increased in the fourth as China boosted its strategic reserves in light of the falling oil prices.

Concerning India's economy, the other drive for the Asian economic growth, the demand for oil has risen by about 100,000 barrels/day to reach 3.8 million barrels/day.

Latin American countries witnessed an increase in demand by 200,000 barrels/day to reach 6.7 million barrels/day due to demand of 100,000 barrels/day of oil in Brazil followed by rest of the region by the increase of 100,000 barrels/day. (OAPEC, 2015).

### **3.4 The impact of oil supply in the volatility of oil prices**

The potential of oil reserves, oil policies and the need for oil to meet or export domestic needs and to obtain cash resources to meet or maintain financial needs for future generations are factors influencing the global supply of oil, as well as commercial stocks, The strategic affects the supply size, especially in seasonal fluctuations. The resources divided the global oil supply to exporters two main, etc. the first oil-producing countries belong to OPEC, which dominates 40% of the world production of crude oil, while the second source is the oil producing countries outside the OPEC. It should be noted here that 90% of crude oil production is concentrated in twenty countries, while the rest of the production by 10% whereupon the more than 40 countries produce scant oil (Alwan, 2014).

The proven reserves growth through time depends in part on oil production standards, because in light of the high levels of production, the proven reserves go down that under the rising oil prices, the stock of proven reserves is increasing. It is noticeable that the main factor is important and low growth in the oil display is decreasing the historical rates proceeds investments in production capacity resulting from the technical difficulty to extract the remaining oil reserves.

What is built on it from the high costs justifies is not possible conducting the extraction processes only under the Petroleum prices were high which in turn is, in the end, creates an incentive for oil investments. What promotes The high oil prices during the periods of the seventies and eighties caused a significant rise in oil reserve standards is certain to countries outside of OPEC, through discoveries of new oil fields as the high oil prices during those periods stimulated the Oil Well Drilling operations as the cost of producing a barrel of oil.

Including the cost of developing and expanding oil fields in the United States is \$ 10 in the North Sea \$11 compared to the cost of production of oil barrel in the Middle East countries of OPEC, which is \$2 per barrel in addition to the development of the fields that are uneconomical in intervals low oil price (Najib, 2011).It is noticeable that the rate of R/P the universal remained almost constant across the periods and nineties because of the investments and the discoveries and development of production of oil. According to the International Energy Agency estimations that the oil industry investments are directed in part to meet the new oil demand, which represents 16% of the total investment while the remaining of 84% is to compensate for the decreasing production from the primary reserve to compensate for decreasing rates in the oil production fields.

**Table 1:** The average cost of producing a barrel of oil (dollars per barrel) the end of the year 2015

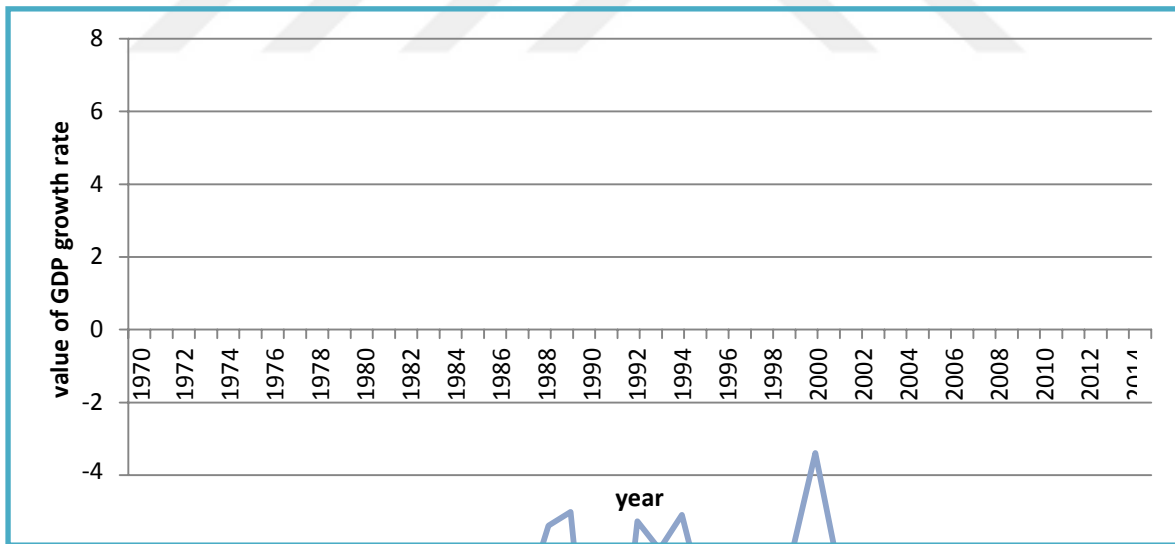
Countries	Operational production cost	Capital cost	Total production cost per barrel
KUWAIT	3.7	4.8	8.5
SUADI ARABIA	4.5	5.4	9.9
IRAQ	4.8	5.9	10.7
OMAN	5.3	6.0	11.3
UAE	6.6	5.7	12.3
QATAR	6.8	5.8	12.6
IRAN	6.9	5.7	12.6
RUSSIA	8.9	8.4	17.3
ALGERIA	13.2	7.2	20.4
VENEZUELA	9.6	13.9	23.5
LIBYA	16.6	7.2	23.8
KAZAKHSTAN	16.3	11.5	27.8
MEXICO	18.3	10.7	29.0
CHINA	15.6	14.3	29.9
NIGERIA	16.2	15.3	31.5
COLOMBIA	15.5	19.8	35.3
ANGOLA	18.8	16.6	35.4
NORWAY	24.0	12.10	36.1
USA	21.5	148	36.3
CANADA	18.7	22.4	41.1
BRAZIL	17.3	31.5	48.8
UK	21.8	30.7	52.5

**Source:** Rystad Energy Report of, 2015.

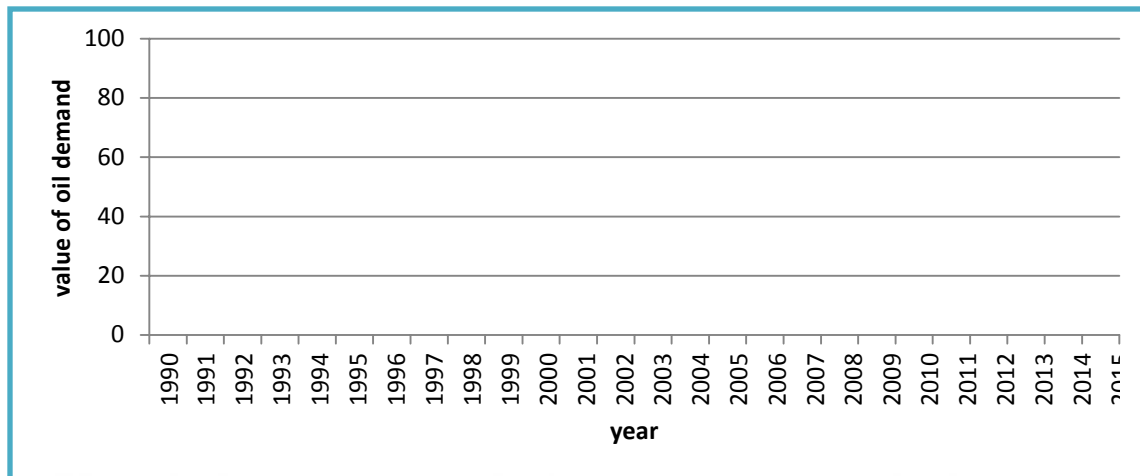
### 3.5 The rate of economic growth

The growing national economy is in a better position to meet new needs and can solve economic and social problems locally and globally. For real economic growth to take place, GDP, national income or real per capita income must increase a faster than population growth. The fluctuations in economic activity and the rate of growth is closely linked to the demand for crude oil in the international market, which is one of the most important factors affecting the size and direction of the application up and decline, and can be expressed this association with flexibility of Interior demand, by dividing the rate of change in the demand for the rate of change GDP totally.

The International Monetary Fund estimates that the high price of oil per barrel at a rate of \$5 leads to a low growth average of the world economy by 0.3% in the year following the high price, while the level of the International Energy Agency states, turned out to the results of one study that GDP growth in the main industrial countries is a positive effect, when increasing their growth 10% leads to a change in world oil prices by 112.3% and this is due to the overall height imports of oil equivalent 84% (Faihan, 2006).



