THE IMPACT OF THE WORLD TRADE ORGANISATION ON LIBYAN BANKING SECTOR

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ABSTRACT

The main aim of this study is to identify and analyse, both qualitatively and quantitatively, the potential effects of the World Trade Organization (WTO) on the Libyan Banking sector using DEA and Panel data regression methods. Libya has not gained its full membership of the WTO yet. However, Libya has gained observer status since 2004. Since Libya has not yet joined the WTO, it is not possible to know its impact by addressing the period pre and post joining the WTO. Therefore, to know the final expected impact of the WTO on the Libyan banking sector, two ways are selected. The first one is by assessing the rules of the WTO and review the existing literature regarding the impact of the WTO on banking sector to draw some conclusions on the Libyan banking sector. The other one is by using the efficiency of banks as a means to know the impact of the WTO on the Libyan banking sector. The efficiency was empirically measured using DEA method and two types of comparison: Common Efficient Frontier (CEF) and National Specific Frontier (NSF). The using of DEA method allows the comparison of efficiency of Libyan banks to those in existence in countries similar to Libya (Gulf countries) that have already gained membership of the WTO .Also, to check whether there have been any changes in the general trend of efficiency since these countries have joined the WTO. Finally, in order to find out how to improve the bank efficiency, the determinants of bank efficiency were investigated using panel data regression and the WTO was used as one of the determinants of bank efficiency.

The main finding from a sample inclusive of GCCs banks with /without Libyan banks under CEF comparison, reveal that the mean efficiency score of the Libyan banking industry is not dissimilar to the GCC country's mean. Since these results are different to those obtained in the existing literature and also to know the implication of WTO on GCC countries as more homogeneous countries, the analysis was repeated without Libya using the CEF comparison. However, the type of comparison (NSF) produced significantly different results, in particular the ranking of the countries. Overall, The results of DEA which were supported and complemented by using the Panel data regression method show that there is no clear evidence that the efficiency of Gulf countries has been improving since joining of the WTO. The reason behind this might be the decreasing level of efficiency in these countries relative to developed countries When the Gulf countries joined the WTO. Furthermore, the Gulf countries have not yet completely opened their banking sectors and still discriminate against foreign banks. Also, they still enjoy the exemption given to developing countries. Therefore, Libya's joining the WTO as a full member- at the present time -might affect the banking sector negatively. Regarding to the impact of banking reform on Libyan banks efficiency, although the results were ambiguous and depending on using CEF or NSF type, the results of NSF which is supported by previous literature showed that there was progress, therefore, efficiency was improved after the reform had started.

DEDICATION

TO MY PARENTS AND MY FAMILY

DECLARATION

This is to certify that this dissertation is the result of an original investigation. The material has not been used in the submission for any other qualification. Full acknowledgement has been given to all sources used.

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LIST OF ABBREVIATION

ATM	Automated Teller Machine,
CBL	Central Bank of Libya
CEN-SAD	Community of Sahel –Sahran State
CIA	Central Intelligence Agency
COMESA	The Common Market for Eastern and Southern Africa
EIA	Energy Information Administration
EU	European Union
GAFTA	Greater Arab Free Trade Area
GATS	General Agreement on Trade in services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
IMF	International Monetary Fund
MENA	Middle- East and North Africa
NPLs	Non-performing Loans
NOC	National Oil Corporation
SCBs	State-Owned Commercial Banks
UMA	Arab Maghreb Union
UN	United Nation
WTO	World Trade Organization

CHAPTER ONE
INTRODUCTION

1.1 Introduction

The aim of this study is to identify and analyse, both qualitatively and quantitatively, the potential effects of the World Trade Organization (WTO) on the Libyan Banking sector. Libya is not yet a full member in the WTO. It submitted its application of accession to the WTO on 10 July 2004. However, Libya has not submitted a memorandum on the foreign trade regime so the working party has not met yet (WTO, 2008).The General Council of the WTO established a working party to examine the application of Libya on 27 July 2004. This is the first step in the accession process. Libya has become an observer since July 2004 and will continue to be so during the negotiations leading to full membership (WTO, 2008). According to the WTO rules, Libya must start accession negotiations within five years from the date of gaining the status of observer. Therefore, because Libya is not yet a member of WTO, it was not possible to estimate the impact of WTO membership upon Libya directly. However, efficiency of banks in countries similar to Libya (Gulf countries) those are already members of WTO was assessed by Data Envelopment Analysis (DEA) and Panel Data Regression method.

Libya is seeking to join the WTO for political and economic reasons. For example, it needs to further integrate into the world economy (especially into the international community of market-based economies) after the UN suspended economic and other sanctions against Libya, and the UN Security Council officially lifted its sanctions in 2003. Furthermore, the Libyan government needs to get more predictable access for its exports to foreign markets and attract more foreign direct investment, especially in non-oil sectors such as financial services, tourism, and retail trade (EIA, 2006). Moreover, the Libyan government believes that becoming a member of the WTO will help its efforts for the programme of economic reform and liberalization and would have a positive impact on economic growth. In addition, membership should help to reduce the heavy reliance on oil government revenue, achieve higher level of employment, more efficient use of economic resources, and

improve the living standard for its people. Libya is particularly keen on expanding the service sector which is more labour-intensive. Hence, it should allow the country to provide employment for its fast growing young population. The Banking sector is one of the most important parts in the financial service sector and the Libyan economy. In 2006, the Libyan banks assets represented 60% of GDP. However, insurance sector was small and limited. It accounted for less than 1% of GDP (World Bank, 2006). Also, the domestic equities market is limited. It was only established in 2006.

The World Trade Organisation was founded in 1995, as an outcome of long –time discussions and negotiations between countries for many decades .The main aim of the WTO and its related agreements like The General Agreement on Trade in Services (GATS), Trade-Related Intellectual Property Right (TRIPs), and Trade-Related Investment Measures (TRIMs) is to increase international trade in commodity and services by promoting lower trade barriers (GATT, 1994).

Most of the previous studies related to Libyan banking sector have showed that it has low competitiveness, small scale, low quality of service, low professional skills in management, and inadequate technology. Credit remains the key business and source of income for the banks. Products and services of the banks are poor, with low convenience. Most of the commercial banks do not have an effective and sustainable business strategy. Staff qualification of most banks is inadequate to access new technology and modern banking. The supervision and internal audit remains weak. The information system, financial reporting, accounting, including the management information system (MIS) do not achieve the international standards and practices (Ehtawish, 2006) and (Shamia, 2007). Most state-owned banks have suffered from non-performing loans (NPLs) that amounted to 26.6% of total loans in 2007.This ratio is still the highest in the Arab world (Oxford, 2010). In addition, there are problems related to corruption, lack of transparency and accountability. Although, the banking sector exists in a relative capital-abundant economy, the number of institutions is small by international standards and has traditionally been over-protected by the government. Moreover, the Libyan banking sector as a developing sector will have to face international competitiveness, by reducing costs and increasing efficiency and quality, as Libya become a full member of the WTO and foreign banks are allowed to enter the Libyan financial market and operate without any restrictions. Though

this move may hold positive prospects for banks to expand their market share through elimination of the restrictions to operating outside the country, it also poses a challenge to forcing them to grow and operate at global, international standards.

Steps have been taken to reform the banking system such as the adoption of the law number (1) of 2005. However, the reform process of the economy and the banking sector are not completed yet. Hence, joining the WTO might help to strengthen and accelerate the process of reforms. Banking is a problematic sector in Libya and would be greatly challenged by the WTO accession. Joining the WTO, and the liberalisation of the banking sector that the WTO requires should bring much more competition to Libya's financial industry and the state monopoly status of banking sector gradually cease to exist.

Joining the WTO is a key to the survival and success of domestic Libyan banks, especially for state-owned commercial banks. The reforms of Libyan domestic banks and joining the WTO should bring efficiency and strength to the Libya's banking industry. However, great instability might be caused during reform process. It is very important for Libya to find appropriate methods to pass this process, so that the banking reform can be achieved in a steady and effective way.

1.2 Objectives of the Study

The study tried to achieve the following objectives:

a) To cover the literature review, both at theoretical and empirical levels, on the impact of WTO membership upon countries similar to Libya with particular reference to the banking sector. Also, asses the rules of the WTO and existing literature on the impacts of the WTO on banking sector and draw some conclusion on Libyan banking sector.

b) To provide descriptive analysis of the economic situation of Libya with particular reference to the banking sectors.

c) To cover a focused and updated review of both theoretical and empirical studies using Data Envelopment Analysis (DEA).

d) To empirically evaluate the efficiency of Libyan and Gulf commercial banks by using DEA method to compare and check the trend of their efficiency as an

indicator to the ability of Libyan commercial banks to compete with foreign banks when Libya become a full member of the WTO.

e) To cover a focused and updated review of theoretical and empirical studies of the determinants of bank efficiency.

f) To determine the impact of different factors which affect the efficiency of Libyan commercial banks by using Panel data Analysis regression. Given the fact that Libya is not yet a member of WTO and has not become a market economy yet, the above analysis will be complemented by case studies of the impact of WTO membership on banking sector in similar countries (Gulf Countries). This will be integrated by the analysis of the expected effects of the WTO on Libyan banks.

1.3 Research questions of the Study

Taking into account the aims and the objectives of the study, the study will answer the following questions:

Q1. By using international standards to evaluate the efficiency, is the current performance of Libyan banks acceptable to join the WTO? (Empirical chapter using DEA) . Also, to what extent recent Libyan banks reforms have achieved their targets to raise the efficiency of Libyan banks? (Empirical chapter using DEA and comparison with previous findings in the literature) .

Q2. What are the main determinants of Libyan and Gulf banks efficiency? In other words, how to raise the efficiency of Libyan banks to allow them to benefit from accessing the WTO (Empirical Chapter on determinants of bank efficiency to Libya and Gulf countries).

Q3. What are the recommendations on banking reforms in the context of the negotiations leading to Libya's accession to WTO?

1.4 Methodology of the Study

The study will adopt two empirical methods. One is a non- parametric linear programming method (Data Envelopment Analysis DEA) that will be used to evaluate the efficiency of the Libyan and Gulf commercial banks. Further detailed analysis of DEA is offered in chapter five. The other method is Panel Data Regression Analysis. This method will be used to determine the factors which affect the Libyan and Gulf banks efficiency. The

results from DEA will be used as dependent variable in an econometric model of the determinants of efficiency estimated by Panel Data Regression Analysis.

The primary source of data on the banks' balance sheets, income statements and ownership is the Bankscope database produced by the Bureau van Dijk, which includes data on 30,000 banks world-wide. The database is updated monthly and latest issue of the Bankscope database used in this study was March 2008. Bankscope is a comprehensive, global database of banks' financial statements, ratings and intelligence. The central banks of the countries provide aggregate data on their banking systems to calculate market shares in deposit taking and lending activities.

Other important sources of Libyan data are the international trade statistics, the annual reports of the Libyan Central Bank (CBL) and the Libyan National Institute of Information, the International Monetary Fund, World Bank, World Trade Organization, and Arab Monetary Fund. The study will include the period from 1999 to 2007 since this is the available data in Bankscope for banks in Libya and Gulf countries. Unfortunately, data of the period before 1995 (The year of WTO established) and after 2007 were not available in the Bankscope. However, this period is sufficient to give general trend about the efficiency of Libyan banks and the Gulf countries .These countries represent a case study of countries that have joined the WTO.

1.5 Contribution to the Knowledge

The contribution to the knowledge of this study could be summarised as follow:

a. To the best of researcher's knowledge, there are no previous empirical studies aimed to identify and quantify the expected effects of the WTO on Libyan banking sector. Therefore, this study will try to fill in the gap in the knowledge in this area specifically.
b. This thesis advances the knowledge in understanding the potential impacts of the WTO on Libyan banking sector in different ways (descriptive and empirical analysis). The thesis uses a more comprehensive and latest available data and includes most of the suitable variables identified in the literature. Furthermore, the thesis uses recent methodologies suitable to the empirical work (DEA and Panel data regression method).

c. The study will be of great help in benefiting Libyan banks managements by analysing and evaluating banking performance and efficiency of the Libyan banks.
d. Evaluating the recent efficiency of Libyan banks (including private banks sector) after the adoption of the Law number (1) is a new area of research. The new banking law aimed to restructure the banking sector and became effective in January 2005.
e. The research is new in terms of determining the factors which affect the efficiency of Libyan banks.
f. The Libyan government has chosen the banking sector as a tool to achieve its objectives regarding its socio-economic plans. Therefore, the government, and especially the CBL, is likely to benefit from this study by understanding the expected impacts of Libya's joining the WTO on the Libyan banking sector.

The following empirical papers have been developed as part of the PhD research.

- The efficiency of Libyan commercial banks in the Context of Libyan WTO accession (Presented at Salford Postgraduate Annual Research Conference June 2010 and accepted to be published as conference proceedings).
- The expected impacts of the WTO on Libyan banking sector. (Being prepared for submission to a suitable journal).

1.6 Structure of Thesis

This thesis consists of seven chapters. It is organised as follows:

Chapter one presents the background of study. It highlights the aims, objective, methodology, and research questions. Also, outline the contribution to the knowledge as well as the structure of the thesis.

Chapter two gives an overview of the Libyan economy including the general features of the Libyan economy through presenting its main characteristics.

Chapter three focus on the main features of the Libyan banking sector and its development. In other words this chapter attempts to address the evolution of the banking sector in Libya regarding its development, growth, and reform policies. This chapter is primarily

concerned with the development of the Libyan commercial banks, supported by financial and economic indicators.

Chapter four deals with World Trade Organisation (WTO), and its development including its founding principles, functions with special reference to the General Agreement of Trade in Services (GATS). The second part of this chapter presents the previous studies focused on the impact of the WTO on banking sector and financial sector. Also, draw some conclusion on the impact of the WTO on Libyan banking sector through assessing the rules of the WTO and the existing literature on the impacts of the WTO on banking sector.

Chapter five assesses the efficiency of Libyan and Gulf commercial banks in the context of Libyan WTO accession. This chapter defines the concept of banking efficiency, and outlines the DEA methodology used in this study.

Chapter six aimed to shed the light on the determinants of Libyan banks efficiency by using Panel data regression method. Chapter five and six represent the empirical work of the thesis.

The final chapter will incorporate the summary, the conclusions of this study and the recommendations for bank management, Central Bank of Libya, government, and future studies concerning Libyan commercial banks' performance and their efficiency. Also, this chapter gives recommendation concerning the studies deal with the Libyan economy and developing countries in the context of WTO.

Table 1.1 Organization of the study

Chapter One	Introduction
Chapter Two	Background on Libyan economy
Chapter Three	Banking sector in Libya
Chapter Four	WTO/GATS and banking service
Chapter Five	The Efficiency of Libyan commercial banks in the context of Libyan WTO Accession
Chapter Six	The Determinants of Bank Efficiency: Literature Review and A panel Data Study for Libya and Gulf Countries
Chapter Seven	Conclusions and Recommendations

1.7 Summary

This chapter introduced the research topic by describing the background of the study and the objectives and questions of the study. Next, the methodology adopted for this study was then briefly discussed. Contribution of the study is discussed followed by an outline of the structure of the thesis. The next two chapters provide a background about the economy of Libya and its banking sector.

CHAPTER TWO

BACKGROUND ON LIBYAN ECONOMY

2.1 Introduction

Until Libya gained its independence on 24 of December 1951, the country was controlled by many nations over different ages; for instance, the Greeks, the Romans, the Phoenicians, the Italians, the British and French. The most significant milestone over the previous ages was the introduction of Islam and the Arabisation of the country. Oil discovery in the late years of 1950s is still the most important event in modern Libyan history. A study of the expected impacts of WTO on Libyan banking sector must consider some important contextual features of Libyan economy. Therefore, this chapter provides an overview to the Libyan economy and its structures, and shed the light on the environment of Libyan banks operate in. The chapter will mainly focus on the modern history and the main feature of the Libyan economy.

2.2 The Modern History of Libyan Economy

The modern history of the Libyan economy after the end of the Second World War can be divided into different stages and periods. Oil discovery represents the most important factor, which affects the Libyan economy so it will be used as a standard to divide these stages and periods.

2.2.1 The First Stage: Before Oil Exportation (1943-1960)

During the Second World War, the infrastructure of the country and the agriculture sector were damaged. They were situated in the north coast of the country which was the theatre for most of the war fighting. The average annually income estimated in the late 1940s was between (£15-£20) (Alhasia, 1979) . During the early 1950s, the country was described as one of the poorest countries in the world. Higgins (1953 cited in Gurney 1996), described Libya in his report which was sent to the UN, as a good example for less-developed country with difficulties of progress.

Although, there was a little improvement in few sectors like health and education at this stage, most sectors were described as heavily under developed. At the same time, there were chronic deficits in both public budget and the balance of payments . The policy of renting military bases, the development aids from the United Nation (UN) and foreign countries were used to cover these deficits. However, the deficits continued during this stage (Saig, 1982). Furthermore, the domestic production was insufficient to cover the domestic demand even though the level of income was very low (Alhasia, 1979). At this stage, the implementation of economic development plans faced great financial difficulties due to limited financial recourses.

2.2.2 The Second Stage: After Oil (1961-current):

In general, the Libyan economy has improved compared with the previous stage, especially during the periods (1961-1980) and (1999-current). The stage after oil discovery during 1950s may be divided into three periods.

2.2.2.1 The First Period: Financial Surplus and Welfare: (1961-1980)

Oil exploration in Libya began in early1940s. Libya's first oil fields were discovered in 1959 (at Amal and Zelten—now known as Nasser). By the year 1961, the structure of the Libyan economy started to convert from a capital deficit nation into a capital surplus nation due to the increase in the value of Libyan oil exports. As a result of that, the deficit in the balance of merchandise trade ended in 1961, the deficit in the balance of payments ended by 1963, and the deficit in the public budget ended by 1966, after having been in deficits since 1943(Saig, 1982). Although there was a significant increase in oil prices in this period, especially during the period (1973-1980), the public budget was in deficit again in a number of years (after 1966) due to expansion in public expenditures.