**Figure 2:** work of the researcher based on the OPEC data (1970-2014)

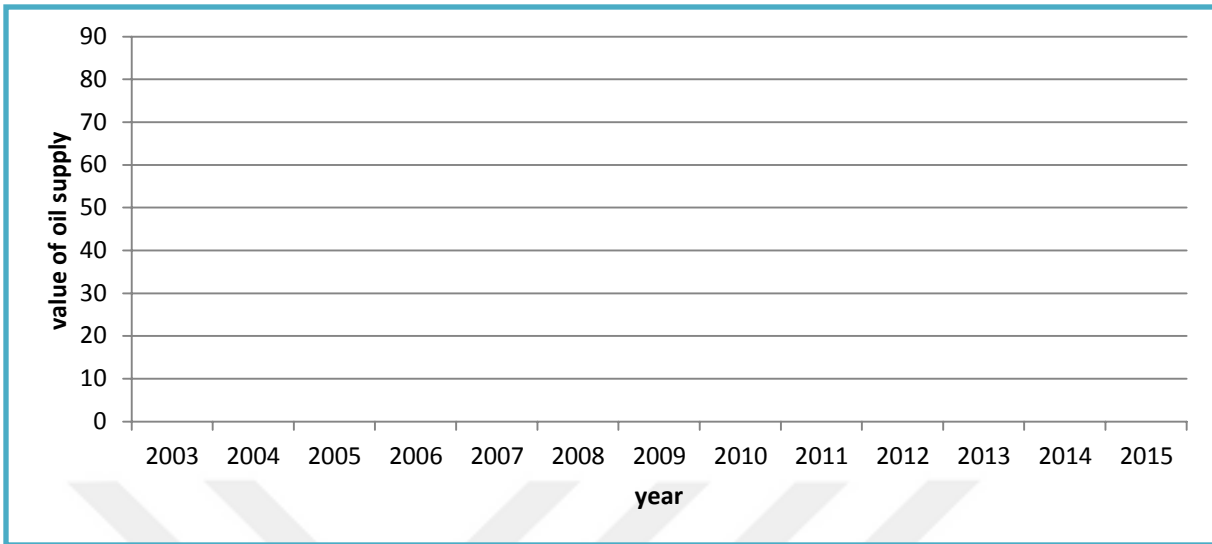


**Figure 3:** work of the researcher based on the OPEC data (1990-2015)

### 3.6 The size of global reserves

The size of the global reserve is one of the factors affecting the oil market, since the quantity extracted (oil supply) is a function of the size of the reserve and price, and therefore the policy of extraction of crude oil in each country affected by the size of oil reserves over a period of time, Oil affect the overall supply of crude oil in the international market. And that the resulting changes in the size of the oil reserves, which affect the international market due to several factors, including:

- a- The annual production, which is inversely related to the size of the reserve rate.
- b- The new discoveries that are connected direct proportion to the oil reserves.
- c- The development of fields through the use of modern technology leads to increase in proven reserves.
- c- Revaluation of reserves through new geological information leading to increased proven reserves, which has increased the proven reserves by 80% in the United States.
- e- Other reasons that lead to the change of reserve as political considerations, (Mohammed, 2008).



**Figure 4:** work of the researcher based on the OPEC data (2003-2015).

### **3.7 How to configure a holistic measure of financial stability**

In order to develop a holistic scale uniformly or individually for financial stability aggregate financial stability index (AFSI), use four composite measures describe: measure the evolution of the financial system and the economy at risk, the safety of the banking sector, the global economic climate.

#### **3.7.1 Financial Development Index (FDI)**

This measure consists of a set of indicators:

A- Market Capitalization/ GDP: This indicator refers to the development of the capital market. Were excluded indicators associated with the insurance sector analysis, because of a weak sector in the sample countries, as this sector represents a source of systemic risk? To increase the value of this indicator a positive impact (+) on the scale (AFSI).

B- Total Credit/GDP: This indicator presents information concerning financial intermediation, which reflects the extent to which credit institutions to implement mediation functions. The higher level of this indicator is higher, it was more sophisticated and mature financial system. And given your credit in local currency instead of foreign currency, because the latter may represent a possible source of currency risk.

C- Interest Spread: Represents the margins, or the difference, the difference between interest rates of lending and borrowing rates. The real interest margin reflects growing check profitability of the banking sector, which is necessary to ensure stability, adding that high-efficiency hint in the mediation and allocation of resources. But at the same time, it indicates that this sector is immature (immature), borrowers are high risk. While low margins reflect improved levels of efficiency of the banking system. Therefore, high-interest margins connected backward in



evolution, and a negative effect (-) on the AFSI. The reason for this is that the increasing interest margin can refer to periods of financial instability when credit institutions take additional safeguard measures against the potential risks of borrowers' inability to pay (they raise interest rates on lending, compared with borrowing rates, to counter those risks). (Sobhy, 2015).

### **3.7.2 Financial Vulnerability Index (FVI)**

This standard includes a set of indicators, by the International Monetary Fund IMF reports on the countries. This collection describes the macroeconomic stability and structure of funding prevailing. Or investors, these indicators, and analysis, where sustainable values of these indicators show that the financial system sound mode sound and response-able to withstand potential shocks.

This standard consists of the following indicators:

A- Inflation Rate: This indicator represents the macroeconomic risk exposure. The primary goal of a Central Bank is to achieve price stability. Stability level works for this indicator to lift investor confidence. This index affects negatively the AFSI.

B- General budget deficit to GDP: This indicator describes the performance of the Government. If the budget deficit is high, investors lose their confidence in the Government's ability to ensure a sustainable future economic growth. However, this index affects positively the AFSI.

C-current account deficit to GDP: The large current account deficit shows a large economic imbalance and requires a future correction, which affects financial stability. An economy with a large current account deficit means that it consumes more than it produces and must borrow from abroad, such as foreign direct investment to sustain this consumption. If these foreign investments are exposed, for one reason or another, the financial system is exposed to risk. However, this indicator is positively correlated with AFSI.

D-Excessive appreciation depreciation of Real Effective Exchange Rate (REER): the large volatility in REER shows that the economy is subject to major corrections through the exchange rate, which can adversely affect financial stability. In other words, absolute changes in REER reflect exchange rate adjustments as a corrective measure in the economy.

E- Non-government credit/total credit: This private credit is non-government credit and reflects the financing of private sector credit. A large part of these loans became nonperforming loans. Therefore, the depreciation of this indicator reflects a positive attitude. Bank reserves are a guarantee associated with the ability of these banks to respond to deposit withdrawals. The minimum requirement for statutory reserve may be used as an important monetary policy instrument. This high index positively affects AFSI.

F- Loans as a percentage of deposit: The ratio of reserves to deposits is high in undeveloped financial systems, where liquidity preference is high. The increase in these reserves affects the

remaining amount expended as loans. The greater preference for cash payments, the higher the likelihood of higher withdrawals. The rise of this indicator positively affects the AFSI scale.

G- Deposit/M2 ( $\Delta$  %) :This ratio reflects the relationship between savings and consumption, as the deterioration of the value of this indicator shows the devaluation of the currency, while at the same time, reduced savings, increased consumption, and possibly higher inflation. This indicator is positively correlated with AFSI.

H- Reserves/deposits)/ (notes& coins/M2): This indicator, together with the above indicator, is an important indicator of the ability to send signals about an actual crisis. The boom of credit, which is not associated with the expansion of deposits, shows a potential imbalance in the financial system (i.e., low confidence in the local currency).Reserves, as a share of deposits, reflect the ability of the banking sector to respond to excessive withdrawals of deposits. PITMA reflects the ratio of banknotes and coins to an M2 preference for liquidity at the economy level. Thus, the strong preference for liquidity associated with low reserves puts the financial system at risk. Thus, this indicator is positively correlated with AFSI. (Hadad, 2007).

### **3.7.3 Financial soundness index (FSI)**

This standard includes indicators proposed and used by international financial institutions to assess the safety practices of the financial system. This information is difficult to obtain, especially when using quarterly data. Indicators of this measure include:

A- Non-performing loans/total loans: This indicator reflects the quality of loans granted by banks. Quality means that the size of non-performing loans tends to increase in the event of a credit crunch, while the value of this index deteriorates after crises, such as after the subprime mortgage crisis of 2007. This index negatively affects AFSI.

B- Capital/ assets ratio: This indicator describes the extent to which the banking sector is capitalized. The information in this indicator relates to the ability of financial institutions to perform obligations or solvency. Thus, the effect of this indicator is positive on AFSI.

C- Own capital/total assets ratio: This indicator also describes the extent, or level, of the capitalization of the banking system. This index compares capital to assets. Which was confirmed by the Basle Committee on the solvency capital adequacy, this is the return on assets (ROA), as the potential profit from credit institutions should compensate for the prevailing risk in the market. The high value of ROA reflects a more profitable and safe financial system. Thus, the effect of this indicator is positive on AFSI.

E- Effective Liquidity/required liquidity ratio: This indicator reflects the liquidity of the banking system so that it is able to respond to withdrawals, as opposed to what is required, or determined by the authorities, on the liquidity required to be provided. The effect of this indicator is positive on AFSI.

F- General risk ratio: This indicator reflects the overall level of risk, which the financial system may be exposed to. This indicator is selected to analyze some important aspects of the integrity of banking institutions, such as the performance of a lending activity, capital adequacy, profitability, and ability to perform debt or obligations. The effect of this indicator is negative on the AFSI scale (Table 2). (Gray, 2007).

### **3.7.4 World economic climate index (WECI)**

This measure describes the global economic climate or situation, by addressing some important economic variables, such as global inflation, global economic growth rate, and others. This scale includes the following indicators:

A- Economic climate :A measure calculated by the Center for Economic Studies and the Institute for Economic Research (CESifo) to give a climate perspective the prevailing business of investment opportunities. This positive indicator is based on the AFSI scale.

B-World inflation: This indicator describes the status or position of the prevailing price level globally, and there is no need to say why stability prices are important at the global economic level as a whole. The effect of this indicator is negative on AFSI.

C- World economic growth rate: This indicator reflects the level of economic growth prevailing at the global level at any time. This indicator is positive for AFSI below briefly illustrates the impact of each of the above indicators on the overall measure of financial stability (AFSI). (Verlis, 2010).

### **3.8 The theoretical Analyzing of global oil prices on the production of and exports and imports of Iraqi crude oil**

Iraq is more dependent on oil than any other country in the Middle East and Africa (MENA): oil production accounts for two-thirds of the country's GDP almost 95 percent of government revenues and a staggering 99 per cent of total export. With a breakeven oil price of \$102 per barrel in 2012, which is among the highest in the region, Iraq is very vulnerable to a fall in oil prices. At the same time, the high level of current spending makes it difficult to external shocks without disproportionately cutting investment spending (IMF, 2013).

A critical element for Iraq's economy is that while the country is dependent on oil and 97 percent of the state revenues are from oil, the sector employs only 80,000 workers out of a total of eight million in the labor force, roughly a total of 1 percent of the total workforce (United Nations Joint Analysis Unit, 2014). This leads to the fact that unemployment in Iraq, as in many other countries in the region, is a serious challenge for the country and its economy. Iraq, as with many other countries in the region, is not managing to address the issue of unemployment in spite of its wealth. There is a wide divergence of statistics about unemployment, but suffice to say that unemployment hovers around 18 percent with higher unemployment rates for those aged 15–29. Female employment is probably around 14 percent, which is low compared to most other countries in the region (20 percent in MENA and 37 percent in Low and Middle-Income Countries). To put these statistics in context, Iraq is the third largest Arab country in terms of population with roughly 34 million. Its population is growing at 1.8 per cent and roughly 58 percent of the population is under 24. Similar to other countries in the region, the public sector is the major outlet for absorbing huge numbers of young graduates to the extent that army and security services have returned to the levels of the 1980 Iran–Iraq War with more than one million members.

**Table 2: Iraqi Exports and Imports vs. Oil Prices, 2003-2014**

Years	2003	2005	2007	2009	2011	2013	2014
Total Iraqi exports in US\$	\$9.91 Billion	\$23.70 Billion	\$39.59 Billion	\$39.43 Billion	\$79.68 Billion	\$89.77 Billion	\$83.98 Billion
Total Iraqi imports in US\$	\$9.93 Billion	\$23.53 Billion	\$19.56 Billion	\$41.51 Billion	\$47.80 Billion	\$59.35 Billion	\$53.18 Billion
Brent crude oil price in US\$	\$28.85 Barrel	\$38.26 Barrel	\$72.44 Barrel	\$61.74 Barrel	\$111.26 Barrel	\$108.56 Barrel	\$98.97 Barrel

**Source:** A-Iraqi Central Bank.

B- U.S. Energy Information Administration.

As illustrated in table one, Iraqi export revenue tracked oil prices closely between 2003 and 2014, underscoring the importance of oil to Iraq's export economy. During periods of high oil prices, export revenues rose. Iraqi spending on imports remained largely detached from oil prices but declined in 2014 in tandem with the recent oil price drop.

**Table 3: Iraq's Reserves and Current Account Balances, 2005-2014**

	2005	2007	2009	2011	2013	2014
Iraq total reserves (includes gold, current US\$)	\$12.20 Billion	\$31.50 Billion	\$44.30 Billion	\$61.00 Billion	\$77.70 Billion	\$66.40 Billion
Iraq current account balance (BoP, current US\$)	(\$3.34) Billion	(\$15.52) Billion	(\$1.13) Billion	(\$26.13) Billion	(\$7.90) Billion	(\$11.90) Billion

**Source:** World Bank 2014.

Iraqi total reserves and current account balance also reflect the impact of oil on the financial health of the country, as illustrated in Table 3. Iraq's current account balance increased to \$26.13 billion in 2011, a record high year for oil prices, but fell to -\$11.90 billion in 2014 due in part to the steep fall in oil prices during the latter half of the year. Iraq's total reserves mirror the change in current account balance.

**Table 4:** Iraq's Oil Production and Oil Exports in 2015

Month (2015)	Iraq crude oil export revenues (US\$)	Iraq crude oil exports)*000 barrels/day)	Iraq crude oil production ('000 barrels/day)
January	\$3.26 Billion	2,535	3,042
February	\$3.40 Billion	2,981	2,783
March	\$4.48 Billion	3,077	3,339
April	\$4.79 Billion	3,145	3,176
May	\$5.45 Billion	3,187	3,288
June	\$5.29 Billion	3,187	3,591
July	\$4.84 Billion	3,105	3,718
August	\$3.93 Billion	3,079	3,760
September	\$3.73 Billion	3,052	3,755
October	\$3.29 Billion	2,708	3,659
November	\$3.66 Billion	3,365	3,747
December	\$2.92 Billion	3,270	4,130

**Sources:** Export revenues from Ministry of Oil

As Table 4 shows, Iraqi export figures for 2015 highlight the challenging dynamic that Iraq is facing. Despite increasing oil exports and production to near-record highs in 2015, Iraq's export revenues were far lower than the previous year and declined even further near the end of 2015. Whereas average monthly oil exports of 3.18 million barrels per day (b/d) in May 2015 got Iraq \$5.45 billion in revenues, by December revenues had nearly halved, despite an increase in exports of 83,000 b/d. Furthermore, Iraq had proportionally less oil to export as a percentage of its total production by the end of 2015, as the country started paying back international oil companies (IOCs) in oil due to cash shortages, which ultimately cut into oil export revenues. In March 2015, Iraq exported approximately 92 percent of its overall production for that month. In October, Iraq exported only 74 percent of its monthly production.

### **3.9 The importance of oil revenues in the Iraqi economy**

Oil is a key player in shaping the future of Iraq. Recent analyzes and studies suggest that it will continue to be an important source of cash and financial revenue and that oil payments have a very important impact on the country's economic situation. (Kasen, 2007). The decline in the price of oil leads to a decline in economic growth. The rate in Iraq has declined from 9.8% in 2008 to 6.9% on one oil source, oil prices fell sharply more than 65% of its price at the beginning of the crisis. (Shakke, 2015).

It is clear from the general budget of the Iraqi economy that oil revenues are at the forefront of public budget funding compared to other revenues, such as tax revenue and non-tax revenues. The expectation of worsening financial crisis will make the external shock stronger. And it is impossible for the economy to continue to meet the debts that represent the burden borne by Iraq, and it will remain constrained by financial constraints, and the reconstruction projects approved by the government will be postponed indefinitely, and then the Iraqi economy will not only to borrow internally, External financial problems are increasing, or may receive grants or soft loans as a result of their obligations to international financial institutions. (Mustafa, 2010).

The global price of oil degradation and its impact on the general budget in Iraq was the most obvious after the financial crisis that swept the world in 2008, has dropped the crisis clouded the global economy growth rates and thus on global demand in general and the demand for crude oil in particular during the two years (2009-2008), which had a significant impact on a significant decline in oil revenues of oil-producing countries, as well as for Iraq, where he formed in 2008 on the general oil market, the level of all ironies and twists dramatic fast, during the first half of the flying oil prices high and almost touches the threshold of \$150 a barrel in the month of July and quickly began to fall in decline and rolled to below \$40 a barrel at the end of the second half of the same year.