There were three Economic development plans (five years- a Plan) implemented, and there was a significant improvement achieved in many sectors compared to the previous stage. However, the most important target, which was related to lowering the reliance on oil economy to multi-sectors economy, (like agriculture, industry and service sectors), was not achieved in this period in spite of the great financial resources available.

2.2.2.2 The Second Period: The Deficit and the Sanction (1981-1999)

In this period, the Libyan economy was influenced negatively by many important factors. The first one was the USA decision to stop importing Libyan oil in 1981 due to political conflicts. The Libyan oil exports lost the USA market which had imported around 40 % of the total Libyan oil exports (Alfitouri, 1992). The second factor was the significant reduction in the revenues of Libyan oil exports (compared to the previous period) due to the significant reduction in oil prices during the period (1982-1999). Furthermore, Libyan oil exports were reduced by the recession which was continuing during early years of 1980s in European countries. As a result of the reduction in oil revenues, the execution of many projects of the economic development plans were delayed or cancelled. This added more difficulties to reform the economy from heavily reliant on one sector to an economy dependent on multi-sectors.

The previous two factors contributed negatively to deficits in the public budget and the balance of payments again during this period. In addition, the procedures and policies which were implemented to end these deficits caused many negative side effects. For example, the use of constraining imports policy and controlling the hard currency led to many problems such as parallel market in commodities, and black market in hard currency, which led (with other factors) to serious problems such as slow economic growth, high unemployment and high inflation rates (Alfitouri, 1992). The third negative factor was the controlling role of public sector to the economic activity and ending the role of the private sector by early 1980s. This was one of the most important reasons, which caused many problems like reducing productivity, increasing unemployment rates, the deficit in public budget, therefore, increasing public debt. Although privatisation programme started by the late of 1980s, it was very slow and rejected strongly by a class which was benefiting from the public sector. The final negative factor was the sanctions in 1992, which were imposed by the UN due to Lockerbie Issue. This sanction was implemented by USA and other UN members. Although the sanctions have no direct effects on Libyan oil exports, it was noticed that the sanction had high economic and social costs.

2.2.2.3 The Third Period: Financial Surplus and Welfare (1999-current)

There is no doubt that Libyan economy at this stage has improved more than the previous stage in general. To explain this claim, there are many explanations. The first one was

achieved on April 5, 1999, when the UN suspended economic and other sanctions against Libya, and the UN Security Council officially lifted its sanctions in 2003. Furthermore, on September 20, 2004, the USA officially lifted its sanctions and diplomatic relations were formally resumed. In the same year, the USA agreed to accept Libya as an observer in the WTO. The second explanation is the significant increase in oil prices during this period, which has continued since 1999 (except for recent years when the prices have declined significantly), and also the rising in the quantity of oil exports. All of these changes led to support the economic growth rate significantly during this period. For example, during 2005, the growth rate of real GDP was 34.8% due to the increase in the growth rate in oil sector and non-oil sectors which reached 71.3% and 28.7% respectively. As a result of the increase in oil prices and the quantity of oil exports, the deficits in the Balance of payments and the public budget were reversed. As a result, significant surplus have been achieved during this period so imports barriers have been eliminated in 2005.

However, no significant progress has been made in terms of reforming the economy to reduce its dependency on oil as the country's sole sources of income, as well as the privatisation programme which was started since the late of 1980s. Also, although the Libyan currency was devaluated to increase the competitiveness of Libyan firms and to attract foreign investment to the economy especially in terms of non-oil and gas sectors, most of foreign investors still have preferred to invest in the oil and gas sector instead of other sectors.

2.3 The Main Features of Libyan Economy

The Libyan economy has the most of developing country's characteristics. It has been described as an extremely wealthy-state which has a high dependency on foreign countries. The main features of the Libyan economy will be discussed as follows:

2.3.1 Resources

The most important resources in Libya are its oil and natural gas. Oil exploration in Libya began in 1940, when the Italian government instructed AGIP to explore the Sirte Basin; however, World War II interrupted these early efforts, and deposits in commercially viable quantities were not discovered until 1959 (St John, 2007). In this year, American

prospectors announced the discovery of petroleum deposits in commercially viable quantities in eastern Libya. There were dramatic increases in both production and revenues in the following decade; however, the oil prices were relatively low. From the beginning, revenues from petroleum exports increased rapidly, growing more than fifteen-fold from $40 million in 1962 to $625 million in 1967. Within eight years of its first shipment, Libya was the world's fourth largest exporter of crude oil, a rate of expansion previously unknown anywhere in the industry's history. As one indication of the depth of change that took place, per capita income increased from $35 in 1951 to over $1,000 in 1967. Although it occurred from a relatively modest base, economic growth of this magnitude remained extraordinary both in real and relative terms. By 1969, Libya's daily production was comparable to that of Saudi Arabia even though its known reserves at the time were far less (Mahmud and Russell, 1999). Libyan oil production eventually reached a peak in the following year at 3.7 million barrels per day (b/d), over three times its level three decades later (Gurney, 1996).

The Libyan economy is heavily dependent on the hydrocarbon industry which, according to the International Monetary Fund (IMF, 2009), accounted for over 95 percent of export earnings and an estimated 80 percent of financial revenues in 2008 – preliminary 2009 data and short-term forecasts indicate that these figures will remain relatively stable through 2014. According to Oxford Business Group (2010), by the end of 2009, Libya holds around 43,7 billion barrels of oil reserves, the largest in Africa and ninth largest in the world while the estimates of Libya's national oil company (NOC) reaches at least 45 billion barrels. However, the country remains highly unexplored and only approximately one-third of the country is covered by exploration agreements with oil companies. The under-exploration of Libya reflects the impact of former technology sanctions on oil sector and also stringent financial terms imposed by Libya on oil foreign companies.

Libya's oil industry is public owned industry. The NOC is responsible for implementing the Exploration and Production Sharing Agreements (EPSA) with international oil companies (IOCs). NOC is also responsible for field development and improvements as well as downstream activities. IOCs working in Libya work in exploration, production, transportation and refining. The oil foreign companies came from different countries such as the USA, the UK, Italy and Malaysia, and include Eni, Statoil Hydro, Occidental, OMV,

ConocoPhillips, Marathon, Shell, BP, ExxonMobil and others. In 2009, total oil production (crude plus liquids) was approximately 1.8 million barrels per day (bbl/d) (EIA, 2010).

Gas reserves make Libya in the fourth place in Africa. Libya holds slightly over 54 trillion cubic feet (tcf) of natural gas reserves. It is noticed that Libyan natural gas production has grown substantially since 2004. According to Energy Information Administration, Libya's natural gas production has grown substantially in the last few years. According to (EIA, 2010) Libya produced 1,070 billion cubic feet (Bcf) of gross natural gas in 2008 of which 562 Bcf was marketed dry natural gas. The remainder was vented, flared or re-injected to enhance oil recovery. Natural gas currently accounts for 45 percent of generated electricity. In spite of plans to increase natural gas consumption for electricity production, project delays and infrastructure limitations have kept domestic consumption relatively stable over the past decade. However, the International Energy Agency (IEA) is estimating that by 2012, domestic consumption could increase by as much as 50 percent if planned pipelines and gas-fired plants come online.

According to Oxford Business Group (2010), only 2% of land is suitable for agriculture. Water resources are very limited due to reducing in annual rainfall averages. Rainfall is rare, with the majority of the country receiving less than 400 mm annually. More than 95% of the country is agriculturally useless desert or semi desert. As a result, the country imports about 80% of its agricultural produce. Most of Libya's arable land lies in the North of Libya like the Jabal Akhdar region around Benghazi, and the Jifarh plain near Tripoli. Great Manmade River project (GMR), the largest water scheme in the world, designed to bring water from underground aquifers fossil beneath the Sahara to coastal cities. In other words, the Great Man-made River Water Supply Project seeks to overcome the severe water shortages for Libyan agriculture by extracting fossil water from sources in the south. The aim was to provide 70% of extracted water to agriculture, including large scale agricultural projects in the centre and south of the country, with the remaining 30%, going to residential and industrial users. However, there are many challenges facing the project like, doubts in its long-term viability due to finite nature of the fossil reserves, high costs of using water in drinking and agriculture, negative effects on oases in the desert due

to reduction in level of underground water, and problems related to pipe's damage due to natural corrosion factors.

Libya has an attractive strategic location situated in the Northwest Mediterranean coast of Africa and the Midpoint of Arabic countries. Also, Libya is one of the closest African countries to the EU countries and it represents one of the most important trade partners to several countries of the EU (the most important economic union in the world). Therefore, the country has great potentials in other areas like transit trade, as Libya is considered a good link between South sub Sahara countries and the Mediterranean Sea. In addition Libya has great tourist potentials as it has suitable climate, clean environment and stability. Tourism ranges between coastal, desert tourism, as well it has also varied cross-civilization antiquities sites; like those of Phoenician, Greek, Roman, and Islamic civilizations. It can be said, however, that a great deal of Libya's wealth is still untapped, as most of country's vast areas are yet discovered whether in oil and gas or in other minerals.

2.3.2 Population

Libya is one of developing Arabic countries. It has an area of approximately 1,775,500 km2, making it the fourth largest country in Africa. It is greatly under-populated and most of its people live in the narrow coastal strip next to the Mediterranean Sea, with more than half of the population living in the two major cities of Tripoli (the capital) in the far west of the country and Benghazi in the east ,while the desert occupies most of the country.

The Libyan population by the mid-1930s had been cut in half due to emigration, famine, war casualties and country occupation by other nations, lack of hygiene and other health issues. There were not any data or information about the population in Libya before 1954. In this year, the first census was done and showed that the Libyan Population was around 1,088,800 with an annual population growth rate of around 1.25 per cent. As shown in table 2.1, the total population has increased significantly to around 6.46 million in 2010. This means that total population has multiplied more than five times since 1954. The high rate of growth population reflects the impact of oil on the Libyan economy in terms of improving domestic social services, and also, an official policy of fostering rapid growth to meet labour needs and to fuel economic development. The population growth rate was

estimated at around 2.2 % in 2010. According to UN estimates, it reached around 4.5% in many years during 1990s so it was one of the highest Population growth rate in the world.

Table 2.1 Libyan population

Years	Mid-Year Population, Total(Absolute)	Mid-Year Population, Total(Growth)
1990	4.146390	
1995	4.662863	1.5139
2000	5.125443	2.4446
2005	5.777532	2.3826
2010	6.461454	2.1678

Source: (Datamonitor, Libya Country Profile, 2010)

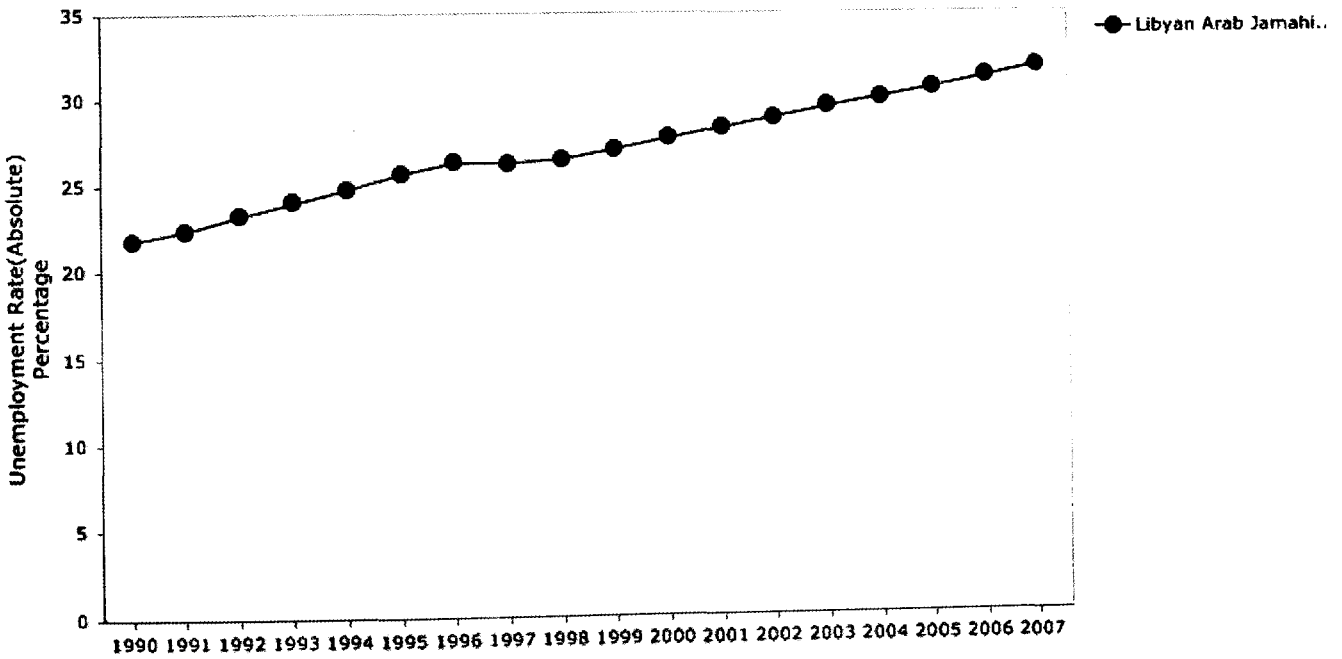
The high population growth rates that prevailed in the period under review led to important changes in the age structure of the Libyan population. One certainty in demographic studies is that high rates of population growth result in an increase in the percentage of young population groups. This, in turn, leads to a heavier burden of expenditure on non-productive services such as education, health, housing, utilities, and social security, essentially signifying that there are more consumers than producers. Libya has a young population. According to the 2006 census, 31.06% of its total people were under the age of 15.The birth-rate is 25.13 per 1000 and the death rates are 3.41 per 1000. The over fertility rate is 3.01 births per woman. The surplus of births over deaths, and the surplus in Balance of migrants entering over leaving the country (net migrants) have caused the increasing of the population growth rate since 1954. The country has strong basic health indicators. Life expectancy was 72.3 years in 2008, up from 69.5 years in 2006. It is noticed that the live expectancy has improved significantly since 1960 due to the improvement in the overall quality of life after oil discovery. In 2008, around 7.4 percent of total population have lived below poverty line. This percentage is equal to Tunisia which has a bigger Population and fewer resources than Libya.

According to Oxford Business Group (2010) the overall population density is approximately 3 persons per square kilometre, which is one of the world's lowest population densities. Furthermore, more than two-thirds of the population lives in the densely settled coastal areas and the main cities in terms of population are Tripoli, Benghazi and Misurata.

2.3.3 Labour

According to Datamonitor, Libya Country Profile, 2010, as shown in Chart 2.1, the rate of unemployment is getting higher from 1990. It was estimated to be around 32 percent in 2007, affecting primarily the young. Although there is no accurate number showing the disguised unemployment, it might be a high percentage because 75% of labour force is employed in public sector which is described as a low productivity sector. As a consequence of its small population and the implementing of economic development plans, Libya has had to import a large number of foreign workers. Expatriate workers, most of them from Arab countries, flowed in Libya after the discovery of oil. The greatest demand was for managerial and professional personnel. However, a large percentage of the expatriates were unskilled workers who were widely distributed throughout the economy. There is no accurate data on foreign workers and non-nationals population because of under reporting and illegal entry. However, it is believable that is bigger than the number, which is published by official sources (Otman, and Karlberg, 2007). No significant changes in government wages have occurred since 1981. According to the limited statistics, in 2003, monthly salaries averaged only US$ 190 in 2003 (CIA World Fact Book, 2010).

Chart (2.1): Libyan Rate of Unemployment



Source: (Datamonitor, Libya Country Profile, 2010)

There is a chronic distortion in the structure of labour force when allocated by sector. Although the service sector is the most attractive employment sector, its share of GDP is approximately the same of industry sector which employs a smaller share of the labour force. For example, according to the CIA World Fact Book, 2010, in 2004, the labour force in industry sector was 23% of total labour force and its share of GDP was 45.7%. At the same time, the labour force in service sector was 59% from total labour force and its share of GDP was 45.6%, and the labour force in agriculture sector was 17% and its share of GDP was only 8.7%. Although women represent around half of total population in 2009, their share of the total labour force is low. They represent only around 30 % of total labour force at the same year. It is noticed that the female labour force has a high illiteracy rate (28%), and facing limited work choices. All these factors influence negatively on economic activity of women. In terms of labour law, the workers right and duties were defined. However, it is unclear whether the laws are enforced.

2.3.4 Education

Education in Libya is free for all citizens. This includes primary, elementary and secondary schools. The education is compulsory up until secondary level. According to Datamonitor, Libya Country Profile (2010), the literacy rate is the highest in North Africa; over 82% of the population can read and write (age 15 and over). Male and female literacy rates are 92.4% and 72%, respectively. Primary education both free and compulsory for all, which gets translated into high primary enrolment rates for both males and females. As per statistics from the World Bank, as of 2008, the total gross primary enrolment rate was 97 %.

The high literacy rates are a result of systematic government investments in the educational sector over the past several years. The school curriculum was restructured to boost technical training and English language education. Several technical educational institutes were also established even at the tertiary level. In 2000, the local authorities were delegated authority to oversee the educational institutions in their respective areas. The elimination of sanctions in 2004 and the subsequent normalization of relations between Libya and the US have facilitated academic and student exchange programs between the countries. The education expenditure in the country has been low at around 2% to 3% of GDP during the period 2000-2008.

Porter and Yergin, (2006) argue that there is lack of accurate information related to the education sector and the education in Libya has quality issues. These yield from two sources: problems with the quality of inputs, such as curricula, teachers and the educational infrastructure; and a number of structural issues. These include the lack of reliable and objective standards, no central body to provide overall planning and monitoring, inefficient allocation of public resources, and a lack of resources in specific areas.