The reason for this is the financial crisis that hit the global economy, which has had a negative impact on the global economy, which was clearly reflected in the oil market represented by the decline in the level of oil prices. And in August 2005 it reached \$73 a barrel and then came back again because of the decline in the value of the US dollar and so we see the rapid fluctuations in oil prices and the effects of this in the oil revenues of the oil-exporting countries and affects the public budgets and in Iraq was the main impact of the crisis was in the field The decline in public revenues to the extent that posed significant challenges to the Ministry of Finance in the federal budget due to the federal low oil revenues and table (5) .The percentage of the contribution of crude oil revenues in the composition of the general budget revenues in Iraq during the years (2004-2015) (Mohamed, 2014).



**Table 5:** Share of oil revenues in the composition of revenues of the general budget in Iraq for the period (2003 - 2015). (Billion Dinars)

Years	Oil revenues	General revenues	budget	Share of oil revenues in the composition of revenues of the general budget %
<b>2003</b>	<b>15,728,387</b>	<b>16,514,806</b>		<b>%95</b>
<b>2004</b>	32,627,203	32,982,739		%98
<b>2005</b>	39,480,069	40,502,890		%97
<b>2006</b>	46,534,310	49,055,545		%94
<b>2007</b>	51,701,300	54,599,451		%94
<b>2008</b>	75,358,291	80,252,182		%93
<b>2009</b>	48,871,708	55,209,353		%88
<b>2010</b>	60,131,401	70,178,223		%85
<b>2011</b>	98,209,000	99,998,258		%98
<b>2012</b>	117,304,000	119,466,000		%98
<b>2013</b>	110,637,000	113,767,000		%97
<b>2014</b>	97,072,400	105,386,000		%92
<b>2015</b>	<b>78,649,000</b>	<b>94,048,000</b>		<b>%83</b>

**Source:** Zainab Ahmed Mohamed, 2014.

Note from Table (5) the fluctuation of the total oil revenues in the general budget during the period (2003-2015), where the oil revenues in 2004 amounted to (32,627,203) billion dinars, and the oil revenues as a share of public revenues increased significantly from 2003 (98%), due to the increase in oil prices and consequently increase in oil revenues, as in the case of public revenues, oil revenues recorded the highest level in 2008, reaching (75,358,291) billion dinars, while the proportion of its contribution to public revenues amounted to (93%), due to high oil prices in the world market (about 148) countries (Per barrel ), (Suham,2008).

In 2009, oil revenues at current prices decreased by (48,871,708) due to the decrease in oil prices and the share of public revenues to 88%. The reason for this decrease was the result of the collapse of oil prices due to the financial crisis witnessed The global economy in that period, which shows the extent of the external situation reflected on the domestic economy of the oil country.

In 2010, oil revenues increased significantly, reaching (60,131,401) billion dinars due to the significant increase in the prices of crude oil and contributed to public revenues, To (85%), In 2011, total public revenues increased as a result of the increase in oil revenues to reach (98,209,000) billion dinars, due to the increase in international oil prices to reach \$103 in 2011 after it was \$75 per barrel in 2010 , And in 2012 increased public revenues as a result of the increase in oil revenues, which amounted to (117,304,000) billion dinars due to the increase in

oil prices, which reached \$107 per barrel after it was \$103 per barrel in 2011, Public revenues in 2013 decreased by (6.1) trillion dinars compared to 2012 to reach (113,767,000), This decrease is due to a number of reasons, including the decrease in oil revenues which reached (110,637,000) billion dinars due to the decline in international oil prices. In addition to the decrease in quantities of crude oil exported to about (872) million barrels after it was (887) million barrels in 2012.

Therefore, the most important risk of the adoption of public revenues on oil is a basis that results in the fluctuation of the proceeds of public revenues, as the decline in oil prices lead to a decline in public revenues and thus increase the deficit of the general budget and the presence of oil as a main resource for financing the budget will lead to a decline in the importance of other income, Moreover, the possibility of a decline in the amount of production for any internal reason will increase the problem of low revenues. (Mohamed, 2014).

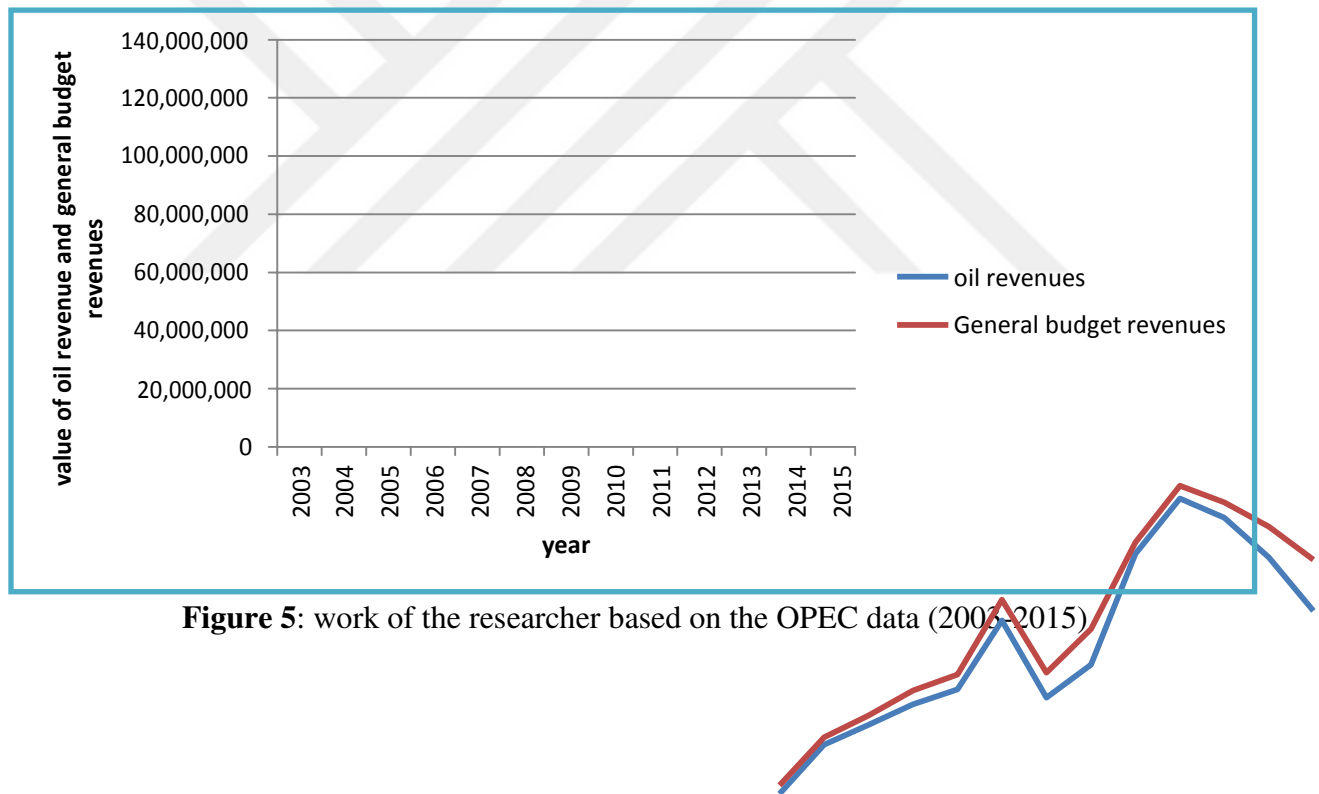


Figure 5: work of the researcher based on the OPEC data (2003-2015)

## CHAPTER FOUR: RESEARCH METHODOLOGY

This chapter will discuss data on index of financial stability, exchange rate, gross domestic product (GDP), money supply, inflation rate and price of oil per barrel globally, taking into consideration of Iraq as a case study. All the variables were ensured to be in the same unit, any variables that are in Iraq IQD are converted to percentage before running the analysis so as to have good, efficient and reliable results or outcomes.

The data of these variables were obtained from the ministry of finance and the central bank of Iraq. The data used it was time series in nature, which covered from 2003 to 2015. The description of the sources of data would be given subsequently under data.

Lastly, the model specification or econometrics model used in this research will also discuss in this chapter.

### 4.1 Model Specification

In analyzing the oil price and financial stability in Iraq during the period 2003 to 2015 , the explanatory or independent variables in this study are money supply (MS), Exchange Rate(ER),Gross domestic product(GDP), inflation rate(INFR),price of a barrel globally(POBG) ,while the index of financial stability(IOFS)was used as dependent variable.

The ordinary least square (OLS) as an approach for computing the unknown parameters in a linear regression model will be employed in this study as an estimation technique. The method of OLS is extensively used in similar research when making a regression analysis, this is because of mathematical simplicity and much reliable result than any other econometric technique (Guajarati, 2003), and therefore, the function can be expressed as follows:

$$\text{IOFS}=\text{f}(\text{MS}, \text{ER}, \text{GDP}, \text{INFR}, \text{POBG})$$

### 4.2 Estimation Techniques

Recent developments in econometrics, especially in the analysis of time series, were concerned with the statistical characteristics very much after (Nelson and Plosser) published their paper in 1982 confirming that most of the financial time series of the United States of America contained the (Unit Root), Most of the time series are static, so applying traditional methods to statistically static data leads to false estimates whose results cannot be relied upon. In order to avoid this problem, the current study will apply unit root tests such as VAR and Granger

causality and Augmented Dickey-Fuller and Philips-Perron test, the time series contained in this study at the root of the unit. On static time strings at the integrity level specified by the tests.

### 4.2.1 Vectorial Autoregressive (VAR)

Sims In 1981, SIMS was of the view that the traditional method of constructing the following standard models is based on an interpretive view, which includes many unexplored hypotheses such as the exclusion of certain variables from some equations in order to arrive at a diagnosis (Identification) is acceptable for the model, as is the choice of external variables (Exogenous), and the distribution of time lag periods. In this model, Sims proposes to treat all variables in the same way without any preconditions (excluding them or counting them externally) and insert them all into the equations with the same delay times. (Sims, 1981).

The general model he proposed is the Vectorial Autoregressive (VAR) model, which can be written as follows:  $\Phi(\beta) Y_t = \epsilon_t$

As:

$Y_t$ : A random, yet stable, context.

$\Phi(\beta)$ : Many of the limits of class B by the time-delay coefficient b write as it comes.

$$\Phi(\beta) = \phi_0 - B\phi_1 - B^2\phi_2 - \dots - B^p\phi_p$$

~~Definition~~

## 4.2.2 Johansen- Jesuilus Test

Johansen Jesuilus presented year (1990) test relies on self-estimating the vector regression model (Var) Vector Autoregressive model using the greatest possible function Maximum Likelihood Function, and this test is appropriate to small-sized samples.

Furthermore suit them with ties that contain more than two variables, and more importantly, it determined there was more than a common the vector for integration. This test of the relationship between rank ( $\pi$ ) and the characteristics of the root of the unit, which is a test Dickey Fuller, but in a multi-regression. As the existence of co-integration of time-series requires that no longer be the matrix with full rank ( $0 < r(\pi) = r < n$ ).

If the rank the matrix includes information between long-term of the time series variables and also represents the number of independent and predictable written combinations. You can determine the presence of co-integration whether by rank. If the rank (Rank  $\pi = 1$ ) there is a single common the vector integration, the variables are not integrated with each other, and if the rank is (Rank  $\pi = 0$ ), then, that all of these variables contain a unit root. , But if the matrix with full rank, all static variables did not have the root of unity. In other cases in which the rank is ( $1 < \text{Rank } \pi < n$ ) and here there are several vectors Joint Integration.

The vectors of the mutual integration identify in the methodological frame of Johansen - Jesuilus through two tests:

### A-The Trace Test (trace $\lambda$ )

It takes the following form:

$$\lambda \text{ trac} = -T \sum_{i=r+1}^n \text{Log} (\lambda_i)$$

(T) is the volume of the sample, r is the number of mutual integration vectors, and  $\lambda_i$  is the smallest values of auto-vectors.

If the null-hypothesis test  $r = 0$  competes in front of alternative hypothesis  $r \leq 1$ . When the calculated value of maximum probability average is less than the critical value, it accepts the null-hypothesis. It means that the vectors of mutual integration are equal to zero. But if the calculated value is more than zero (the critical one), it accepts the alternative hypothesis. It means that the number of vectors is more than zero of which it means that mutual integration exists among the related variables.

### B- Maximum Eigenvalues test (max)

$$\lambda \text{ max} = -T \text{Log} (1 - \lambda_i)$$

If the calculated value for the average of the maximum probability is more than tabular, (the critical one) refuses the null-hypothesis  $r = 0$  and accepts the alternative hypothesis  $1 = 0$ . It is

what provides for having at least one vector for mutual integration and vice versa, accepting null-hypothesis and refusing alternative one. (Jesuillus, 199).

### 4.2.3 Granger causality test

The Granger causality test is a statistical hypothesis test aims to determine whether one-time series is effective in forecasting another, it was initially proposed by Granger (1969). Generally, regressions reflect purely correlations among the variables, but Clive Granger argued that causality in economics could be tested and considered by measuring the ability to forecast the future values of a time series using prior values of another time series. Granger causality test remains a popular method for causality analysis in time series considering its simplicity in computation. Even though regression analysis does not necessarily imply causation, it only deals with the dependence of one variable on other variables. But in regressions involving time series data, the situation may be different due to the time consideration. The Granger causality test presumes that the information related to the forecasting of the respective variables, let it be  $Y_t$  and  $X_t$ , is involved solely in the time series data on these variables. We shall take note that, whenever we have two variables, we are dealing with bilateral causality. The test involves computing the following regressions:

$$Y_t = \sum_{i=1}^n (\alpha_i X_{t-i}) + \sum_{j=1}^n (\beta_{1j} Y_{t-j}) + \delta_1 ECT_{t-1} + \varepsilon_{1t}$$

$$X_t = \sum_{i=1}^n (\lambda_i X_{t-i}) + \sum_{j=1}^n (\beta_{2j} Y_{t-j}) + \delta_2 ECT_{t-1} + \varepsilon_{2t}$$

Where  $\varepsilon_{1t}$  and  $\varepsilon_{2t}$  are the uncorrelated disturbances, ECT is the error correction term,  $\delta_1$  and  $\delta_2$  are the adjustment speed. Johansen and Juselius (1987) affirms that the existence of cointegration implies the existence of causality relation among the variables  $Y_t$  and  $X_t$  under the constraint  $\delta_1 + \delta_2 > 0$ , in a situation whereby the cointegration relationship among the variables is not existing, the term ECT should be removed, and the equation 7 and 8 shall be rewritten as follows:

$$Y_t = \sum_{i=1}^n (\alpha_i X_{t-i}) + \sum_{j=1}^n (\beta_{1j} Y_{t-j}) + \varepsilon_{1t}$$

$$X_t = \sum_{i=1}^n (\lambda_i X_{t-i}) + \sum_{j=1}^n (\beta_{2j} Y_{t-j}) + \varepsilon_{2t}$$

Therefore, from the above two equations i.e. 9 & 10, we may understand that error correction term was eliminated as a result of non-existing cointegration relationship.

#### 4.2.4 Phillips – Perron Test (PP)

Distribution of testing Dickey-Fuller enlarged based on the assumptions that an independent random error term statistically and includes a fixed contrast. So when you use a method of Dickey-Fuller expanded we must make sure that the error term is not linked and it includes a fixed contrast. Phillips and Perron (1988) developed a downloaded generalization of the way Dickey-Fuller expanded to allow the existence of a self-link in the error term, and Phillips-Perron method is a modification of a test of Dickey-Fuller takes into account the restrictions fault somewhat fewer. Which allows reducing the random mistake is not to be independent in a few and distributor distribution is not congeners. This test is based on the root of the unit first and then calculate the statistical value is converted to eliminate the effects of autocorrelation on the probabilistic distribution of the statistical test (Perron, 1988: 335) test is conducted in four stages: (Salami, 2013).

Estimate by OLS the three models to test Dickey - Fuller statistics associated with the account.

$$\text{Variance estimation short term. } \sigma^2 = \frac{1}{n} \sum_{t=1}^n e_t^2$$

Estimating the debugger laboratories  $Su^2$  called long-term variability and extracted through a common variations of residue previous models, where:

$$Su^2 = \frac{1}{n} \sum_{t=1}^n e_t^2 + 2 \sum_{i=1}^L \left(1 - \frac{i}{L+1}\right) \frac{1}{n} \sum_{t=i+1}^n e_t e_{t-i}$$

In order to assess this variability it is necessary to find the number of delays L estimated in terms of views n

$$\text{Statistically Phillips Peron Account } t^* = \sqrt{K} \frac{\sigma^{\rho-1}}{\sigma} \frac{n^{(K-1)} \sigma}{\sqrt{K}}$$

$$\text{Whereas: } K = \frac{\sigma^2}{Su^2}$$

The test is used Phillips-Peron formulas and values spreadsheet itself, which takes test Dickey-Fuller, where the first version without a constant limit and without time Direction and take a second fixed limit only to the assumption that the average chain does not equal zero, and the third formula shall take the fixed limit with the direction schedule. If (t) is greater than the calculated (t) spreadsheet, it means that smooth running stable.