2.3.5 Private and Public Investment

Although, there is evidence that the private sector is growing, the public sector is still dominating the economy and controlling most economic activities. The public sector has expanded since the starting of oil exportation and changing in political system in 1969. However, Libya started liberalizing its economy from the various constraints, and exposing it to competition quite early, as of 1988 when it enacted Law No. 8. This law dealt with certain provisions related to economic environment and economic activities. This was followed by another law, equally important, that is Law No. 9 for the year 1992 to complement Law No. 8. The new law aims of economic units and government agencies entitled to engage in economic activities.

There were many important factors that lead to the starting of the privatization programme aimed to eliminate the state monopoly by the late years of 1980s. For example, controlling the economy by the state might lead to rising in high rates of inflation, unemployment, and reducing productivity. Also, political reasons were related to bad relation between Libya and its neighbours especially a military border conflict between Libya and Chad. there was a strong direction related to the privatisation after Soviet Union had ended. The last factor: low oil prices in the eighties. To deal with these challenges, the government adopted measures to stimulate the economy. This was manifested particularly in limiting the role of the public sector in the economy, paving the road for the private sector to play a larger role in economic life, and to reduce the depressions on political system. This clearly started in 1988.

To deal with this difficult situation, Libya adopted a group of reform policies and procedures aimed to achieve greater openness of the economy, and to expose domestic production to internal and international competition, and to reconsider the allocation of

natural resources whether human or financial in an effort to restructure the production of the economy away from its dependency on the oil sector, and to maximize benefits from its resources.

Although, there is no sufficient and accurate data that shows the progress in private sector, it is noticed that the private sector has achieved progress in recent period compared to the previous period (before starting the programme of privatisation and reconstruction of Libyan economy). Regarding to investments allocation data between the public and private sector during the period (1970-1997), the share of public sector was more than 86% of total investments. At the same time, the share of the private sector was only 13.5% (Shamia, 2007). However, there is some information referred to the developing of private sector in services sector (especially in tourism) during the period (2000-2005). According to international organization, the private sector represents 20% of the GDP (IMF, 2006). However, this percentage might be less than expected because most of the private sector activities are informal. Porter and Yergin (2006) estimated it around (30-40) % of total GDP.

Regarding to foreign and domestic investment policies, Investment Law No.5/1997 regulated foreign investments; it was amended by Law No. 7/2003 and has its regulation. The law allows investment in non-oil sectors like industrial, agriculture, health, tourism and services, the law provides many advantages and exemptions for investors including exempting machinery for production inputs from all customs duties and charges as well as exemption from income tax up to 8 years, and the exemption for export from production taxes or any taxes or fees imported or exported. According to the law an investors has the right to transfer his profits, and to refinance his capital. He also has the right to manage his assets through partial or total sale of the project. The law protects investments fully against nationalization or confiscation. Law No. 65/1970 stimulates that joint ventures between foreigners and Libyans can establish joint stock companies.

Domestic investment is regulated through Libyan economic activities No. 21/2001 which has provisions related to engaging in economic activities, this was amended by Law No. 1/2004 and its regulations which allows companies (individual or legal person), or joint stock companies to engage in various economic activities. However, Libya is still ranking poorly in FDI promotion, and losing out on investments that could drive its economic development. There are several problems like long delays in FDI approvals, restriction and

delays granting work permits and visa for foreign company personnel. The ability to attract the foreign investment is still limited and most of FDI tended to the oil sector. The statistics referred that the share of oil sector and gas in FDI is around 80% (Porter and Yergin, 2006).

2.3.6 The Structure of Economic Activity

According to previous studies, the oil and gas sector is still dominating the economy. One of these studies (Shamia, 2007) point out that the share of oil and gas sector on average was more than 55% of GDP during the period (2000-2005) and this percentage reached a peak in 2005 at around 71.3%. At the same period, the shares of industry and agriculture sector of GDP were very low. They were just 1.4% and 2.8% respectively due to negative growth rate during the period (2001-2004). At the same time, the growth rate of Oil and Gas sector, and services sector achieved high rate growths. They were 40% and 25.7% respectively during **2005** so the GDP growth rate by current prices reached 34.8% in 2005. However, this percentage was slightly decreased in 2008. It reached 32.8% (Datamonitor, Libya Country Profile, 2010).

In terms of real GDP, the service sector dominated the Libyan Economy during the period (2000-2005), its share in real GDP as an average was more than 45% and represented more than 65% of non-oil real GDP. This means that the services sector created around two thirds of added value. At the same time the shares of agriculture sector and industry sector were low. They were 22% and 12.3% respectively. Although these two sectors represented more than 30% of development expenditure, during the period (1970-2006), their shares in real GDP, non real GDP and GDP were law compared with services sector. This means that there is distortion in the structure of Libyan economy requests rising of the shares of agriculture and industry sector to achieve the balance in the Libyan structure economy .The non oil sector represented 28.7%of GDP and the oil sector represented around 71.3% during the period 2000-2005 (Shamia, 2007). The same contribution of non-oil of GDP was approximately achieved in 2009 (Datamonitor, Libya Country Profile, 2010).

In conclusion, the Libyan economy is still heavily reliant on oil sector. This means that development or evolution in the GDP for Libya is closely related to the developments

occurring in the oil sector. Some studies referred that increase (or decrease) in oil price by (1%) will lead to increase (or decrease) the Libyan GDP by 3% (Abusnina, 1992).

2.3.7 Innovation

Innovation activity in Libya appears to be low. Libya's capacity to innovate was ranked lowest among the 111 countries analyzed in the Global Competitiveness Report (GCR) 2005-06, and the Libya Business Executive Survey (LBES), conducted among senior executives in state-owned and private enterprises. This low level of innovation is also apparent from the number of inventions recorded in Libya - 7 per annum on average in the last decade. Even these do not all represent real inventions, as many of them are process improvements to available solutions, which already exist outside Libya.

Libya also ranked low among the 111 countries on other factors that influence the economy's capability to innovate, such as the quality of scientific research institutions (ranked 84th), the quality of mathematics and science education (87th), and intellectual property protection (92nd).

2.3.8 Governance Indicators

The World Bank report on governance uses voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law, and control of corruption as indicators for 212 countries and territories over the period 1996–2008. Daniel Kaufmann , Massimo Mastruzzi of the World Bank Institute and Aart Kraay of the World Bank Development Economics Research Group carried out the study. For any country, a percentile rank of 0 puts it at the lowest rank and 100 correspond to the highest rank. Libya ranked in the 2.4 percentile on the voice and accountability parameter in 2008, is one of the lowest ranks in the world.

Voice and accountability measures the extent to which a country's citizens are able to participate in selecting their government, along with freedom of expression, freedom of association, and the availability of free media. Libya ranks in the lower percentile due to its strict attitude towards the press. Libya has a lower rank than its neighbour Egypt which is at percentile rank of 14.4.

Libya ranked in the 63.2 percentile on political stability and absence of violence in 2008. Political stability and absence of violence measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism. Libya is at a higher rank than Egypt which faces political unrest and is ranked at 23.0 percentile.

Libya ranked in the 18.0 percentile on government effectiveness in 2008. Government effectiveness measures the quality of public services; the quality of the civil services and the degree of its independence from political pressures; the quality of policy formulation and implementation; and the credibility of the government's commitment to such policies. Libya's rank on this indicator is lower than that of Egypt, which is ranked at the 43.1 percentile in this category.

Libya ranked in the 17.9 percentile on regulatory quality in 2008. Regulatory quality measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. Low ranking indicates inefficient implementation of policies and regulations for the private sector. Libya's rank is lower than Egypt, which is ranked at 49.3 percentile. Libya ranked in the 29.2 percentile on the rule of law parameter in 2008. Rule of law measures the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. Libya's rank is lower than Egypt which is ranked low at 52.6.

The country is ranked in the 21.7 percentile on the control of corruption parameter as of 2008. Control of corruption measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the appropriation of the state by elite and private interests. Libya is behind Egypt, which is at 29.5 percentile (Kaufmann et al, 2009) and (Datamonitor, Libya Country Profile, 2010).

2.3.9 Foreign Trade:

Libya is a developing economy. Its major exports are crude oil, refined petroleum products, natural gas and chemicals. Oil exports represent around 96% of total Libyan exports and the country has high open rates of economy. For example, during the period

(2000-2007), the percentage of imports to GDP was-in range- (12-27) %, the percentage of total trade to GDP was around 66% (in average) and reached a peak (91%) in 2005. This confirms that Libyan economy is still highly dependent on foreign countries to afford its needs. 70% of needs is imported from outside the country, the major products imported by Libya are machinery, transport equipment, food, and manufacture. According to (Oxford, 2010), the biggest market for Libyan oil exports continues to be Italy, representing 40.4% in 2008. Next are Germany, with 12.8% of the total, and France, also with 12.8%. With regards to imports, Italy is also the biggest trading partner, accounting for 17.8% of the total import bill in 2008. Germany is in the second position with 6.9%. Machinery, transport and equipment continues to be the biggest import category, accounting for roughly 50% of the total value, followed by foodstuffs and livestock, which represent around 13%. The Libyan service trade balances have suffered from chronic deficit.

The infrastructure of international and domestic trade is still limited and inappropriate to develop trade between Libya and other countries (Porter and Yergin, 2006) claims that Libya is neither a major importer nor exporter, and neither does it possess a major transhipment hub. Hence its ports and other infrastructure are relatively undeveloped compared to those of its immediate neighbours. Libyan ports are substantially smaller than in other Mediterranean countries. Road infrastructure is still inadequate. For example, there is no road to the southern border of the country. Also, Libya still does not have a railway system. Trading and port activities demand a variety of specialised skills and occupations, which can only be developed through training and experience. Given low trade levels, Libya lacks the specific skills necessary for transhipment and/or value-added service operations.

There is chronic shortcoming in Libyan foreign trade. There is concentrating in merchandise structure in one commodity (oil), which is added to high geographic concentration in limited number of countries (EU countries, especially Italy). The strong relation and highly dependent on other economies show the sensitivity of Libyan economy to changes or shocks that happen in this group of countries like inflation and recession. Regarding to trade Libyan policy, it was noticed that tariffs barriers on imports were reduced when Libya decided to eliminate customs duties on 3500 goods (all of imported goods except tobacco) in July 2005. After this date, import duty rates have been became: 10 percent for tobacco products and zero for all other goods. Although no tariffs barriers are still existence, in 2006, services duties-imposed on imports was 4%, consumption taxes

imposed on imports was in the range of (15-25%) while the rate of production tax on domestic production was just (2-5%), and some quota restrictions on imports are still existence. In terms of exports barriers, oil exports are dominated by the state and Libyan law prohibits individuals from owning and exporting oil. However, there are no significant barriers on non-oil exports except a few goods like, cement, iron, subsided goods, and scrap metals.

Libya is a member in many international organizations like the Organization of the Petroleum Countries since 1962, International Monetary Fund, World Bank, Arab Monetary Bank and other institute of Arab League, African Economic Community. Libya applied for accession to the World Trade Organization (WTO) in June 2004 and currently has an observer status. The General Council has agreed in July 27th, 2004 to start the negotiation process for the accession of Libya.

In one effort to accelerate this process the Libyan People's General Committee (Council of Ministers) issued Decree № 102 for the year 2004 to establish "The High Coordination Committee" to be in charge of Libya's accession to the WTO.

Libya places great hopes on joining to the WTO. Libya believes that becoming a member of the WTO will play a great role in its efforts for economic reform, openness, and liberalization. This will reflect favourably on its economic growth, on revenue diversification away from dependence on oil, on achieving higher employment, the maximum utilization of economic resources and in raising the living standard for its people.

Libya is a founding member in many regional trade agreements like, Greater Arab Free Trade Area (GAFTA), Community of Sahel –Saharan State (CEN-SAD), Arab Maghreb Union (UMA). However, these regional economic communities have not achieved significant progress in terms of increasing Libyan trade due to many problems. For example, the GAFTA has suffered from non-tariffs barriers which have important negative effects on trade relation between its members. Furthermore, there are political conflicts between many members in GAFTA and these political conflicts , in some cases , changed in to military conflicts such as Second Gulf War, As well as the SEN-SAD has suffered from military conflicts between founding members (Chad and Sudan) due to Darfur Region. Although the UMA has not suffered from any military conflicts since its founding,

it has suffered from political conflicts between its members like Sahara problem between Algeria and Morocco, and other political conflicts. In addition, many of the UMA members prefer to corporate with European Union Countries instead of other members in the UMA. For example, Agadir Agreements (includes Mediterranean states and one from Asia) contains two founding members of the UMA (Tunisia and Morocco). The exports of the countries who are members in regional trade agreements are facing unfair competition with other developed countries exports since Libya reduced the constraints on imports in 2005.

In conclusion, there is no evidence for the importance of trade regional agreements on Libyan trade, especially after the constrains on imports had reduced. The European Union countries still represent the most important destination to Libyan trade, and the Arab and African Libya's trade are still limited. For example, the Libya's Arab trade represented just 1% of total Libyan trade in 2005 (after nine years since Libya's accession to the GAFTA), and the share of SEN-SAD countries in the total of Libyan trade was less than this number in 2005 (after eight years since Libya's accession to the SEN-SAD). There is no doubt, this situation has a negative effect on Libya's aim to position itself as a key economic intermediary between Europe and Africa, and pushing for a new African Union.

2.4 Summary

This chapter has provided an overview of Libya's historical and economic background to the Libyan economy. It reviewed the resources, population and social environment of the country. The chapter conclude that Oil exportation in the early sixties had a big role in the transformation of the Libyan economy to better situation. However, the Libyan economy has been dominated by petroleum sector in terms of GDP and exports. The role of the private sector in economy is still limited compared to public sector. Also, Libyan population is concentrated in highly young group and they are still limited compared to the extreme wealth which is created by oil. Furthermore, they concentrated in a small area of land (exactly near the coast), in spite of the vast area of the country. Moreover, Libya has high rates of unemployment and literacy. Although, the service sector is one of the most important sector of the Libyan GDP, Libya is still net importer to services. This chapter pave the way to next chapter to address the nature and the environment that Libyan banks operate in.

CHAPTER THREE

BANKING SECTOR IN LIBYA

3.1 Introduction

This aim of this chapter is to give the reader an overview of the nature of the Libyan banks. The banking sector is one of the most important sectors in the Libyan economy. It represents the most important part of the Libyan financial sector. Libyan banks assets represented 60% of GDP in 2006, while insurance sector is still small and limited. It accounted for less than 1% of GDP (World Bank, 2006). Also, the domestic equities market is still limited. It was only established in 2006. Under central planned economy, banking sector is an essential part of central control. All financial activities in Libya are under the control of Central Bank of Libya (CBL).This institution has controlled the Libyan Financial Sector since its establishment after Libya's independence in 1951.This chapter will be consisted of three sections. Section 2 will provide a summary of the history of Libyan banks. Section 3 will present the current structure of the Libyan banking sector. Section 3 will discuss in abbreviation the expected role of the banking sector on Libyan economy.

3.2 Historical Background of the Libyan Banking Sector:

This section of the chapter gives a brief historical background of the Libyan banking sector (LBS), in addition it discusses the main changes that occurred in the (LBS). These are summarized into three stages as follows: The period before 1952, the period between1952-1969, and finally the period after 1969. This division is based on the major changes in governmental orientation during modern Libyan history. Every stage has its own characters which is different from other stages.

3.2.1 The Period before 1951

This period can be further divided in two stages and each stage is discussed below:

3.2.1.1 Stage One: From 1911 to 1939

In the mid nineteenth century the importance of the Libyan economy had become recognised by the Ottoman government. Nonetheless, the Libyan economy was mainly dependent on agriculture and trade. Therefore, to improve its economic performance the

government established relevant financial institutions that tended to reflect the importance of the agriculture sector to the Libyan economy. When Italy controlled Libya in 1911, four Turkish banks as well as one Italian bank (Bank of Rome) were performing in the country. These banks were as follow:

a) Agriculture Bank was established in 1868 in Benghazi (the second main city in Libya)
b) Agriculture Bank was established in 1901 in Tripoli city (the capital)
c) Ottoman Bank was established in1906 in Tripoli.
d) Ottoman Bank was established in 1907 in Benghazi.

There were two branches of Bank of Rome opened in Tripoli and Benghazi in 1907. It was noticed that the main function of the Turkish banks were related to the financial and administration affairs of Ottoman state instead of the Libyan people. The Turkish banks left the country after the country had been controlled by Italy.

During the stage of the Libya's dependency to Italy (1911-1939), the number of Italian banks operating in Libya rose in to four banks, these are shown below:

a) The Bank of Rome was in Tripoli in 1907.
b) The Bank of Napoli was in Tripoli in 1913.
c) The Bank of Sicilia was in Tripoli in 1913.
d) The Bank of Italy was in Tripoli in 1928.

In addition to these banks, two saving funds were established in the city of Tripoli and Benghazi in 1923 and 1925 respectively. These two saving funds merged in to one saving fund in 1936 which was called Saving Fund of Libya. However, the main objective of these banks was to facilitate the credit process to Italian settlers, given the fact that during the Italian occupation era, both the Libyan banking sector and the monetary system were linked to the Italian banking system. In other words, the activities of the Italian banks and saving funds were concentrated to the settlement of Italian people instead of native Libyans so their role in the social development was limited. The agriculture and industry in Libya were subsidized by Italian banks in order to assist the settlement of Italian farmers and Italian owners in Libya. However, the native Libyans had suffered in consequence of colonial policy (Gurney, 1996).

3.2.1.2 Stage Two: From (1940 to 1951)

After Italy was defeated in the Second World War, its banks left the country and lost their domination of Libyan banking sector. However, all of the Italian banks returned to the country after the Second World War had ended except the Bank of Italy. Although the Italian banks returned back to the country, the Italian currency (Lira) which was the official currency in the previous stage (1911-1939) had gradually disappeared as a currency in circulation during this stage (Blowers and McLeod, 1952).