#### 4.2.4 Augmented Dickey-Fuller (ADF) Test

The Augmented Dickey-Fuller test was involved in this study in order to prove the existence or non-existence of the suspected non-stationarity problem. (Sayed, 2013). stated that, in the case of Dickey-Fuller Test, there may create a problem of autocorrelation. To tackle autocorrelation problem, Dickey-Fuller has developed a test called Augmented Dickey Fuller Test.

There is three Dickey-Fuller model as follows:

Equation 1: with Intercept only  $\Delta Y_t = \beta_1 + \delta Y_{t-1} + \varepsilon_t$

Equation 2: with Trend and Intercept  $\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \varepsilon_t$

Equation 3: without Trend and Intercept (Constant)  $\Delta Y_t = \delta Y_{t-1} + \varepsilon_t$

Where  $Y_t$  is regarded as the relevant time series,  $\Delta$  is considered as a first difference indicator,  $t$  is a linear trend and  $\varepsilon_t$  is an error term. And also, all the above three models must comply and produces the same decisions all the time on whether our variable  $Y$  has a unit root or not.



## CHAPTER FIVE: EMPIRICAL RESULTS

This study is based on a modern method of economic measurement used in the analysis of the relationship between the time series of the variables under study for the purpose of constructing a precise standard model that explains the real effect of the independent variables on the dependent variable. The role of the explanatory variables is defined by some economic variables that are expected to have a stabilizing effect Financial in the Iraqi economy.

### Independent Variables

MS: Money Supply

ER: Exchange Rate

GDP: Gross Domestic Product

POBG: Price of a Barrel Globally

INFR: Inflation Rate

### Dependent Variables

The model includes one dependent variable, financial stability expressed in public revenues (IOFS).

## 5.1 Data

**Table 6:** shows the semi-annual for each of the (IOFS, ER, GDP, MS, INFR, POBG) the unit (IQD).

Years	IOFS (billion/dinars)	Exchange rate(dinars)	GDP2007=100 (billion/dinars)	Money supply (billion/dinars)	Inflation rate %	POBG (\$)
Jan-Jun 2003	7,864,194	1946	1,458,343.7	2,868,286.85	28.7	28.1
Jul-Des 2003	15,728,387	1936	1,459,732.4	3,117,841.5	32.55	32.07
Jan-Jun 2004	24,160,699	1444	1,462,509.8	7,017,401.17	36.4	36.05
Jul-Des 2004	32,593,011	1462	1,468,064.2	7,038,838.33	43.15	43.34
Jan-Jun 2005	36,020,763	1466	1,473,619.2	10,727,144.83	49.9	50.64
Jul-Des 2005	39,448,514	1478	1,362,385.2	10,832,654.5	63.15	55.86
Jan-Jun 2006	43,160,884	1482	1,251,151.2	11,971,428.33	76.4	61.08
Jul-Des 2006	49,873,253	1468	1,182,854.6	13,857,318.33	88.2	65.08
Jan-Jun 2007	48,810,192	1290	1,114,558.1	15,950,635.33	100	69.08
Jul-Des 2007	50,747,131	1244	1,253,934.1	19,328,067.5	106.35	81.74
Jan-Jun 2008	64,939,442	1217	1,393,310.2	21,530,804.5	112.7	94.4
Jul-Des 2008	79,131,752	1189	1,231,635.3	26,230,591.17	117.4	77.73
Jan-Jun 2009	65,425,406	1180	1,069,960.5	29,656,222.67	122.1	61.06
Jul-Des 2009	51,719,052	1184	1,210,923.3	34,430,014.33	122.85	69.25
Jan-Jun 2010	59,269,365	1185	1,351,886.7	42,227,816.33	123.6	77.45
Jul-Des 2010	66,819,670	1187	1,507,976.6	49,019,462.17	126.77	92.45
Jan-Jun 2011	82,454,942	1189	1,664,066.6	51,061,591	130.6	107.46
Jul-Des 2011	98,090,214	1202	1,742,778.7	5,768,203.17	133.47	108.48
Jan-Jun 2012	107,090,214	1239	1,821,490.9	61,139,052.83	139.57	109.5
Jul-Des 2012	116,597,076	1226	1,864,420.8	61,612,680.5	140.65	107.7
Jan-Jun 2013	113,637,309	1248	1,907,350.8	67,683,319.67	142.13	105.9
Jul-Des 2013	110,677,542	1216	1,849,551.7	71,526,884.33	143.4	81.45
Jan-Jun 2014	103,874,976	1220	1,791,752.5	73,046,837.84	145.45	57
Jul-Des 2014	97,072,410	1207	1,744,030.7	71,128,077.17	146.42	56.15
Jan-Jun 2015	74,192,515	1227	1,720,169.9	69,519,538	147.21	54.87
Jul-Des 2015	51,312,621	1247	1,696.308.3	6,7911,000	148.0	55.3

**Source:** Central Bank of Iraq, Directorate General of Statistics and Research, semi- Annual Bulletin. (2003-2015).

**Table 7:** Results of the estimation of the relationship between independent and dependent variables in OLS method

Dependent Variable: IOFS				
Method: Least Squares				
Date: 04/01/17 Time: 17:30				
Sample (adjusted): 2003S1 2014S2				
Included observations: 24 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MS	-0.015274	0.064283	-0.237605	0.8149
RE	-0.270558	0.497041	-0.544336	0.5929
GDP	0.507932	0.193695	2.622329	0.0173
POBG	0.755429	0.158798	4.757156	0.0002
INF	0.148275	0.189773	0.781329	0.4448
C	9.110337	4.248823	2.144203	0.0459
R-squared	0.923291	Mean dependent var		17.96992
Adjusted R-squared	0.901983	S.D. dependent var		0.436967
S.E. of regression	0.136804	Akaike info criterion		-0.928212
Sum squared resid	0.336878	Schwarz criterion		-0.633699
Log likelihood	17.13854	Hannan-Quinn criter.		-0.850078
F-statistic	43.33049	Durbin-Watson stat		1.571719
Prob(F-statistic)	0.000000			

**Source:** From the researcher's work based on Eviews 0.9 outputs

In view of the results of the estimate presented in Table (7), we find the following:

1. For the significance of the regression equation, the calculated F-statistic value is equal to (43.33049), which is a significant value at any level of significance. This confirms the value of P-Value, which is equal to 0.000000, For the independent variables and the significance of the equation as a whole in the effect on the dependent variable, As for the extent to which the explanatory variables contribute to determining the behavior of the dependent variable, it is clear to us from the value of R<sup>2</sup>, which is equal to (0.923291), meaning that (92%) of the changes in the dependent variable (financial stability) is due to the explanatory variables, Measurement or estimation errors.

2. (Durbin-Watson stat), which amounted to (1.57), which occurred in the area of non-resolution, which confirms the researcher that this model does not suffer from the problem of self-linkage between the survivors and will accept the hypothesis of nothingness, which states that there is no problem of self-link and refuses Alternative Hypothesis.

3. The model does not suffer from the problem of linear multiplicity. According to Klein's test, the multiple correlation between the highest correlation coefficient in the correlation matrix was between the parallel exchange rate and the inflation rate (0.90). Thus, the higher correlations coefficient is simple in the matrix (0.81), Which is less than the value of the coefficient of determination (0.92). Therefore, the model is acceptable in statistical, economic and standard terms, and the table (6) shows this.

## 5.2 Stability test results for time series of study variables:

For econometric estimates, variable-run stationarity was analyzed. At the same time, the VAR process was carried out because they did not get static. Cogeneration on this series is not true. Impulse-response analyses were performed. Variance decomposition was done and finally, Granger causality analysis was done.

### THE IMPACT ON IOFS CHANGING FROM OIL PRICES

**Table 8:** ADF test statistics

Variable	Level		First Differences	
	Intercept	Trend and intercept	intercept	Trend and intercept
LNIOFS	-1.4907 (1)	-0.3053 (1)	-2.7027(0)***	-3.2303 (1)***
LNGDP	-1.5483 (1)	-2.3868 (1)	-3.8898 (1)*	-3.8784 (1)**
LNER	-2.1325 (3)	-1.1120	-2.1143	-3.4212 (3)***
LNMS	-2.3113 (0)	-4.6296 (0)*	-7.9485 (0)*	-7.9808 (0)*
LNINF	-3.3263 (1)**	-1.8313 (0)	-0.8196 (1)	-1.8069 (1)

ADF and PP test statistics show that some of variables are stationary in level. But due to the structure of the series, we accept the series have long run memory and we take the variables into consideration with their first differences.