In this period, Libya was under British and French military administration so Barclays bank could enter the country by 1943. It established two branches in the city of Tripoli and Benghazi. Barclays bank controlled the Libyan banking system for a long time. It was receiving deposits from civilians and militaries, and was dealing as Representative to the British Authority in issuing currency. Relating to the currency which was used in this stage, the Sterling Pound was used in Tripoli as well as in Benghazi after the Italian currency had disappeared. The Egyptian Pound was also used temporarily in Benghazi before issuing the Sterling Pound by Barclays Bank, while French currency was used in Fezzan (In the south of Libya) (Bait Almal, 2005) and (Lender, 1953).

In conclusion, the evaluation of this stage is similar to the previous stage in terms of the role of the banking system in social development. By 1951, the country was classified as one of the poorest state in the world and 90 % of the citizens in Libya were illiterate (Gurney, 1996).

3.2.2 The Period between (1951 to 1969)

As it is known, Libya achieved independence in December 1951 under the name of the Kingdom of Libya. The structure of the Libyan banking system changed significantly during this period. In addition to foreign banks which were presented during the previous period (1911-1951), there were four new banks founded after the independence. Three of these banks were foreign banks and only one was Libyan bank as follow:

a) Middle East British Bank (1952).
b) Limited Arab Bank (1952).
c) Egypt Bank (1953).
d) Algerian Real Estate Bank in (1955).
e) National Bank of Libya (1956).

Libya became a member of the British Sterling bloc when independence was established in 1951. Under the national bank law in 1955, the Central Bank of Libya with the name of "National Bank of Libya" was founded and began operating under the protection of the Ministry of Finance in April 1956. Its main function was the issuing of banknotes and coins, besides maintaining monetary stability in Libya and playing the role of the government's bank. In 1958 a national currency was created: the Libyan Pound, having a par value of US$2.80. The currencies serving as legal tender in various parts of the country were replaced by the new Libyan currency.

Also, the first unified banking law was issued, stipulating the organisation of credit and money supply and the supervision of liquidity held by commercial banks. The good relation between Libya and the UK reflected in a strong connection between the Bank of England and the National Bank of Libya so the latter was divided into two departments, an issue department and a banking department similar to the structure of Bank of England (CBL, 1967 cited in Alwdan, 2005). The commercial banks for the most part were branches of major international banking institutions. In the main, they were engaged in providing short-term international and domestic commercial credit.

Due to the large number of foreign bank branches, the Libyan National bank was unable to persuade other banks to execute its established policies, which were in the best interest of Libya. As a result, a new banking law (No 4 of the year 1963) was issued, changing the name of the National Bank of Libya to become the Bank of Libya, giving it more wide-ranging authority and new functions. Therefore, under the new law, the function of the Central Bank became clearer and its supervisory role over the commercial banks was improved.

According to the new banking law in 1963, Bank of Libya was established as the central bank of Libya. The government wanted to give stability to the external value of the Libyan currency and to regulate currency and credit. The bank could also make advances to the central government up to 10 percent of estimated current revenues. The commercial banks were required to maintain liquidity ratios and reserves in the Central Bank against deposits as prescribed by the Central Bank. The other target of banking law No. 4 of 1963 was to nationalise all commercial banks. The reason behind the law, according to the Libyan government, was that all foreign banks in Libya were not working in the best interest of the country but rather for the interests of their parent banks in foreign countries. The main

purpose behind the government's policy of Nationalisation was to encourage and promote the local banking sector. Therefore, to confirm the monopoly and control of the Bank of Libya, the law stipulated that 51% of the capital of every foreign bank had to be owned by the Bank of Libya.

As a result of the Nationalisation policy which was followed by the Central Bank, several small foreign banks were merged and reformed in Libyan participation (around 51-percent). However, the big foreign banks like Barclays, Rome and Arabic bank did not comply with the Nationalisation Policy. Under the new policy the commercial banking sector consisted of nine banks, including the commercial division of the Bank of Libya (CBL, 1967 cited in Alwdan, 2005). During this period, two specialised banks were created the Agriculture Bank and the Industrial and Real Estate Bank of Libya. Although, there was a lack of information about the role of banking system in social development during this period, it was noticed that there was significant improvement in Libyan infrastructure and social development during the period, especially, after 1961when the trade balance started to achieve surplus due to starting in oil exportation. It was noticed that the social and economical development plans were started to implement in away more efficient.

3.2.3 The Period after 1969

The military government that took power in 1969 viewed the banking sector as a primary target of its general program of nationalisation which had already started during the previous stage. In November 1969, the new government required that all banks in the country be Libyan controlled, especially, the remaining branches of foreign banks in the country, namely Barclays Bank, Banco di Roma, Banco di Napoli, and the Arab Bank. The new government bought out the 51-percent control of the commercial banks that had not already converted to Libyan control. In July 1970, the government took 100- percent control of four of the major banks with foreign minority ownership. In December 1970, the government purchased outright all banks that still had some foreign minority participation and, by a process of merging, reduced the number of commercial banks to five. The commercial banking sector then consisted of only five banks, of which the government owned three: Umma Bank, Jumhoriya Bank, and the National Commercial Bank, whereas in the cases of the Wahada and Sahara Banks the government owned 51 per cent of the capital and the remaining 49 per cent was owned by the public. Libyan citizens were

permitted to purchase limited interests in several banks. In addition to the five state-owned commercial banks, there were four specialised banks. The name of the Bank of Libya was changed by the banking law No. 63 of 1971 to become the Central Bank of Libya (CBL), and it was given more power to control and supervise commercial banks. Yet, until 1970, the commercial division of the CBL also carried out commercial operations, but in that year the National Commercial Bank was founded to undertake the commercial operations on behalf of the CBL.

Table 3-1 shows the commercial banks, specialised banks, their respective capital structures, date of established and type of ownership during the period (1969-1993) and as stated in Law number 153 of 1970.

Table: (3.1) the Banking System Structure During the Period 1969-1993

Name of the bank	Establishment date	Type of the bank	% of share owned by CBL	% of share owned by private sector	Former name of the bank
1. Central Bank of Libya	1971	Central	100%	0%	Bank of Libya
2. National Commercial Bank.	1970	Commercial bank	100%	0%	-Commercial banking division of CBL -Istiklal Bank (Bank of Napoli as a foreign bank) -Orouba Bank (a branch of Arabic Bank as a foreign bank)
3. Al Umma Bank	1969	Commercial bank	100%	0%	-Bank of Rome
4. Jumhoriya Bank	1969	Commercial bank	100%	0%	-Barclays Bank
5. Sahara Bank	1970	Commercial bank	51%	49 %	-Bank of America -Bank of Sicilia
6. Wahda Bank	1970	Commercial bank	51%	49 %	-Bank of North Africa -Nahda Arabia Bank. -African Banking Company. -Other small banks
7. Agriculture Bank	1970	Specialised bank	100%	0%	-Libyan National Agricultural bank
8. Savings and Real Estate Investment Bank	1981	Specialised bank	100%	0%	-The Industrial and Real Estate Bank of Libya
9.Development Bank	1981	Specialised bank	100%	0%	-The Industrial and Real Estate Bank of Libya
10. Libyan Arab Foreign Bank	1972	Specialised bank	100%	0%	

Note: Constructed by researcher on the basis of gathered data from Central Bank of Libya (2006) and (Bait Almal, 2005).

From 1972 until 1993, there was not any significant change in new establishment of commercial banks and specialised banks. However, it was noticed that there was expansion in the branches number of commercial banks and specialised banks across the country during this period. In 1993, the Central Bank of Libya issued the law number (1) of 1993 relating to banks, currency and credit. The law effectively replaced the 1963 Law No. 4, covering and updating its main provisions, and increased the authorized capital of the CBL to LD100 million. This law permitted private and foreign banks to operate in the country. Private banks had to get the approval from the Central Bank of Libya and the Council of Ministries. As a result of this law, several private banks were established, for instance, Bank of Commerce and Development, Bank Alaman for Investment and Commerce.

However, there was no response of foreign banks to enter the country after issuing the law number (1) of 1993. In a domestic Libyan context, one of the main results of the 1993 Law was the foundation of the Bank of Commerce and Development (BCD) in 1994, with 2,000 private shareholders, the most important privately owned commercial bank in the Libyan market, which eventually started operations in 1996. Since then it has grown significantly, from having one branch in Benghazi to ten branches throughout Libya.

Compared with state-owned banks, the BCD has championed innovations including telephone, PC, drive in, and internet banking services, whereas the government-owned banks focus on corporate banking and on serving the huge public sector, BCD does not have a government-sourced asset base, and so must compete with a superior service strategy, providing customers with services such as ATMs and credit cards, in essence representing the way forward for modern banking in Libya (Otman and Karlberg, 2007) .

In 2005, Libya has taken some steps to reform its banking system. The law number (1) of 1993 and its amendment were modified by the law number (1) of 2005. The main objectives of the new Banking Law are:

a) Emphasizing the independence of the Central Bank in line with international best practices.
b) Improving the capital adequacy ratio of commercial banks.
c) Strengthening the competitiveness of domestic banks, eventually leading to the participation of foreign banks in the domestic banking market. As a result of issuing to the law number (1) of 2005, The French bank B.N. Paribas has 19% participation in

the local Sahara bank in Sep 2007, and will increase its participation to 51% over a period of 3 years .It was also decided that foreign employees of this bank should not exceed 10% of the total staff. On the other hand, in 2008, it was permitted to the Jordanian Arab Bank to participate in the capital of another local bank, Alwhda bank, by 19% subject to be increased to 51% over 3 years as well the same terms for the Sahara bank.

d) The law has allowed opening branches of foreign banks in accordance with the terms and conditions laid down by the board of directors of the central bank, provided that the capital for any branch should not be less than 50 million U.S dollar, but the CBL has delayed making any decision in this regard. At present, 20 representative offices for foreign banks have been authorized to work in Libya.

e) Extending the domain of Central Bank supervision to include all banks , including the three specialised banks (Agricultural Bank, Bank for Real Estate Investment and Savings, Development Bank), which were previously excluded from its supervisory domain.

f) Adopting Basel II principles on effective banking supervision; and improving standards of and requirements for supervisory disclosure by the banks.

The new Banking Law seems to have incorporated many of the recommendations from international agencies like the IMF (Porter and Yergin, 2006). It is noticed that Libya has started to implement a critical recommendation to separate the Central Bank's ownership and supervisory functions regarding commercial banks. However, the implementation of these recommendations is still proceeding.

3.3 Current Libyan Banks Structure:

This section aims to draw the current picture of the Libyan banks structure. According to the Central Bank division, the current Libyan banks structure will be as follow:

3.3.1 The Central Bank of Libyan (CBL):

The CBL is one of the most important parts of the Libyan structure system since its adoption in April 1956. The governments paid particular attention to this bank. It plays an important

role in making and implementing policies affecting the financial sector in Libya. CBL is 100% state owned and represents the monetary authority in Libya. The Central Bank has the

power to influence the direction of credit and borrowing whether in size, sort, rate, or duration in ways that would realize the country best economic interests. Also, the CBL has the status of an independent corporate body and it has been authorized by Ministry of Finance to decide upon permissions to allow foundation the private banks, and opening of branches, or representative offices of foreign banks. The head quarter of the CBL is in Tripoli city. However, to make the CBL services more accessible to commercial banks branches and public departments located far from the headquarter, the CBL has three branches located in Benghazi, Sebha and Sirte. Hereunder is a brief survey of the traditional main functions of the CBL as mentioned in the literature of the Central bank of Libya and the law number (1) of 2005.

a) Issuing and Regulating the Currency

According to the law No. 63 of 1971, the Libyan Pound was replaced by the Libyan Dinar (L.D). For the purpose of exchange rate stability, the Libyan Dinar was pegged to SDR'S basket since March 18, 1986 to reflect the relative importance of each currency in Libya's international economic relations. In other words, what determine the exchange rate level of the Libyan dinar are the exchange rate changes of the currencies in the SDR basket. According to the last modification in 14 June 2003, the Libyan Dinar equals .5175 SDR. Table 3-2 below show the rates of Libyan Dinar against major international currencies from 1999 to 2009:

Table 3-2 Exchange Rates of Libyan Dinar (LD) against major international currencies

Categories	Years										
	1999	2000	01	02	03	04	05	06	07	08	09
Exchange Rates Against US Dollar	0.5	0.5	0.6	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.3
Exchange Rates Against ECU/Euro	0.5	0.5	0.5	1.2	1.5	1.6	1.6	1.6	1.7	1.8	1.7
Exchange Rates Against Swiss Franc	0.3	0.3	0.4	0.8	1	1	1.1	1	1.1	1.1	1.2
Exchange Rates Against Pound Sterling	0.8	0.8	0.9	1.9	2.1	2.4	2.4	2.4	2.5	2.2	2

Sours: GMID: Global Market Information database of Euromonitor international.

The CBL is the sole issuer of Libyan currency (banknotes and coins). Naturally, currency in circulation is covered by gold and foreign exchange in convertible currencies, as well as the foreign treasury bonds and Libyan treasury bonds of 15 Years maturity. The table 3-3 below shows the currency issued by CBL during the period 2000-2007.

Table 3-3: Currency issued (LD Million)

Year	2000	2001	2002	2003	2004	2005	2006	2007
Currency issued	2826.73	2690.77	2751.81	2883.28	2794.7	3482.1	4134.5	4952.4

Note. Constructed by researcher on the basis of gathered data from different annual reports of Central Bank of Libya .

b) Management Of Reserves And Control Of Foreign Exchange

The CBL keeps and manages the government's gold and foreign exchange reserves. Therefore, the Bank is responsible for choosing suitable investments and amounts to be invested in each foreign currency, taking into account developments in foreign exchange and money and capital markets to ensure safety and profitability. The Bank allows Commercial banks to keep foreign assets in accordance with regulations issues from time to time in conformity with the general economic best interests of the country. However, the CBL has gradually reduced foreign exchange controls in light of the stable economic and accepted general level of prices, and in order to make encourage foreign investors.

c) Acting As A Banker To The State

The CBL is the fiscal representative for the state and, as such, it keeps the accounts of revenues and expenditures for general secretariats. It also disburses transfers and collects funds domestically and abroad, as well as it administers letters of credit transactions on behalf of its clients. These banking services are also offered to public institutions.

d) Acting As A Banker To Commercial Banks

The CBL keeps the legal cash reserves required from commercial banks as a percentage of their clients deposits. In addition, it accepts interest-bearing time deposits from these banks. The CBL could set interest rates since the CBL is still the owner and operator of the banking sector. The CBL has been actively engaged in reducing excess liquidity by the establishment new certificates of deposits and by increasing bank reserve requirements. It has also increased bank reserve requirements to prevent a build up of asset bubbles within

the banking system. At present the discount rate is 3% and the rate on the central bank certificate of deposit, 91 days, is 1 % (Oxford, 2010). Naturally, the CBL is the lender of last resort for commercial banks and can provide them with extraordinary loans in critical and exceptional circumstances the CBL deems are threatening monetary or banking stability in Libya.

e) Supervision and Regulation Of Banking Activities

The CBL examines and analyses the financial positions of Commercial banks and ensures that they keep within the main stipulated ratios such as the cash reserve, legal liquidity. The Bank also issues directive to the Commercial banks regarding the volume and direction of credit extended by the banking sector, especially credit for the more productive sectors of the economy. The CBL officials inspect Commercial banks and their branches and examine their books and records to ensure the soundness of their financial positions and the accuracy of statistics which they provide to the Bank and finally, the suitability of their services. The CBL provides the Commercial banks with check clearing services as well as the services of a centralized credit risk office.

f) The CBL's Role in Economic Development:

The role of the CBL in economic development is manifested directly in creating monetary and financial institutions capable of mobilizing and channelling savings for development projects. The Bank also contributes to strengthening the State financial position through managing the public debt as its holdings of gold and foreign exchange.

The Bank's indirect role in the economic development of Libya is embodied in its influence over the activities of commercial banks, especially by controlling the volume, direction and cost of credit. The other aspect of the Bank's indirect role lies in the adoption of monetary policies capable of reinforcing internal and external confidence in the strength and stability of the Libyan currency and economy and, consequently, encouraging savings by citizens and promoting incentives for the utilization of these savings in productive and safe investment, as well as attracting foreign investments, and reducing any causes for the national capital escape abroad.

3.3.2 The State-Owned Commercial Banks (Scbs) And The Private Banks:

As mentioned previously, the Libyan market was completely dominated by the (SCBs) until 1993. This domination started to reduce gradually after the private banks had started

to operate according to the law number (1) of 1993. However, the SCBs are still representing the most important part in financial sector in Libya. As it can be seen from table 3-4, the (SCBs) (the first five banks in the table) which have the biggest capital still represent the most important part of financial sector in Libya. These banks came first in terms of assets, deposits and credits.

Bank of Commerce and Development (BCD), which began its operations in 1996 is the first and the most important private commercial bank in Libya. In addition to this bank, nine small private commercial banks were founded since 1993.These banks are still in early stages according to their activities and branches. In 2001, (48) regional private banks were established. These banks are located in many regions and owned by citizens of each region. According to the CBL, around (40) regional banks merged with National Banking Corporation (NBC) (one of the private banks) and the rest of the regional private banks (8 banks) merged to the rest of private banks in 2006. According to the plan of CBL, it is predictable that the number of private sector bank is going to become smaller due to the CBL requirements, in terms of size of bank's capital. Table 3-4 below shows several financial indicators of the whole commercial banks by the end of 2007:

TABLE (3.4): Main Financial Indicators of the Current Libyan Commercial Banks in 2007

Name of Bank	Assets		Deposits		Loans	
	Value (L.D)	%	Value (L.D)	%	Value (L.D)	%
Sahara	7216.7	23.1	6151.6	24.1	1240.1	15.1
Algmhuria	6056.9	19.4	5201.1	20.4	2102.6	25.7
Al-Umma	5493.8	17.6	4660.0	18.3	1337.4	16.3
National Commerce Bank	4788.2	15.4	3928.5	15.4	1292.0	15.8
Alwhda	4237.4	13.6	3053.0	12	1444.5	17.6
Bank of Commerce & Development	1419.3	4.6	1246.7	4.9	290.8	3.5
National Banking Corporation	786.7	2.5	400.1	1.6	293.8	3.5
Alaman Bank for Investment & Commerce	328.2	1.1	262.9	1.0	1.7	0.0
Alwaha Bank	216.4	0.7	150.1	0.6	12.6	0.2
Almutahed for Commerce and Investment	195.8	0.6	121.4	0.5	33.4	0.4
Alegmaa Alarabi	139.4	0.4	143.8	0.6	36.5	0.4
Alsrai for Commerce & Investment	88.4	0.3	60.0	0.2	38.4	0.5
Almutuast	88.2	0.3	60.7	0.2	33.2	0.4
Altegari Alarabi	78.1	0.3	60.5	0.2	11.6	0.1
Alwafa	51.8	0.2	33.0	0.1	23.4	0.3
Total	**31185.3**	**100**	**25533**	**100**	**8191.2**	**100**

Note. Constructed by researcher on the basis of gathered data from different annual reports of Central Bank of Libya.

As can be seen from the table and from reviewing the main financial indicators of the Libyan commercial banks, the Libyan banking sector is dominated by state owned banks (the first five banks in the table) .Also; it is clear from the table that the Bank of Commerce & Development is the most important private bank.

3.3.3 Specialised Banks:

In addition to the state-owned commercial banks and the private banks, there are four specialised banks. These banks are state owned and depends on its capital and the state in terms of finance its operations. Bait Almal (2005) presents more explanation on each specialised bank as follow:

a) Agriculture Bank:

This is the oldest specialised bank in Libya. It was founded in July 1955 under the name of the Libyan National Agriculture Bank to provide interest free production loans to farmers. It also made short –term loans for financing agriculture production, medium-term loans for up to five years for machinery and materials and long-term loans for up to fifteen years for land reclamation projects, irrigation, and agricultural construction. The agricultural bank purchased produce from farmers at a guaranteed profit and sold the supplies at subsidized prices. To cover current expenditure of the bank, it has supported by Ministry of Finance.

b) Saving and Real Estate Investment Bank:

Due to the Libyan economic conditions in the early 1960s, the rate of migration from the rural area to the big cities had sharply increased, leading to sharp increases in house prices. Meanwhile, the government had become aware of the fact that commercial banks were unwilling to invest in the housing industry. Consequently, in 1965 the government established the Industrial and Real Estate Bank (IREB), in order to extend long-term credit for housing and industrial projects without interest on its loans. The capital of IREB was 10 million Libyan Dinars financed by the government, and this figure further increased to LD45 million in 1969, fully financed by the government (IREB, 1969-70). According to law No. 2 of the year 1981 the Real Estate, Savings and Investment Bank was established with an authorised capital of LD 100 million. The Saving and Real Estate Investment Bank was adopted to replace the Real State Department of the Industrial and Real Estate Bank of Libya which was ended in 1981. The new bank was assigned to support construction development activities, and to extend credit facilities to people. The bank aims to encourage the Real State Saving and making housing loans. Most of its loans were for home purchases (Bait Almal, 2005).

c) Development Bank:

This bank was founded in 1981to replace the Industrial Department of the Industrial and Real Estate Bank of Libya. It was established according to law No. 8 of 1981, and it follows the Secretariat of the Treasury, with a stated owned capital of one hundred million Dinars. The activities of this bank are providing credits to industry sector and other sector.

thus, offers loans to finance the investments required for industrial, agricultural, and tourism Projects . Besides, this it provides production projects with technical advice.

d) Libyan Arab Foreign Bank (LAFB):

In early 1972, the government established LAFB with capital of 20 million LD as a wholly owned subsidiary of the Central Bank, but not subject to the Central Bank's legislation. regulations, or exchange control. It engaged in financial and banking operations outside the country and acted as the foreign agent for the government and Libyan commercial banks. Its main purposes were to encourage regional development--particularly of countries friendly to Libya, to become active in international financial markets, and to serve as a vehicle for Libyan assistance to other countries. The main activities of the LAFB cover the following areas (Alwdan, 2005):

- To take part in foreign financial enterprises and activities.
- Issuing, buying, and selling shares, as well as other international financial documents.
- Accepting and giving short-term deposits as well as on-demand deposits.
- Financing foreign trade.
- Issuing credit letters

The bank also extends its activities to include foreign residents and foreign companies working in Libya. However, since it was established, the bank has continued to focus on the development of its financial resources by adopting the same strategy designed to maintain a tradition of financial strength coupled with high quality service provision. LAFB significantly increased its balance sheet in 2004, growing by 18.1 per cent to $11.2 billion. In pre-tax profit terms the bank increased profits by a factor of 6 in 2004 to reach $51.5 million compared with $8.4 million in 2003, in short showing, in a dramatic way, the immediate effects of the lifting of the sanctions on Libya, with 2004 results producing an Return on Equity (ROE) of 16 per cent (Otman and Kkarlberg, 2007).

3.3.4 The expected Role of banking sector in Libya's development:

The Libyan banking sector as in developing countries is relatively small. It can be described as a highly concentrated sector. In 2007, total banking assets amounted to LD 31.185 billon, of which approximately $ 29.2 billon were held by six commercial banks. Of these six banks, the first five banks were owned by the Central Bank as it is shown from the table number (3-4). It is noticed that intermediation and payments facilitation is

still limited. The vast majority of payment transactions are carried out in cash. The percentage of currency with the public represented 95% of the total currency issued for circulation during the period 1995-2006.

As mentioned earlier, by the beginning of 1970s, the banking sector was completely nationalized and dominated by the state. This gave monopoly to the public sector banks and reduced the need to raise efficiency due to the absence of competition. Furthermore, with respect to the structure of this sector, it followed the model of the former Soviet Union banking system which consisted mainly of 4 specialised banks, operating in the fields of foreign trade, industry, agriculture, and household. The public sector banks were assigned activities in certain sectors. This led to the isolation of the Libyan banks from the developments and innovations taking place in the international banking industry. In addition, to create more jobs, most of the Libyan banks were overstaffed with redundant employment. According to several financial performance indicators of the Libyan banking sector the average of ratio of capital adequacy is adequate (10%) and exceeds the Basle Committee's uniform standard of capital adequacy which is 8 %. However; Libyan banks have suffered from non-performing loans. This sort of loans represented around 27% of total loans in 2007. Furthermore, the ratio of liquid assets to total assets is relatively high. It was around 73% in the same year (Oxford, 2010).From presenting the traditional main function of the CBL, it is noticed that the Central bank of Libya is similar to the Central banks in African countries. Therefore, it is expected that liberalization of banking sector in Libyan economy, in conformity with WTO and GATS, will predictably involve management of change at the functions of Central Bank of Libya and its role in the development (Murinde and Ryan, 2003).

To deal with challenges facing Libyan economy and banking sector, the previous steps of banking reforms have been taken. Therefore, joining the WTO and foreign bank's entry to the Libyan market are in this context. From the point of view of decision makers, it is expected that joining the WTO and foreign bank's entry will increase the efficiency of the Libyan banks and to improve the service quality of the banking sector. Furthermore, it is expected that liberalization of Libyan trade banking sector and the raising of banks efficiency will contribute to reducing the level of employment and rising labour productivity. In this context, the banks could play important role in development of the

country throw providing loans to population in different economic activities like industry, agriculture and services.

3.3.5 Summary

This chapter gave a brief summary of Libyan banking sector. It started by providing historical background about Libyan banking sector and its development. Then, the current Libyan banks structure was presented. Finally, the expected role of the banking sector in Libyan development was briefly discussed. The historical background shows that even the long period of banks establishment in Libya, the role of banking sector in development is still limited. Also, the current structure of Libyan banks shows that the Libyan banks are still dominated by public banks which have also insignificant role in development. In order to change this situation, the decision makers expected that joining the WTO as a part of Libyan banks reforms will increase the banks efficiency and improve the role of banks in development.

CHAPTER FOUR
WTO/GATS AND BANKING SERVICE

4.1 Introduction

Globalization has been increasingly affecting the world, enabling trade to provide greater access to wider choices of products and services to consumers and corporations alike. In most cases, greater options lead to better choice, which brings better consumer utility in the long run. Services represent the highest growing sector of the world economy and contribute for two thirds of global production, one third of global employment and around 20% of global trade (WTO, 2010 a). However, the provision of services to consumers has not developed as much as international trade theory predicted. This is not due to the theory itself, but the nature of implementation not being universal and the lack of compromise by each country. The World Trade Organisation (WTO) as a main part of the phenomenon of globalization is the single global international organization dealing with the rules of trade in merchandises and services between countries. The WTO was originally set up as the General Agreement on Tariffs and Trade (GATT). One main innovation of the WTO in supplanting its predecessor, (GATT), was to take a much border view of trade and, in particular, add to the trade negotiations issues such as Trade Related Intellectual Property Right (TRIPS), Trade –related Investment Measure (TRIMS) and the General Agreement on Trade in Service (GATS) (Murinde and Ryan, 2003). At the present, the members of the WTO are 153 countries. Most of the world has become members of the WTO.

Because Libya is now an observer of the World Trade Organization and is expecting to become a full member, and as the aim of this research is to assess the impacts of the WTO on Libyan banking sector in light of the expected full membership, it is important to study the background of the WTO/ GATS and also review the literature about the impact of the WTO on banking sector in Libya in particular and to countries similar to Libya. Therefore, Section 2 presents a brief historical background of the WTO. Section 3 discusses the main feature of the WTO. Section 4 reviews and focuses on the argument related to impact of the WTO on Libyan banking sector. The final section reviews previous empirical studies related to the impact of the WTO on banking sector to countries similar to Libya.

4.2 A Brief Historical Outline of the WTO

By the ending of World War II, the Bretton Woods system was designed as an integrated effort by the international community in order to encourage trade liberalization and multilateral economic cooperation. Implementing the Bretton Woods system meant the respect of rules and obligations so as to avoid economic conflicts between countries.

The Bretton Woods conference in 1944 was introduced to consist of three main international institutions which were founded to regulate and harmonise the new multinational economic system. These institutions were namely the International Monetary Fund (IMF); the International Bank for Reconstruction and Development (IBRD) or World Bank; and the International Trade Organization (The ITO). These organizations represented the new multilateral economic system. The IMF and the World Bank were to regulate and oversee the monetary and financial side internationally, while the ITO to regulate and develop the international trade. The executive organ provided for in the Havana Charter - would have administered the Charter's agreements. Unfortunately, however, the Havana Charter was never approved by the member countries like United State of America (USA) and development industrial countries as a result of political disputes. Therefore, the entire proposal was abandoned (Bretton Woods, 2007).

As the ITO project failed, the GATT then became the primary international agreement regulating trade between nations. The main objective of the GATT was to reduce tariff rates. When the ITO failed, the entire responsibility to administer trade and trade-relating matters between the nations was left in the hands of the GATT. GATT negotiations in the first four rounds dealt mainly with tariffs on goods (Narlikar, 2005); with the first round of negotiations resulting in a tariff concession of about one fifth of the world's total trade. The rounds continued to concentrate on further reducing tariffs, until the 1960s when the Kennedy Round brought about a GATT Anti-Dumping Agreement, and a section dedicated to development.

It is worth mentioning that before 1995, the GATT stood as a guide arrangement in regulating tariffs and trade. However, although the GATT was remarkably successful, it also suffered from several obstacles, some of which related to weak application of the GATT regulations in national laws and others to protectionist attitudes of some members of the GATS, thus resulting in slow implementation for multilateral trade cooperation

particularly in the 1970s, and also affecting the GATT regime. Furthermore, the procedure for provisional application to the GATT was complex and burdensome, and the GATT did not clearly define the powers of the contracting parties (members of the GATT) in regards to decisions and authority on waivers. The vague legal status of the GATT and the lack of constitutional problems made it even more awkward. It was for these reasons that the need for a global trade regulator was considered to be necessary, and the WTO then came into existence as a result in 1995. A large part of the WTO's current work has been brought about by the 1986-1994 negotiations of the Uruguay Round, and earlier negotiations under the GATT. New negotiations are now in process under the Doha Development Agenda, which was launched in 2001 (WTO, 2010a).

4.3 The Main Feature of the WTO

The WTO agreements represent the heart of the WTO, negotiated and signed by most of world's trading nations and ratified by their parliaments. The aim of the World Trade Organisation is to help producers of goods and services, exporters, and importers conduct their business. In other words, to provide appropriate framework to the negotiation of trade liberalisation between nations. The WTO agreements are long-lasting and difficult because they are legal texts covering a wide range of sector and activities. They deal for instance on: textiles and clothing, agriculture, banking, telecommunications, government purchases, industrial standards and product safety, food sanitation regulations, and intellectual property. GATS as one of the WTO agreements covers all the measure related to trade in services except services supplied in the exercise of governmental authority and Air Transport services. WTO Members have commonly used a classification system including of 12 core service sectors (document MTN.GNS/W/120) as follow (WTO, 2010 b):

- Business services (including professional services and computer services)
- Communication services
- Construction and related engineering services
- Distribution services
- Educational services
- Environmental services
- Financial services (including insurance and banking)

- Health-related and social services
- Tourism and travel-related services
- Recreational, cultural and sporting services
- Transport services
- Other services not included elsewhere

These sectors are further subdivided into a total of some 160 sub-sectors. Under this classification system, any service sector may be included in a Member's schedule of commitments with specific market access and national treatment obligations. Each WTO Member has submitted such a schedule under the GATS.

A number of simple, basic principles run throughout all of these agreements. These principles are the basis of the multilateral trading system. It took around seven and a half years, about twice the original planned schedule to complete the negotiations. The system was developed through rounds of trade negotiations, held under GATT. The first rounds dealt mostly with tariff reductions but later negotiations included other areas such as anti-dumping and non-tariff measures. The Uruguay Round which was continued from1986-94 led to the WTO's creation.

The WTO covered almost all trade, from banking to telecommunications. It was quite simply the biggest trade negotiation ever, and most likely the largest negotiation of any kind in history. The economic case for Trade liberalisation system based on multilaterally agreed rules is simple enough and rests largely on commercial common logic. Furthermore, it is also supported by evidence: the experience of world trade and economic growth since the Second World War. Tariffs on industrial products have fallen steeply and currently average less than 5% in industrial countries. During the first 25 years after the Second World War, global economic growth averaged about 5% per year, a high rate that was partly the result of lower trade constrains. World trade grew even faster, averaging about 8% during the period (WTO, 2010c).

4.3.1 The Accession Process of WTO Membership

According to GATT (1994), all members have joined the GATT as a result of negotiation and thus membership means a balance of rights and commitments. On the other hand, they enjoy the privilege and advantages that other member-countries give to them and the security that the trading rules provide. On the other hand, they had to make commitments

to open their markets and to accept the rules of the WTO or commitments were the result of the membership (or accession) negotiations. Countries negotiating membership are named observers WTO members. For most WTO members, the negotiations were held under the old GATT system and became founder members of the WTO on 1 January 1995 automatically because they had signed the Uruguay Round agreement in Marrakesh in April 1994. Some joined GATT after April 1994 but before the WTO was set up and they also joined the WTO automatically. Another small group had participated in the Uruguay round but did not complete their membership negotiations until 1995, when they, too, joined. All of these countries are named "original" WTO members.

Any state or customs territory having full independency in the conduct of its trade policies may join the WTO, but WTO members must agree to the terms of membership and the application goes through four stages according to the WTO rules: first, the government applying for membership has to describe all aspects of its trade and economic policies that have a bearing on WTO agreements. This is submitted to the WTO in "a memorandum of the trade policy", which is examined by the working party dealing with the country's application. These working parties are open to all WTO members. Second, when the working party has made sufficient progress on principles and policies, parallel bilateral talks begin between the prospective new member and individual countries. They are bilateral since different countries have different trading interests. These talks are related tariff rates and specific market access commitments, and other policies in goods and services. The new member's commitments are to apply equally to all WTO members under normal non-discrimination rules, even though they are negotiated bilaterally. In other words, the talks determine the benefits (in the form of export opportunities and guarantees) other WTO members can expect when the new member joins. Third, once the working party has completed its assessment of the applicant's trade regime, and the parallel bilateral market access negotiations are complete, the working party finalises the terms of accession. These appear in a report, a draft membership treaty "protocol of accession", and lists "schedules" of the member-to-be his commitments. The World Trading System and the World Trade Organisation Finally, the final package, consisting of the report, protocol and lists of commitments, is presented to the WTO General Council or the Ministerial Conference. If a two-thirds majority of WTO members vote in support, the applicant is free to sign the protocol and to accede to the organisation. In some cases, the country's

own parliament or legislature has to approve the agreement before membership is complete (WTO, 2010d). However, the WTO accession process might be increasingly costly, complex, and takes longer and longer to complete (Evenett and Primo Braga, 2005).

Developing countries represent most of world's nations (about two thirds of the WTO's members). They play an increasingly significant and active role in the WTO because of their numbers, because they are becoming more important in the global economy. and because they increasingly look to trade as an essential tool in their development efforts. However, the level of benefits from trade liberalisation is different between developing and developed countries or between nations in general. As a result, there is concern in the developing countries on the effects of the WTO on these countries. The lengthening time to negotiate accession and the uncertainty created by the inadequate legal definition of the price of WTO accession are major concerns (Eventt and Primo Braga, 2005) and also, the final impact of the WTO on their economies.

4.3.2 Services sector in the context of the WTO

Services represent the highest growing sector of the world economy and contribute for most of global production, one third of global employment and around 20% of international trade. The GATS is the first multilateral trade agreement that covers trade in services. Its establishment was one of the major achievements of the Uruguay Round of trade negotiations, from 1986 to 1993. This was approximately half a century after the entry in to force of the General Agreement on Tariffs and Trade (GATT) of 1947, the GATT counterpart in merchandise trade. GATS covers large sectors of the services economy, from hotels and restaurants to personal services that have traditionally been considered as domestic activities that would not lend themselves to the application of trade policy concepts and instruments. Other sectors, from telecommunications to rail transport, have been viewed as traditional Area of government or public ownership and control, given their infrastructural importance and the perceived existence. A third important group of sectors, including, education, health and basic insurance services, are considered in many countries as governmental responsibilities, given their importance for social integration and regional cohesion, which should be tightly regulated and not be left to changing in markets situation.