**Table 9:**PP (Phillips-Perron) test statistics

Variable	Level		First Differences	
	Intercept	Trend and intercept	intercept	Trend and intercept
LNIOFS	-4.5666 (1)*	-2.2801 (2)	-2.6843 (4)***	-3.1476 (4)
LNGDP	-0.9149 (0)	-1.6251 (0)	-3.2415 (1)**	-3.1978 (1)
LNER	-3.8152 (2)*	-2.5220 (1)	-4.8480 (0)*	-5.8198 (1)*
LNMS	-2.2105 (3)	-4.6261 (2)*	-7.9485 (0)*	-7.9808 (0)*
LNINF	-4.9230 (3)*	-1.5541 (3)	-1.1169 (2)	-2.1945 (2)

According to unit root test results, we employ variables with their first difference. In the second step, we build a vector autoregressive model by using six variables. Initially, we have to identify lag number. In the table below, the lag length criteria test results are presented. According to results, LR, FPE, AIC, and HQ indicate the number of lag is one. So we ask for only one leg.

**Table 10:** indicates lag order selected by the criterion

Endogenous variables: D(LNIOFS) D(LNPOBG) D(LNMS) D(LNINF)

D(LNGDP) D(LNER)

Exogenous variables: C

Date: 06/02/17 Time: 11:19

Sample: 2003S1 2015S2

Included observations: 23

Lag	LogL	LR	FPE	AIC	SC	HQ
0	122.4096	NA	1.62e-12	-10.12258	-9.826359*	-10.04808
1	177.8171	77.08861*	3.37e-13*	-11.81018*	-9.736667	-11.28870*
2	202.4640	21.43209	1.98e-12	-10.82295	-6.972146	-9.854486

\* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

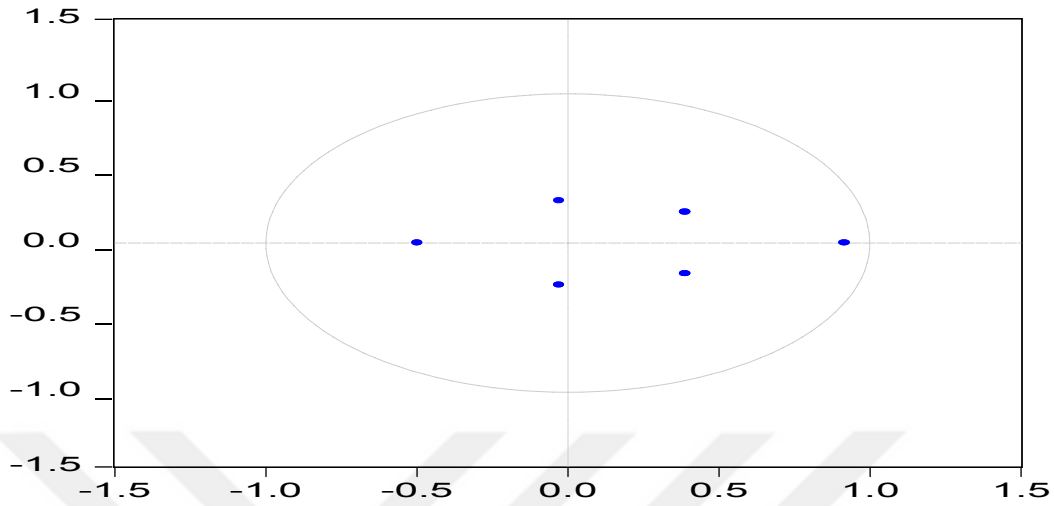
FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

### Inverse Roots of AR Characteristic Polynomial



**Figure 6:** Inverse Roots of AR Characteristic polynomial

After the identification of the number of lag, we test the validity of autocorrelation in the selected lag number. Results of autocorrelation test are presented in the following table. According to results, there is no autocorrelation problem when we select the single lag number. In the light of this result, we continue the empirical test with one leg.

**Table 11:** VAR Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h

Date: 06/02/17 Time: 11:31

Sample: 2003S1 2015S2

Included observations: 24

Lags	LM-Stat	Prob.
1	29.02311	0.7888
2	28.42420	0.8117
3	40.15320	0.2912
4	22.23181	0.9650
5	40.87730	0.2648
6	54.41509	0.0251
7	20.74812	0.9803
8	26.73245	0.8692
9	42.11961	0.2232
10	47.82919	0.0898

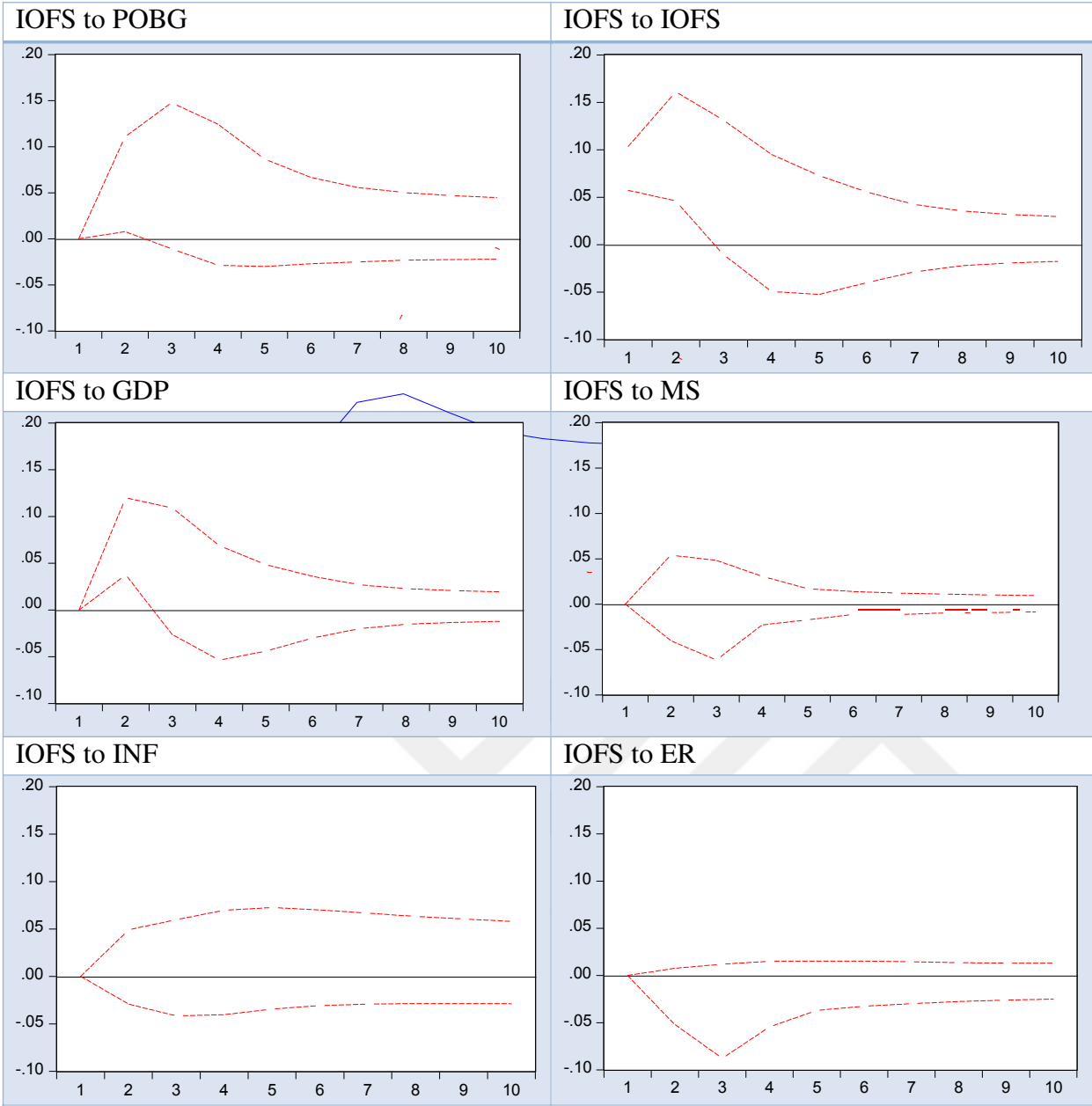
Probs from chi-square with 36 df.

Impulse response test results are presented in the following figures. Each figure implies response of IOFS to the related variable. The first figure indicates the response of IOFS to POBG shock. A positive 1% shock in POBG would induce an increase in IOFS. The response of IOFS is statistically significant for two periods. This result is also significant theoretically. Because an increase in POBG would increase the income of government via tax income (This is theoretically explained I made a conclusion in this way, but it can be expanded).

In the second figure, the response of IOFS to IOFS is presented. As expected, the response of IOFS to a shock in IOFS is positive and statistically significant for three periods.