The definition of services trade under the GATS is four-modes, depending on the territorial presence of the supplier and the consumer at the time of the transaction. According to Article I:2, the GATS covers services supplied as follow (WTO,2010b):

- from the country of one Member into the country of any other Member (Mode 1- Cross border trade). In other words, it applies when service suppliers resident in one country provide services in another country, without either supplier or buyer/consumer moving to the physical place of the other .
- in the country of one Member to the service customer of any other Member (Mode 2 — Consumption abroad). In other words,, it refers to a consumer resident in one country moving to the place of the supplier(s) to consume a service.
- By a service provider of one Member, through commercial presence, in the country of any other Member (Mode 3 — Commercial presence); In other words, it refers to legal persons (firms) moving to the place of consumers to sell services in domestic market through the establishment of a foreign affiliate or branch.
- By a service provider of one Member, through the presence of natural persons of a Member in the country of any other Member (Mode 4 — Presence of natural persons). In other word, refers to a process through which persons (temporarily) move to the country of the consumer to offer the service.

The following examples, taking Libya as a supposed host country and its banking sector, may help explain how the modes of supply work. In mode 1 dealing, it is actually the service and not the service supplier that crosses the national border (e.g., the granting of a loan by Barclays based bank to Libyan consumer in Libya). Mode 2 involves the consumption of a service abroad (e.g., the opening of a bank account by Libyan resident while travelling in the United Kingdom). Mode 3 entails the commercial presence of a provider of one country in the jurisdiction of another country (e.g., when a United Kingdom bank or financial institution establishes an agency, branch or subsidiary in Libya to supply financial services in Libya). Mode 4 covers the supply of services by service providers through (temporary) presence of natural persons (e.g., bank managers sent from the parent bank in the United Kingdom to the bank's branch or subsidiary in Libya).

The frame work of GATS basically followed the model of GATT, which contains general obligations, annex and specific commitments. General obligations are a set of principles that apply unconditionally and automatically to all members and all service. Basically

there are two general obligations within the content of GATS: Most Favoured National Treatment (MFN) and the Transparency principles. The Most-Favoured-Nation (MFN) principle is a basis of the multilateral trading system conceived after the Second World War and the starting of GATT. It aimed to replace the trade distortions of power-based (bilateral) policies with the guarantees of a rules-based framework where trading rights do not depend on the individual participants' economic or political clout. Rather, the best access situation that have been given to one country (member or not member in the WTO) must automatically be extended to all other countries or participants in the system. This allows each country to benefit, without additional negotiating effort, from concessions that may have been agreed between large trading partners with much negotiating leverage (Free traveller). In the framework of the GATS, the MFN obligation (Article II) is applicable to any measure that affects trade in services in any sector falling under the Agreement, whether specific commitments have been made or not. Exemptions could have been required at the time of the acceptance of the Agreement (for acceding countries: date of accession). They are enclosed in country-specific lists, and their duration must not exceed ten years in principle. Transparency requires Members publish promptly all measures pertaining to or affecting the operation of the GATS. Moreover, there is compulsion to notify the Council for Trade in Services at least annually of all legal or regulatory changes that significantly affect trade in sectors where specific commitments have been made. Members of the WTO are also required to create enquiry points which provide specific information to other Members upon request.

However, there is no requirement to disclose confidential or secret information. The annex of GATS deals with special rules for specific sectors. Since trade in services is not as physical as trade in goods, the annex of the GATS show many differences. There are four annexes to the GATS on movement of natural persons, financial services, telecommunications and air transport services. Specific commitments are the obligations that apply to particular service sectors that are identified in the service schedules of members. Member states have the right to set up the commitment according to their own national policies. Under GATS, members are not obliged to provide national treatment. National treatment belongs to the category of specific commitment, which is a remarkable difference from the GATT. Another main specific commitment need to be done is about market access. Under GATS, member state only gives market access and national

treatment to the service sectors that are inscribed in their schedule, and they may attach limitation or additional commitments to the schedule. GATS permit exemption under certain circumstances, which means members, can keep certain measures that are contrary with obligation of agreement for particular reasons, such as public interest and human rights. The market access provisions of GATS, laid down in Article XVI, cover six types of restrictions that must not be maintained in the absence of limitations. The restrictions relate to (WTO, 2010b):

(a) Restrictions on the number of services suppliers, in terms of numerical quotas, monopolies, exclusive service suppliers or the requirement of an economic needs test[1].

(b) Restrictions on the total value of service transactions or assets in terms of numerical quotas or the requirement of an economic needs test.

(c) Restrictions on the total number of service operations or on the total quantity of service output expressed in terms of designated numerical units in terms of quotas or the requirement of an economic needs test.

(d) Restrictions on the total number of natural persons that may be employed in a specific service sector or that a service supplier may employ and who are necessary for, and directly related to, the supply of a specific service in terms of numerical quotas or the requirement of an economic needs test.

(e) Measures which restrict specific types of legal entity or joint venture through which a service supplier may supply a service.

(f) Restrictions on the participation of foreign capital in terms of a maximum percentage limit on foreign shareholding or the total value of individual or aggregate foreign investment.

These measures, except for (e) and (f), are not necessarily discriminatory, i.e. they may affect national as well as foreign services or service suppliers.

4.3.3 Financial service within the Scope of GATS

Negotiations in the Uruguay Round for financial services were not smooth from the starting point. The liberalization of the financial sector has caused controversy as a result of the financial strength of financial institutions of advanced economies. For example, banks taking advantage of a domestic market relatively closed and limited in competition may oppose liberalization, while the possibility of cheaper capital may gain wider industry

[1] The Economic Needs Test is a method used by governments to subject the granting of market access to demand and/or supply

consensus in this respect (but perhaps not necessarily the same reaction for the liberalization of their own industry). Furthermore, finance is close to sovereignty of countries. This complicates matters, with strong national sentiments expressed against liberalization of financial services as a result. Financial services negotiations were also hampered by members' prudential and regulatory concerns. Members differ in their approach to the structure of the financial system, which will affect their outlook on the regulatory structure. Approaches to financial liberalization will also play a part as well. The experience of financial crises by many countries in the 1980s and 1990s had also made many members hesitant toward financial liberalization from a financial stability perspective. This required compromises on how far liberalization would impinge on their regulatory system. Although the Uruguay Round was concluded in April 1994, agreement could not be reached in financial services until December 1997. In July 1995, members had accepted the interim agreement and schedules on market access and national treatment. However, this was only an interim agreement, and further liberalization was institutionally required in GATS. Unless progressive liberalization takes place in subsequent agreements, the agreement does not fully comply with GATS. By December 1997, a final agreement was reached which is the Fifth Protocol to GATS. Seventy members improved their commitments from 1995, and 32 members maintained their 1995 agreement. It became effective on 1 March 1999. The Fifth Protocol cover note itself does not hold much substance, but refers to the schedule of commitments in financial services. The schedule of commitments that specify the liberalization measures have paramount significance to financial services.

By the end of the Uruguay Round, negotiations on services started on January 2000, subsequently subsumed under the Doha round. The current round of services negotiations commenced with the submission of communication proposals on different service sectors by member countries, followed by submission of requests between member countries in 2002 to open up the different services, and most recently by submission of initial sectoral and horizontal offers by some member countries in 2003. The financial services sector has featured importantly throughout the GATS 2000 discussions and is a sector that features in all the requests made by developed as well as developing countries.

4.4 The Argument related to the impact of the WTO on Libyan banking sector

There has been much argument in recent years about the impact of the WTO on banking sector and the likely costs and benefits of opening up the financial services sector. As for Libya, it is noticed that there have been relatively few studies focusing directly on the effects of the WTO on the Libyan banking sector or financial sector (e.g. Abida and Fayad, 2003),while (Shamia, 2007) and (Abida, 1999) have focused on the effects of the WTO on Libyan economy. However, none of these studies aimed at quantifying or measuring the expected effects of the WTO on Libyan banking sector. These studies emphasised the potentially significant effects of the WTO on the Libyan banking sector. Furthermore, they emphasised the relationship between accession to the WTO and completion of the domestic program of reforms of the banking sector to be achieved before Libya's accession to the WTO.

Libya's joining WTO may have important effects on Libyan economy and its banking sector. As mentioned earlier, the expected final results of the WTO on banking sector is a debate issue. In this section, the expected negative and positive effects of the WTO on Libya banking sector will be summarized from assessing the rules of the WTO and the previous studies to understand the expected final impact of the WTO on Libyan banking sector. The most important final expected negative impact of joining the WTO on Libyan banking sector might be as follow:

a) Competition will probably become much stronger when foreign banks expand their scale and scope of operations in the Libyan market. Libyan commercial banks will may need to cope with many difficulties in expanding their banking activities in the country and the rest of the world while competing with foreign banks. It is expected that of foreign banks accessed into Libya's financial market are experienced international banks with advanced management skill and great efficiency. Therefore, they can provide first class service and more certainties for customers. Many customers might shift from domestic bank to foreign banks with the expanding of foreign banks business in Libya. As foreign banks are able to provide better wage and welfare for their employees, many excellent and experienced seniors domestic banking stuff may go to foreign banks if domestic banks cannot change their conditions in the short-term. By increasing the competition after Libya's joined the WTO as full member, domestic banks likely cannot compete with

foreign banks, and may disappear or merge with each other. Therefore, increasing the rate of unemployment which is already high (32%).

The overstaffing also may leads to inefficiency in state-owned banks. Many states- owned banks have the problem of responsibility confusing in some department. Another problem confronted by Libyan banks is the quality of staffs. With the diversification of businesses, state-owned banks need staffs with good education and skills in the new areas to increase their competitiveness. The original workers in the banks may have more experience in their field, but the new situation needs a group of high quality stuff that have inventive ability and knowledge of international operation. These people will play important role in realizing the commercialization of state-owned banks. Cutting down of overstaffing and the improvement of the quality of staff are interrelated to each other. High quality staff is also needed of foreign-funded and other domestic banks. State-owned banks will involve into heavy competition in getting well-educated and other domestic banks. State-owned banks will involve into heavy competition in getting well-educated and high quality staff state-owned banks need to provide attractive incentives and optimistic prospect to the high quality workers. It is impossible to achieve these without the settlement of overstaffing problem.

b) Market access belongs to the category of specific commitments within GATS. Member states of the WTO list the sectors that will be opened and the extent it will be opened on the schedule. Upon WTO accession, one of the most direct implications brought about by the market access commitment is the enlargement of the foreign occupation in Libyan market. At present according to the regulations on foreign financial institutions, foreign banks need to meet multiple qualification requirements to access into Libya, operations are limited and controlled by Central Bank of Libya. WTO Accession will push Libya to remove these restrictions. One of the major challenges facing Libya's banks is the expanding role of foreign banks in future. Foreign banks' strength of capital, technology, services and global operational scale provide them with potential advantages. Libyan banks will face a difficulty to compete with those international banks that have sufficient financial resources and few bad records on their loans.

c) As mentioned earlier, there was also a low development level in technology, organization, management and professional skills in the Libyan banking industry. Therefore, the Libyan banking sector might be affecting negatively after joining the WTO. According to Zaltom (2010) Libyan banks, be the public or private still have a long way to

go before achieving adequate levels of service quality. This is in the main, due to several constraints; the UN sanctions and the embargo imposed by the West on Libya have had a negative impact on all sectors of the economy and more particularly on the banking system. Huge efforts have been made since the lifting of the UN sanctions to enhance the status of banks, but there are still many shortcomings in terms of staff development, banking structure and regulations and IT facilities. Furthermore, within the Libyan banking sector, service quality enhancement and customer service is a recent culture which is developing slowly because of public perception of the banks and the still pervasive traditional mentalities. Also, Libyan legal system related to banking sector still has several restrictions.

However, from another point of view, joining the WTO might have positive impacts on Libyan banking sector as follow:

a) The Libyan domestic inefficient banks might be merger and included to reconstruction programme of the banking system. Also, the increasing of foreign entry will bring Libya's banking industry more motivation. One of the most directly driving forces comes from the competition. In order to survive under the pressure of next stage, domestic banks will try their best to improve their management and service, enhance their commercialization process, so that they can compete with international banks. Also the flow of foreign banks will bring advanced management and operation mechanism to Libya. Also, this will help Libya to promote its service to meet international standards. The challenge of competition with foreign banks should not be regarded as a negative aspect of the WTO membership, but rather as an important opportunity for Libya to be a free market where competition is the driving force for its economy. Rather than being spoilt by the Government protection and acting as burdens on the Government budget, Libya's domestic products and services would be able to compete, on their own account, against other foreign products and services. When this takes place, Libya's economy would be sustainable and would be able to function via the forces of the free markets. Domestic businesses and corporations would be competitive and can survive not only in the national market but in other international markets. Libya seems to have managed to achieve some development in this direction through privatisation programme.

b) Under the WTO, as mentioned earlier, reducing trade barriers is the main objectives of the GATT and the GATS and other agreements. This reduction is stipulated

in the main bodies of these agreements as well as in the schedules of commitments. As is discussed earlier, the multilateral trading system seeks to make the business environment in the markets of WTO members stable and predictable. When countries agree to liberalise trade and reduce barriers and open their markets for foreign goods and services, they `bind' their commitments. For goods, these bindings mean that customs tariffs cannot go beyond the level stipulated in the country's schedule. Libya' joining the WTO is subject to such commitments as stipulated in its schedule. Libya can only change these commitments through negotiating with other trading partners, a process that may oblige Libya to compensate these countries for loss of trade. The schedules give foreign investors the necessary information about a particular market and help assess their market opportunities in that market. This is another benefit of WTO membership to Libya.

c) Transparency is a fundamental requirement of the WTO. It is one of obligations of member countries; lack of transparency is one of the vital shortcomings existing in Libya's banking sector. Enhancing the transparency of banks is one only the requirement of the WTO, but also the condition for the liberalization and internationalization of Libya's banking industry. As a result of planned economic and monopoly status of major banks, the banking industry of Libya lack of necessary competition, and most of state- owned commercial banks are not commercial banks in the real sense. The entry into WTO might change the situation to a great extent. There has been a recent trend towards providing appropriate accounts certified by qualified accountants, but Libya still lags behind developed-country standards in this regard.

d) The Most Favoured Nation (MFN) principle which is the cornerstone of the WTO agreements, as was previously explained, implies that Libya must treat all foreign products and services equally. Libya is not allowed to discriminate or favour the products or services of a particular WTO member without extending this treatment to all other members. The idea is to make all imports subject to the same regulations. This provides important assurances for foreign products, businesses, and services (including banking sector) that they are not discriminated against in the Libyan market. Thus, the WTO membership benefits Libya in the sense that it makes the market of Libya an attractive place for foreign investors in different fields and sectors as these investors are guaranteed that they will entertain similar treatment with other countries. Also, the MFN principle could be looked at from the angle of Libya being the exporting country. This implies that Libya's exports and services to other countries are treated equally with other foreign

products in external markets. If Libya's exports suffer from any illegal discrimination and are placed at disadvantageous position or placed out of business in external markets due to unfair competition Libya can resort to the multilateral dispute settlement system to regain its rights. It might be argued that Libyan non-oil exports are limited in the present time (4-5%), However, Libya needs to raise this percentage in the future or in long-run by increasing the amount of non-oil exports. Joining the WTO to encourage the non-oil exports will be useful from this side.. The MFN principle is not too rigid as the WTO agreements entail some exceptions where Libya can favour imports and services of some members without extending such discriminatory treatment to other countries. These exceptions can be found in Article 24 of the GATT and Article 5 of the GATS, which both permit WTO members to establish trading blocs or enter into free trade agreements. Through these special arrangements countries which are members to the particular FTA or trading blocks are able to provide each other with special and favourable treatment but without extending such treatment to other WTO members. This might be the case with the Greater Arab Free Trade Area (GAFTA), Community of Sahel –Saharan State (CEN-SAD), Arab Maghreb Union (UMA) where Libya is allowed to discriminate in favour of the products and services provided by the members of these trading blocs but without extending such favourable treatment to other countries whether they are members or not members of the WTO.

e) The monopoly of state-owned banks not only limited the competition in Libya's banking sector, but also restricted the healthy development of state-owned banks. For a long time, in order to favour state-owned banks, private financial institutions use to be suppressed by the government. Actually local people welcome those private financial institutions, which can provide flexible and convenient service. Also the development of the private domestic financial institutions is very important to Libya's banking industry from long-term point of view. After WTO accession, the government suppress is gradually released, those private financial institutions will get great opportunity to grow. They will soon become a dynamic competitor in the banking sector. Therefore, after WTO accession, the monopoly status in Libya's banking industry will be replaced by a competitive environment with the full involvement of state-owned banks, foreign investors and private domestic banks.

f) After joining the WTO, Libya, as a developing country, can benefit from certain WTO terms and principles to keep financial stability and improve the banking sector.

GATS give developing countries more preferential conditions through general principles and specific Articles. First of all, the preamble and Article IV of GATS have addressed the notion of facilitating the increasing participation of developing countries in services trade. Article IV specifies that members should negotiate specific commitments to strengthen their domestic service capacity and its efficiency and competitiveness; to improve their access to distribution channels and information networks; to liberalize the market access that can provide export interest to them. Another important that is addressed under Article XIX of GATS is progressive liberalization, which stipulates that the liberalization should accord to the national policy objectives and the developing level of individual countries, and developing countries should be given more flexibility in terms of opening time, types of transactions and market access. By using these two principles, Libya can accord its opening measure with the national development objective and the development stage of banking sector, open the sector that have better capability initially, and extent the process progressively. Secondly as the national treatment principle and market access are subjected to specific commitment under GATS, they can only be achieved through negotiation with certain restrictive conditions. When Libya becomes full member of the WTO, it can still set out certain qualifications for foreign banks to meet, so as to select those banks who have advantages on size, capital capacity and management to get access to the banking sector first, which would keep financial stability on one hand and would make use of their advanced managing experiences on the other hand. In the commitment, Libya can set out requirements that the foreign bank or finance company who wants to establish a subsidiary or to set branch or wants to form joint venture in Libya. For example, China requested from those who want to set a branch must have total assets of more than US$ 20 billion; for those who want to form a joint venture with Chinese banks, the total asset of foreign institution must reach US$ 10 billion and the joint venture must have registered capital of at least US$ 121 million (600million in Yuan and 400 million in foreign currency) (Shuang, 2003).

Article XIV and Article XV of GATT defined the notion of exemption. In general terms, the agreement shall not prevent members from using measures that are necessary to protect crucial public interest, life and health of human, animal or plant and certain important law and regulations. Also if the commitment will cause serious implication for the specific industry of member state, the state can impede or modify the commitment through negotiation under the provision of GATS. So in the event of any emergency, Libya can

resort to the provision for the renegotiation of its commitment. The protection of certain GATS principles can only play an important role during the five-year transition. Facing fierce competition brought about by the releasing of restrictions on the foreign banks, increase efficiency and competitiveness of domestic banks is the only way for Libya to achieve a stable and prosperous banking system under the new situation.

g) As mentioned in the chapter 2, Libya is one of the members of International Monetary Fund (IMF). Libya joined the IMF on September 17, 1958. Its quota is SDR 1.123 billion (about US$1.564 billion). Libya has no outstanding use of IMF financing. It is necessary to understand the relationship between the WTO and IMF on the problem of foreign exchange supervision. The foreign exchange issue within the IMF and WTO are interrelated to each other. On one hand, for countries that are both members of the WTO and IMF, IMF has the leading role on the problem of foreign exchange. Therefore, basically if IMF member join the WTO (as Libya), all the foreign exchange policies approved by IMF will be accepted by the WTO. According to clause 1 of Art 15 of GATT (appendix 1 of GATT): Exchange Agreements, all the member states shall seek co–operation with the IMF to facilitate the coherence of the WTO and IMF on problem of foreign exchange. Clause 2 and point 3 further explain the co-operation relationship. Clause 5 is the part that particularly shows the leading role of IMF on the foreign exchange, which stipulates that even if the exchange restriction inconsistent with the agreement, the WTO needs to report it to IMF to stop it.

On the other hand, within the framework of the WTO, any foreign exchange measure that cause non-tariff barrier will be forbidden, even if it is a measure approved earlier by IMF. Just as the clause 4 stipulated that members shall not use exchange action to frustrate the provision of the GATT. IMF divides its members into two categories, one includes those countries that accept Article viii of the appendix 2 of IMF Agreement, and the other category includes those countries that accept Article XIV of the appendix 3 of IMF Agreement. The difference between the two categories is that "Article XIV members" can resort on restrictions on its foreign exchange regime without the intervention of IMF; actually Article XIV is a specially design for those developing countries whose regime are undergoing transition. After the transition, when they become "Article VIII members", any of their restriction on the foreign exchange regime has to be approved by the IMF in advance (Shuang, 2003).

Libya accepted Article VIII of IMF Agreements in 2003, since then Libya's foreign exchange regime has basically met the requirement of the WTO. Upon WTO accession, Libya further committed that it would not resort to additional exchange restriction without the approval of IMF, while it did not commit to liberalize its the capital control, such as the convertibility of capital account and the managed floating rate. Because of the leading role of IMF on foreign exchange matters, WTO accession would not cause any direct impact on the foreign exchange regime of Libya. While WTO entry will change the overall financial framework of Libya, so it will potentially enhance the process of exchange administration reform in Libya. The liberalising of the domestic market and the opening up of financial services will attract more foreign investment, which will increase the global linkage of Libya. The gradual integration of Libya into global competition will require diversified portfolio investment and flexible exchange rate. Therefore, WTO accession will quicken the step of Libya in achieving the ultimate full convertibility of exchange administration. It is unlikely that Libya will take immediate action to change its managed floating rate, since it might cause instability over national economic and other related issues, Libyan authorities is trying to avoid the damage. But the liberalising of the exchange regime is an inevitable trend.

4.5 The Impact of WTO on Banking Sector: Empirical Evidence (with respect to other countries similar to Libya).

A quite extensive empirical literature exists about the impact of WTO membership (and the related topic of entry of foreign banks) upon the banking sector in a number of countries similar to Libya. Most of these studies show net positive effects of accession to the WTO, and entry of foreign banks on domestic banking sectors. The results of these studies are useful for understanding the potential effects of the WTO on the Libyan banking sector, especially when factors like the stage of economic development, level of income, and the extent of privatization of banking sector taken in to account.

Jabsheh (2002) has shown that in the context of the Kuwaiti banking sector (as a petroleum country similar to Libya), the liberalisation of the banking sector was accompanied by increased competition, raised the quality of services offered, reduced costs and diversity services, all of which benefited consumers and producers. A study focused on measuring the ratio of concentration and the level of competitiveness in the banking sectors of the Gulf countries by Salem-Ghanem et al (2002) concluded that the banking sector in Saudi

Arabia and United Arab Emirate (UAE) enjoyed a high degree of competition and a limited level of concentration, which makes these two sectors ready to accept the implementation of financial liberalization policy, without any sharp shrinkage effects on the size of banking business of their national banks. This finding also applies. to a lesser degree, to both the banking sectors in Bahrain and Kuwait. The highest concentration ratios levels and the least competitive banks were found in Oman and Qatar. A study by Abou Ali (2000) referred to the impact of foreign bank and WTO on Arab banking sectors. This study concluded that it was not expected that globalisation would weaken the Arab banking sectors. On the contrary, it was expected to induce this sector to accept the challenge and increase its efficiency. Arab banks should benefit from the expanded market under globalization.

A study focused at foreign banks entry in Hungary, the Czech Republic, Slovakia, Poland and Slovenia (as transition economies which were protecting their banking sectors) by Mérõ and Valentinyi, (2003) has shown the positive consequences of entry of foreign banks. Foreign banks have helped recapitalize troubled domestic banks, improve the quality and quantity of financial services, spread technology, and know-how to exert competitive pressure on domestic banks. Another study (Kun Lee, 2002) aimed at analysing the impacts of financial liberalisation and entry of foreign banks on competitiveness in the context of the Middle East and North Africa (MENA) regions. The findings showed that financial liberalization, accelerated by foreign bank entry and privatization of domestic state owned banks, positively contributes to net profitability and better capitalization for domestic banks. In terms of scale economies as an indicator of overall banking efficiency, the results also confirmed that a more efficient financial market underpinned by well-balanced development of financial sectors induces higher banking efficiency. Hermes and Lensink (2005), they review the literature which revealed that 15 out of 23 studies had found positive relationship linking financial trade liberalization with economic growth; four found a neutral relationship and four a negative relationship. In Eastern Europe, Giannetti and Ongena (2005) found that the presence of foreign banks foreign bank presence may improve access to credit for creditworthy firms.

Evidence also indicates a close positive relationship between the liberalization of financial services, the degree of capital account liberalization, and the resulting flows of capital. For instance, the internationalization of financial services in the first half of the 1990s led to a

huge increase in net capital flows from industrial to emerging economies during 1991-96, facilitating a more efficient worldwide allocation of savings and removing domestic resource constraints to investment spending in developing countries. Capital account convertibility expands the list of assets available to domestic wealth-owners, strengthens market discipline by foreign residents over domestic institutions, and limits distortions in asset pricing through increased competition.

On the other hand, liberalization of financial trade in services also involves certain adjustment costs to the domestic financial sector. For example, with the opening up of the domestic financial sector to foreign financial services providers, domestic financial services providers such as banks and insurance companies are probably going to face increased competition from foreign providers and thus possibly get a decline in their profits. There may also be adjustment costs in terms of employment loss in domestic financial institutions. Financial sector liberalization also may affect macroeconomic and financial stability resulting in large scale outflows of capital, unless supported by a strong and transparent regulatory framework for financial sector supervision, as was happened by the 1997 East Asian crisis. Most of these costs and challenges are, however, not the result of liberalization per self, but due to regulatory and structural problems in the financial sector, thus, they can be addressed through the establishment of appropriate regulations and macroeconomic preconditions. For example, the adverse impact of opening up on bank profitability is often an outcome of high levels of non-performing assets and other structural distortions in the domestic banking system. Such problems need to be addressed through appropriate restructuring of individual financial institutions and measures to reduce non-performing assets (NPAs) and the underlying causes for high NPAs rather than imposing restrictions on entry by foreign financial institutions. Claessens et al. (2001) reveal evidence that foreign bank entry is associated with lower profit margins among domestic banks, while Berger et al (2001), Haber and Musacchio (2005), and Mian (2006) provide evidence that foreign banks tend to finance only larger, more established firms. Detragiache et al. (2008) find that foreign ownership is negatively related to aggregate measures of banking sector performance. At the same way, Cowen et al. (2006) cover macroeconomic, institutional, and capital flow evidence on Asian integration and explores relationship between real and financial benefits and contains the risk – of the financial integration in Asia. If foreign bank entry is accompanied by reduced constrains to capital

outflows, banks may be use funds raised in the domestic market to undertake external lending. In such a case, domestic borrowers may not have the same level of entry to domestic savings as before trade liberalization. Another risk is that foreign banks might transfer funds from one market to another as they perceive changes in risk-adjusted returns. There is fear for slow increases in the level of foreign ownership, for instance, when foreign banks "cherry pick" the most desirable markets and customers, leaving the domestic banks with higher risk assets and customers mainly in the cities and neglected in rural retails banking.

4.6 Summary

This chapter aimed to shed light on the main features of the WTO/GATS and their historical development and presented a review of previous studies about the impact of World Trade Organisation on banking sector with reference to Libya. Also, the debate related to the impact of the WTO on Libyan banking sector was discussed in more details. The chapter addressed the gap in the literature regarding to Libya. Also, it opens the door to study the expected impact of World Trade Organisation on Libyan banking sector across measuring the efficiency of Libyan banks using the Gulf countries as a case study in next two chapters.

CHAPTER FIVE
THE EFFICIENCY OF LIBYAN COMMERCIAL BANKS IN THE CONTEXT OF LIBYAN WTO ACCESSION

5.1 Introduction

The Libyan economy depends heavily on oil revenue as its major driving force. Indeed, oil represents around 96% of its export earnings and 55 % of GDP. Therefore the Libyan authorities have been trying to both diversify the economy to reduce its dependency upon oil and to become more integrated into the international economic, political and financial community, for instance by becoming a member of the WTO. One of the sectors identified as very important is the service sector, in particular the banking sector. However, despite the efforts of reforming the banking sector, which have continued during the past decades, most of the Libyan banks have suffered from mounting non performing loans (NPLs), especially the five large state owned commercial banks. When Libya becomes a full member of the WTO during the next years, domestic Libyan banks will have to completely open up to competition with foreign banks and other overseas financial institutions. Many representative offices of foreign banks have already entered the country (CBL, 2007) and also a few foreign banks have been given licenses to operate in the country (IMF, 2008). However, they have not started operating yet. The time scale for intense competition is short to the Libyan banking sector so the ability of Libyan banks to meet the above challenges depends on how efficiently they are run.

In recent years, the measurement of performance has focused on banks and financial institutions. They have attracted a great deal of attention from both academics and practitioners. Measuring efficiency levels at banks is a useful issue for nations, managers and investors alike. Consumers also benefit from efficient resource usage and allocation because this may mean lower prices and more professional service (Anderson et al, 1998). The efficiency of Libyan commercial banks will be empirically evaluated by using DEA method. Also the efficiency of Libyan banks will be compared to other banks located in similar countries {Gulf Cooperation Council (GCC)} which they have already gained membership of the WTO. The efficiency of Libyan and GCC banks will be calculated for nine years (over the period 1999-2007) and also the changes in efficiency to Libyan and GCC banks will be followed to know the implications of membership of the WTO. The

findings of this exercise may provide some guidance for the Libyan banking sector. Measuring bank efficiency of Libyan and GCC banks might be considered as an indicator of the ability of Libyan commercial banks to compete with foreign banks as Libya become a full member of the WTO. Also, measuring Libyan banking efficiency might help to know the effects of banks reforms programme in Libya, especially after issuing the new banking law in 2005.

While many similar studies have evaluated the performance of the banking industry in US, Europe and other developed countries, fewer studies have been carried out to evaluate the efficiency of the banking industry of developing countries. Previous studies like Alwdan, (2005) in the context of Libya focused on the efficiency of Libyan public banks before the introduction of the new banking law in 2005. Therefore, there is a need for a comprehensive assessment of the potential implications of the membership of the WTO on Libyan banking sector and also the impact of reforms programme on Libyan banking efficiency. In other words, to investigate whether efficiency in Libya improves or not after the establishment of private banks and the starting of financial banking sector reforms programme. The results of this study will be compared to the results of previous studies to investigate the impact of the financial banking sector reforms on Libyan banks efficiency to measure their ability to compete with foreign banks as Libya becomes a full member of the WTO.

This chapter is divided in to five parts. The next section reviews some of the relevant literature, while section three gives a brief overview on banking system in GCC countries, and section four examines the methodology for evaluating the efficiency and justifies the approach used and the type of international comparisons efficiency. This includes a brief definition of banking efficiency and its measurement focusing on the DEA method, sources of data collection and advantages and disadvantages of the DEA method. The final section, evaluates and analyses the efficiency of the banks in Libya and GCC countries, presents the results, and summarises main conclusions.

5.2 Literature Review of Banks Efficiency

Since the original study of Data Envelopment Analysis (DEA) by Charnes et al (1978), there has been rapid and continuous growth in using of DEA Technique, not only in

developed countries but also in developing countries. As a result, a considerable amount of published research has appeared, with a significant portion focused on DEA applications of efficiency and productivity in both public and private sector.

Emrouznejad et al (2008) maintain an extensive bibliography of DEA research covering theoretical developments as well as empirical applications from 1978 to 2007. They have identified more than 4,000 research articles published in journals or book chapters. Banking, education (including higher education), health care, and hospital efficiency were found to be the most popular areas of study. These studies have used a variety of inputs and outputs in their analysis.

DEA studies on the performance of banks could be categorized in at least three different ways:

a) Studies that analyse the performance of different banks (e.g. Al-Faraj et al., 2006; Alwdan, 2005), and studies that analyse the performance of branches of the same bank (eg: Vassiloglou and Giokas 1990, Golany and Storbeck 1999).

b) Studies that assess production efficiency of banks (Sathye, 2003) and studies that assess intermediary efficiency (e.g: Avkiran, 1999a; Al-Faraj et al, 2006).

c) Studies that assess the performance for a single period (one year) like (Mostafa , 2007a), (Mostafa, 2007b), and studies that also assess the performance over several consecutive periods (several years) (e.g.: Avkiran, 2000, AlMuharrami., 2008; Darrat, et al, 2003) . In this study, the performance of banks, not bank branches, are assessed viewing them as intermediaries. Furthermore, the efficiency is measured over several years.

This is a sample of selected studies in several developed and developing countries (including Libya), which have applied DEA method to measure bank efficiency. It is noticed from the relevant literature that the DEA method has been applied in several developing countries which are similar to Libya (e.g: Gulf Countries). The selected sample includes different ways to measure bank efficiency by using DEA method and different inputs and outputs. Regarding Libya, it is noticed that a few studies have focused on banks in general and banks efficiency in specific in Libya For example, (Alhasia, 1985), (Abida and Fayad, 2003) and (Hufbauer and Brunel, 2008). However, these studies mainly relied on financial ratios to measure the efficiency of Libyan banks. All these studies concluded that the Libyan banking sector was inefficient. The most important study

to evaluate bank efficiency in the context of Libya was written by Alwdan, (2005). The study used DEA method. The aim of the study was to measure and to explain the variations in the performance of commercial banks (five large state owned banks) in Libya during the initial stages of the recent banking reforms. The main finding of the study indicated that reforms had little impact. The study was very useful in identifying the changes in efficiency and its evolution in Libyan banks during the period of 1980-2000 for five large state owned banks. However, the study is not useful to draw conclusion about the efficiency of private banks since they were excluded from the sample of study.

Miller and Noulas (1996) examined the efficiency of 201 large US banks from 1984 to 1990 by using DEA method. They found that bank technical inefficiency averages just over 5 percent, much lower than found in the previous literature. Furthermore, larger and more profitable banks have higher levels of technical efficiency and more likely to perform under decreasing returns to scale.

Isik and Hassan (2002) used DEA method to evaluate the efficiency of Turkish banks over the period 1988-1996. They investigated the efficiency of the Turkish banking sector to understand the impact of size, international variables, ownership, control and governance on profit, cost, allocative, technical, a pure technical and scale efficiency measures. In order to control the impact of the method choice on the qualitative inferences, they also compare DEA results with the results from a parametric frontier method called Economic Frontier Approach. The main results suggested that the various characteristics of banks have a significant impact on their efficiency. Moreover, cost and profit efficiencies of the Turkish banks had worsen over time. They found that the overall cost and profit efficiencies for the Turkish banks are 72% and 83%, respectively, implying that on average, about 40% of the bank resources and about 20% of the potential bank profits are wasted during the production of banking services. Results also indicate that the dominant source of inefficiency in Turkish banking is due to technical inefficiency rather than allocative inefficiency, which is mainly attributed to diseconomies of scale.

Darrat, et al (2003) examined the performance of banks in Kuwait during the period 1994–1997. They provide an empirical assessment of the efficiency, productivity, and technological progress of banks by using the Data Envelopment Analysis and Malmquist Index. The empirical results suggest that Kuwaiti banks fail to optimally utilise a significant proportion of their resources. The sources of bank inefficiency appear to be

both allocative (regulatory) and technical (managerial) in nature. The results also showed that smaller banks in Kuwait were more efficient than larger ones, although all banks have improved their efficiency-levels and experienced some gains in productivity.