In the third figure, the response of IOFS to a positive shock in GDP is presented. According to result, IOFS would respond positively to an increase in GDP for three periods. the Result is significant for three periods.

It is also significant theoretically. Because an increase in GDP would induce an increase in tax income (This is theoretically explained).



**Figure 7:** Impulse response analysis



In the fourth figure, the response of IOFS to MS is presented. According to result, the response of IOFS to a positive shock in MS is positive but it is so weak and disappears in the second period. Also, it is statistically insignificant. In the fifth figure, the response of IOFS to INF is presented. Results show that IOFS responds to INF positively. But it is insignificant statistically. Lastly, the sixth figure shows the results of impulse – response the test between IOFS and ER. According to test result, an increase in ER would induce a reduction in IOFS. But it is statistically insignificant.



In the next step, we employ variance decomposition method. According to test results, a shock in IOFS can be explained by only itself in the first period. In the second period, the explanatory power of IOFS reduces and power of GDP increases. In the second period, 22% of total shock in IOFS can be explained by GDP. Another variable which has explanatory power is POBG in the second period. It is 12%. The power of GDP in explaining shock in IOFS reduces during the period and reaches 17 % in the tenth term. It increases for POBG and reaches 26 %. These results imply that POBG and GDP are the main variables explaining the shocks in IOFS.



### 5.3 Joint integration testing using the (Johansen-Juselius) methodology

After verifying that the time series data of the basic variables are stable and after determining the degree of their integration and using the( Phillips-Peron) test, this characterization of the long-term relationship requires testing the common integration of the basic variables involved in the model, In view of the results of the unit root tests, we will estimate a co-integration model using the(Johansen-Juselius) test as shown in Table (11).

**Table12:** Summary of the results of the(Johansen-Juselius) combined integration test

Date: 04/01/17 Time: 16:01				
Sample (adjusted): 2003S2 2015S2				
Included observations: 25 after adjustments				
Trend assumption: Linear deterministic trend				
Series: IOFS ER GDP INF MS POBG				
Lags interval (in first differences): No lags				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.925630	146.6721	95.75366	0.0000
At most 1 *	0.775614	81.70456	69.81889	0.0042
At most 2	0.595019	44.34487	47.85613	0.1029
At most 3	0.367589	21.74702	29.79707	0.3128
At most 4	0.295656	10.29161	15.49471	0.2590
At most 5	0.059342	1.529402	3.841466	0.2162
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**Mackinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.925630	64.96751	40.07757	0.0000
At most 1 *	0.775614	37.35969	33.87687	0.0184
At most 2	0.595019	22.59785	27.58434	0.1913
At most 3	0.367589	11.45541	21.13162	0.6018
At most 4	0.295656	8.762209	14.26460	0.3065
At most 5	0.059342	1.529402	3.841466	0.2162
Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**Mackinnon-Haug-Michelis (1999) p-values				

**Source:** From the researcher's work based on Eviews 0.9 outputs

The results of the joint integration test between financial stability, money supply, parallel exchange rate, GDP, global barrel price, inflation rates and data on a semi-annual basis for the period (2003-2015), The results showed rejection of the null hypothesis of integration vectors that lack common integration, and that at least one integrative vector indicates a long-term relationship between variables, The results of the test ( $\lambda$  trace) shown in Table (12) show that the

calculated value of the maximum rate (81.70456) is greater than the critical value (69.81889) at the level of 5%. This means that the null hypothesis ( $H_0 = B_0 = 0$ ) The existence of any vector of co-integration ( $r = 0$ ) and thus acceptance of the alternative hypothesis ( $r = 1$ ) that there is a number of vectors for co-integration, The( $\lambda$  trace) test also shows that there is no third vector of co-integration. Thus, the null hypothesis cannot be rejected. The value of the calculated probability rate (44.34487) is less than the critical values (47.85613) at 5%.

As shown by the results of the( $\lambda$  max) test, in Table (1) there are vectors for cointegration, where the maximum value of the maximum potential (37.35969) is greater than the critical value (33.87687) at 5%, The( $\lambda$  max) test also shows that there is no fourth vector of cointegration, so the null hypothesis cannot be rejected. The calculated mean rate (22.59785) is less than the critical values (27.58434) at 5%.

**Table 13:** Variance Decomposition of D(LNIOFS)

Period	S.E.	D(LNIOFS)	D(LNPOB)	D(LNMS)	D(LNINF)	D(LNGDP)	D(LNER)
1	0.080336	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.165807	62.36314	12.73586	0.161856	0.355759	22.57049	1.812886
3	0.197667	53.15022	20.94739	0.231828	0.453536	20.24152	4.975502
4	0.206271	50.02974	24.59746	0.247439	0.911755	18.71456	5.499058
5	0.209578	48.69118	25.62840	0.239818	1.699489	18.13772	5.603394
6	0.211744	47.82696	25.97370	0.238144	2.509991	17.78731	5.663887
7	0.213386	47.19078	26.09210	0.234531	3.230172	17.53899	5.713437
8	0.214745	46.68565	26.15212	0.232150	3.831443	17.34532	5.753323
9	0.215890	46.27450	26.19140	0.229814	4.326521	17.18961	5.788159
10	0.216863	45.93424	26.22621	0.227969	4.732341	17.06104	5.818197

In the last step we check the causation linkage between variables. According to results, POBG is granger cause of IOFS. The significance level is 10%. INF and GDP is Granger cause of IOFS and significance level of 1%, 5% and 10%. Also IOFS is Granger cause of POBG and significance level is 1%, 5% and 10%.

**Table 14:** Granger causality test

Direction of causality	Prob.
POBG does not cause IOFS	0.0715*
MS does not cause IOFS	0.9352
INF does not cause IOFS	0.0002***
GDP does not cause IOFS	0.0000***
ER does not cause IOFS	0.1247
IOFS does not cause POBG	0.3248
IOFS does not cause MS	0.5374
IOFS does not cause INF	0.5650
IOFS does not cause GDP	0.1679
IOFS does not cause POBG	0.0029***

## CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

### 6.1 CONCLUSION

The Iraqi economy is characterized by unilateralism because of its direct dependence on the export of crude oil with neglect of other economic sectors such as the industrial sector and the agricultural sector. Although Iraq has enormous potential of proven oil reserves and oil production and exports in addition to the low cost of production per barrel, but suffers from structural economic imbalances due to the dependence of their economies on oil revenues , and the way that affected the process of economic development as it has become more sensitive to changes in crude oil prices and the form in which the impact of the volume of oil revenues and create many economic problems, especially the high unemployment rates in some high inflation rates and the way that strengthened the association and its openness to the outside world. According to the Phillips-Peron test with a fixed limit and a general trend, the time series of the variable is narrowly stable at 5%. The parallel exchange rate does not give an identical degree of silence at the level and becomes identical after taking the first difference. And the price of a barrel globally and the rates of inflation and financial stability are identical after taking the second difference.

The results showed rejection of the null hypothesis of integration vector, and that at least one integrative vector indicates a long-term relationship between the variables, through the  $\lambda$  trace and the  $\lambda$  max test. The relationship between financial stability, narrow money supply, parallel exchange rate, world barrel price, GDP at constant prices and inflation rates using the OLS method was estimated to obtain the best and best estimate of the parameters. The results of the estimation were consistent with the economic theory, Explanation of (92%) of changes in financial stability. The hypothesis of the study that the relationship between financial stability and the price of a barrel globally is a positive, when the rise in oil prices globally lead to increased oil revenues in the Iraqi economy, and the privacy of the economy, it leads to increase public revenues within the economy and thus lead to increased financial stability.

## 6.2 RECOMMENDATION

In the light of the findings of the study, it is possible to propose some measures that may help the economic policies in Iraq from using their tools to achieve financial stability and thus contribute to economic growth as follows:

1. For the purpose of alleviating the negative effects of international economic variables, the economy should adopt economic policies that reduce dependence on oil resources in a way that diversify the national income and towards developing the national economy and searching for other sources to obtain the state's financial resources through benefiting of the oil resources currently in the establishment of domestic industries for export to replace oil resources after the end of the oil age.
2. Working on the development of national oil employees by involving in training courses outside the country or working on the use of technical service contracts for the purpose of benefiting from the experience of other countries in the oil industry.
3. Allocating the percentage of the oil revenues for the purpose of developing the oil industry and working to expand it to achieve the increase in production capacity.
4. The establishment of a sovereign fund linked to fiscal policy works as a source of financial and collateral for future generations as part of the savings from oil revenues as well as other miscellaneous income through the fiscal deficit in order to compensate and reserve for emergencies.

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