Sathye (2003) used DEA technique to measure the productive efficiency of Indian banks in the year 1997-1998. The sample included 94 banks (27 public sector commercial banks, 33 private sector commercial banks and 34 foreign banks). The efficiency was calculated using variable return of scale (VRS) input-oriented model. The study showed that the mean efficiency score of Indian banks is lower than the world's mean efficiency.

Drake and Hall (2003) also used the DEA method to analyse the technical and scale efficiency of Japanese banks using a cross-section sample. Efficiency analysis was conducted across individual banks, bank types and bank size groups. Problem loans were controlled for as an exogenous influence on bank efficiency. Powerful size-efficiency relationships were established with respect to both technical and scale efficiency. Moreover, the logic of the large-scale merger wave in Japan is questioned as the larger (City) banks are generally found to be operating above the minimum efficient scale and to have limited opportunity to gain from eliminating X-inefficiencies. The opposite result was found for the smaller banks. Finally, the results suggest that controlling for the exogenous impact of problem loans is important in Japanese banking, especially for the smaller regional banks.

Hassan et al. (2004) investigated the efficiency of the banking industry in Bahrain by employing a panel of 31 banks for the years 1998 and 2000. DEA was used to examine five efficiency measures. They also investigated the conventional accounting measures of performance, and correlated them with five measures of efficiency to investigate whether higher accounting performance had an impact on the bank cost efficiency. The main finding revealed that on average, the banking industry in Bahrain is profitable with average ROE and ROA being 10.36% and 1.622% in 1998, and 13.49% and 2.097% in 2000 respectively. The average allocative efficiency (inefficiency) is about 73% (37%), whereas the average technical efficiency (inefficiency) is about 56% (78%). The results indicate that the dominant source of inefficiency in Bahrain banks is technical inefficiency rather than allocative inefficiency, which is mainly attributed to diseconomies in scale. Overall, average scale efficiency (inefficiency) is about 79% (26%), and average pure technical efficiency (inefficiency) is about 71% (41%), suggesting that the major source of the total

technical inefficiency for Bahrain banks is pure technical inefficiency (input related) and not scale inefficiency (output related) .

Al-Faraj et al. (2006) used DEA method to investigate the level of efficiency of the Saudi commercial banking sector. The research sample consisted of nine Saudi commercial banks for the year 2002. The analysis was repeated under different assumptions of scale of efficiency. The study reveals that the mean efficiency score of the Saudi banks sector is higher than the world's mean. The study recommended that Saudi banks should continue their efforts of adapting new technologies and providing more services in order to sustain competitive advantages as Saudi Arabia continues to reform the banking sector.

Mostafa (2007a) used DEA to measure the efficiency levels of the top 100 Arab banks, while Mostafa (2007b) used DEA to measure the relative efficiency of the top 50 Gulf Cooperation Council (GCC) banks. In both cases cross –sectional data for the year 2005 were used to conduct the analysis. The results indicated that the performance of several banks was sub-optimal, suggesting the potential for significant improvement in both groups of countries. The studies highlight the importance of encouraging increased efficiency throughout the banking sector in the Arab countries and in the GCCs. The results of the above mentioned studies support the hypothesis that efficiency scores for developing countries are lower than those of developed countries.

Berger (2007) reviewed the findings of over 100 studies that compared bank efficiencies across different countries. He divided these studies in three types: (1) comparisons of bank efficiencies in different nations based on the use of a common efficient frontier (CEF), (2) comparisons of bank efficiencies in different nations using nation-specific frontiers(NSF), and (3) comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier (FDNSF). All three types of comparisons yield interesting findings, and also have limitations. The first and the second type are the most common using in the literature.

Al-Muharrami (2008) used the DEA technique to estimate technical, pure technical and scale efficiency, using an input orientation of banks in the GCC countries banks for the period 1993-2002. The sample included 52 privately held and domestically owned fully licensed commercial and Islamic banks. The most important finding of the study is that smaller banks have superior performance in terms of overall technical efficiency than larger ones, which is mainly associated with diseconomies of scale. Second, big banks

seem to be more successful in using the most available technology while medium banks proved to be more successful in choosing optimal levels of output. Due to the fact that small banks generally operate under increasing return to scale, growth of small banks consolidation in the market to a medium size is desirable and should enhance the efficiency of the whole banking sector. Third, Islamic banks were more successful in the adoption of the best available technology and choosing optimal level of outputs . Finally, banks in Bahrain, Qatar, Oman, UAE, Kuwait and Saudi Arabia were ranked first to sixth respectively, in terms of technical efficiency.

Bdour and Al-khoury (2008) used DEA to measure the efficiency of individual commercial banks in Jordan over the period 1998 and 2004. The main finding of the DEA revealed an increase in bank efficiency in the entire period except in 2003 and 2004 where a decrease in bank efficiency was shown for some of the banks in the sample. The overall efficiency scores suggest that the liberalization programme has provided the expected efficiency gains. The analysis further shows that both assets utilisation and the labour factor had an adverse effect on bank efficiency, especially in terms of the excessive number of employees.

Sufian, (2009a) investigates the efficiency of the Islamic banking sectors in 16 Middle East and North Africa (MENA) and Asian countries during the period of 2001-2006. Libya is not included in this study since there is no Islamic banking sector in Libya. The efficiency estimated of individual banks is evaluated using the non-parametric Data Envelopment Analysis (DEA) method. The results revealed that the MENA Islamic banks have exhibited higher mean technical efficiency relative to their Asian Islamic bank counterparts. The empirical findings suggested that during the period of study, pure technical inefficiency outweighs scale inefficiency in both the MENA and Asian countries banking sectors. He also found that banks from the MENA region were the global leaders by dominating the efficiency frontier during the period of study. Also, a positive relationship was found between bank efficiency and loans intensity, size, capitalization, and profitability. The empirical results show that technically more efficient banks are those that have smaller market share and low non-performing loans ratio. A multivariate analysis based on the Tobit model reinforces these findings.

5.3 Banking System in Gulf Cooperation Council (GCC) Countries

This section provides an overview of the banking system of the Gulf Cooperation Council Countries. It contains brief background of GCC countries' economies and their financial sectors (including Islamic banks in these countries). In general these countries have witnessed various financial reforms aimed at strengthening their financial system. These have mainly included moves to deregulate as well as to improve prudential standards. Although stock markets have been improved and have begun to play a wider role in financing various economic sectors, their contribution remains limited in Gulf banking systems. GCC banks show favourable improvement in terms of their asset quality, capital adequacy and profitability during the period 1990- 2007. Such indicators reflect important role for financial intermediaries in the process of economic growth and show the positive impact of economic and financial reforms undertaken in these countries. It is noticed that the performance and the efficiency of GCC banking sectors have improved significantly compared to other countries (Creane et al, 2003).

5.3.1 GCC Countries brief background

The Gulf Cooperation Council (GCC) was set up on May 25, 1981 as an economic block and also as a means for political and military cooperation to strengthen the defence of the Arab Gulf Region. The GCC block include six- oil rich member states: Bahrain, Kuwait, Qatar, Oman, Saudi Arabia and United Arab Emirate (U.A.E) .After a few months of the establishment of the GCC, member states signed (in November 1981) an agreement that established the GCC Free Trade Area and outlined the steps to foster further economic integration. On December 31, 2001, member states planned to set up a Common Single Market and Economic and Monetary Union by 2010 that was, in fact, launched earlier on January 1, 2008. The common market grants national treatment to all GCC firms and citizens in any other GCC country, and in doing so removes all restrictions to cross country investment and services trade. Although, customs union was declared in 2003, practical implementation has so far proved very problematic. Indeed, shortly afterwards, Bahrain concluded a separate Free Trade Agreement with the USA, in effect cutting through the GCC's agreement , and causing much friction. Furthermore, Oman had announced in December 2006 it will not be able to meet the target date and the UAE have announced their withdrawal from the monetary union project in May 2009. This happened

immediately after it was announced that the central bank for the monetary union would be located in Riyadh and not in the UAE. The name Khaleeji has been proposed as a name for this currency. Although, the GCC countries represent small group in terms of population compared to similar blocks such as ASEAN, APEC, NAFTA, or the EU, these countries occupy a massive geographical area and possess significant portion of world oil reserves.

The GCC is a relatively homogenous group of countries. They are probably the most homogeneous union in the world. The GCC countries share a common language (Arabic) and cultural and political history, and are mainly exporters of oil, gas, and refined products. They jointly account for over 40 percent of global oil reserves and 23 percent of natural gas reserves. Oil and gas production contributes around 50% of total GDP and around 75% of total exports and annual government revenues (Sturm et al, 2008). According to International Monetary Fund statistics in 2008, the total GDP of the six GCC members was (US$ 1101.667bn.). Saudi Arabia has the largest GDP US$ 593.385 bn which is around 54% of the total GDP of GCC countries, and Bahrain has the smallest one (US$ 66.889 bn). Average GDP/capita in the GCC was over $14,000 in 2008.

The Gulf Cooperation Council (GCC) countries share a number of specific structural economic characteristics, while they also have some important differences. Key common characters are a high dependency on hydrocarbons as expressed as the contribution of oil (and gas) revenues in total fiscal and export revenues and also the share of the hydrocarbon sector in GDP; a young and fast growing national labour force; and the heavy reliance on foreign labour in the private sector. These characters also create common structural policy challenges to GCC economies, notably economic deregulation to reduce the reliance on the hydrocarbon sector and to develop the private non-oil sector. All of GCC countries need to create employment jobs in the private and non –oil sector for young nationals, given that the hydrocarbon sector is not labour-intensive and further increasing public sector employment is not sustainable.

GCC member states are moving towards economic diversification at a different pace and in different directions. For example, Bahrain and the United Arab Emirates (UAE) are more advanced in the process of diversification. This is also driven by the fact that hydrocarbon reserves are projected to be run down in some countries (Bahrain and Oman) relatively soon, while they will last in others for a substantial period of time. Economic diversification needs to be supported by structural reforms, in particular, privatisation and

market liberalisation, areas in which most GCC countries have made significant progress over current years. Recent macroeconomic developments provide a favourable background for implementing reforms and addressing the structural challenges, in particular, as they have provided GCC economies with the financial means to do so. The annual real GDP growth has been buoyant at around 5.4 % on average for the GCC countries as a whole for the period between 2001 and 2007, making the GCC region one of the fastest growing economies in the world. The reason behind that the GCC countries have achieved large fiscal and current account surplus in recent years due to the rise of oil prices. The infrastructure of these countries has been improved significantly compared to other Arab countries. GCC countries have made significant investments to establish themselves as a regional trade centre. While the physical infrastructure has been upgraded, further progress is needed in the area of trade infrastructure. In terms of institutional trade links and integration, all GCC countries have now joined the World Trade Organisation (WTO). Moreover, Free Trade Agreements (FTAs) are currently being negotiated with several countries and regions, including the EU, which might further contribute to the GCC countries' integration into the world economy. At the same time, intra-GCC and Arab merchandise and service trade are still limited since the similarity of production structures between GCC countries or political reasons between GCC and Arab countries rather than other reasons. However, it is expected to expand with further progress in diversifying GCC economies and regional integration especially intra-GCC countries (Sturm et al, 2008).

5.3.2 The Financial Sector in GCC Countries

The financial sector in GCC countries is dominated by the domestic banking sector, which depending on the country, could be private or public (i.e. state-owned). Even when banks are not overtly state-owned in the past, they have enjoyed strong government support in terms of liquidity support and additional capital to refinance non-performing loans in the majority of the GCC countries .The credit extended by GCC banks tend to be short term maturities. For example in 2006, 56% of all credit in Saudi Arabia had a maturity of less than one year. The reason behind that is the weakness of bond and long term deposits markets. However, this percentage has decreased to 37% in 2008. In addition, the banking sector is described as a highly concentrated sector (Al-Muharami et al, 2006). The combined size of the financial industry in the GCC countries was 1.169 in billion of US dollars in 2007. The total assets, deposit and loans of commercial banks had increased significantly during the period 2002-2007 compared to the period 1991-2001. The reason

behind that might be the significant increase in oil prices and petroleum revenues during the second period. The ratio of total bank deposit to GDP of all GCC countries was 69.38 % in average. The total bank credit to GDP was 67.1% (AMF, 2008). By the end of 2006, the UAE and Bahrain (including the offshore sector) had the largest banking sectors, with total assets standing at over 100% of GDP. By contrast, in Oman, with the smallest banking sector, total assets accounted only for around half of GDP, and Saudi Arabia's banking sectors was also relatively small in the regional context. The share of public banks in GCC countries' financial sectors varies from country to country. It is highest in the UAE, with over 60% of total bank assets being held by public banks (2006 data). In Saudi Arabia, this ratio stands at 23%, whereas in Bahrain and Kuwait, less than 5% of total bank assets are held by public banks (2003 data). However, in Bahrain, which has a significant offshore banking sector, this ratio increases to about one-third, if only onshore bank assets are taken into account (Sturm et al, 2008).

Although, foreign participation and competition in the sector is on the rise, with banks from both other GCC countries and also from outside the GCC countries entering the GCC market or waiting for licences, foreign participation is still relatively low in GCC countries' banking sectors, reflecting institutional restrictions, but has been increasing over recent years, as countries such as Saudi Arabia and Kuwait have started to open up their banking sectors (Murinde and Ryan, (2002)). The share of foreign banks assets in total assets is by far highest in Bahrain at almost 60%, reflecting foreign involvement in the country's offshore banking sector. In the UAE, which hosts some thirty foreign banks, often using the country as a hub for activities in other GCC countries, and in Saudi Arabia, this ratio stands at around 20% while it is significantly lower in Qatar and Kuwait at 11% and 4%, respectively. Banking sectors in the GCC have the potential to consolidate, given the high number of banks in most countries and their relatively small size by international standards. Local banks have to face tough competition from international banks (especially after joining the WTO), whereby being on a larger scale would put them in a more favourable position (Sturm et al, 2008).

5.3.3 Islamic Banks in GCC Countries

Islamic banks are based on the principle of compliance with Shariah law. Islamic scholars and bankers have developed several financial instruments which can be used by Islamic banks in operating banking functions in a modern economy (Molyneux and Iqbal, 2005).

From the time of the establishment of the Dubai Islamic bank in 1975 as the world's first private interest free bank, Islamic banks have shown remarkable progress. The growth of Islamic banks has been phenomenal with assets under management generally growing at annual rates of 12% to 15% per year. Much of the initial growth of Islamic bank was in South Asia. However, since the beginning of the 1990s, the GCC area has become the first attracting area to the Islamic banks (Olson and Zoubi, 2008). The value of shariah-compliant assets is remarkable in the GCC, as total assets are worth over US$263 billion when the figures for Saudi Arabia, Kuwait, the United Arab Emirates, Bahrain and Qatar are aggregated, relative to $235.3 billion in the Islamic Republic of Iran. Total shariah-compliant assets amounted to around $640 billion at the end of 2007. This implies that the GCC countries accounted roughly 41 % of the total. Furthermore, assets have been growing rapidly at a rate between 15% and 20% per year. Most of the very high growth in 2007 was due to rapidly rising oil and gas prices which fed through to government spending in the GCC, and high level of economic activity.

5.4 Methodology of Bank Efficiency

5.4.1 Measurement of Bank Efficiency

In the banking literature, several methods of bank efficiency have been used to assess the efficiency of banks. The traditional one has used a number of financial ratios (eg, return on assets ROA, return on investment ROI, and return on equity ROE). This method is simple to construct and easy to use. Several studies have used this method {see for instance, (Murinde and Ryan, 2002) and (Tarawneh, 2006)}. However, the main weakness of financial ratios analysis is the limitations of these ratios. The financial ratios aggregate many aspects of performance such as financing, marketing and operations. Therefore, by using financial ratio analysis only, it cannot be derived which bank has a higher performance (Chen and Yen, 1997). Furthermore, financial ratio analyses do not control for individual bank outputs, input prices, or other exogenous factors facing banks in the way that studies using modern efficiency methodology does, and so may give confusing results. To illustrate, a cost-efficient bank may have relatively high cost ratios since it is producing a high-cost output bundle (e.g., more loans, fewer liquid assets) or faces high input prices, and so may be mistakenly identified as a poor performer (Berger et al. 2009).

Moreover, there is a lack of agreement on the relative important of various types of inputs and outputs. All these limitations have prompted researchers to look for new ways of measuring efficiency in the banking sector. Cost frontier analysis is an analytical tool to study and evaluate bank performance, as it solves some of the problems related to financial ratio analysis. In academic studies of costs and efficiency in banking, two main approaches have been adopted; a non parametric and parametric approach. The concept of non parametric frontier was first introduced by Farrell (1957) by assuming constant return to scale (CRS). Afterwards the assumption of CRS was relaxed and the methodology extended to parametric approaches. Both approaches require the specification of a cost or production function or frontier. However, the parametric approach includes the specification and econometric estimation of production functions, while the non parametric approach provides a linear frontier by enveloping the observed data points. Hence this technique has come to be termed Data Envelopment Analysis DEA.

5.4.2 Advantages and Disadvantages of DEA

Data Envelopment Analysis DEA provides an alternative approach to parametric/ econometrics or regression analysis. While regression analysis relies on central tendencies, DEA is based on external observations. While the regression approach assumes that a single estimated regression equation applies to each observation vector, DEA analyse each Decision Making Unit (DMU) separately, producing individual efficiency measures relative to the entire set under evaluation. Other advantages of the DEA method are the ability to deal with multiple inputs and outputs. The main advantage of DEA is that, unlike regression analysis, it does not require a specific functional to determine the most efficient DMUs, and so capture the interplay between various inputs and outputs of different dimension (Avkiran, 1999a). Furthermore, the DEA method is particularly suitable to working with limited sample sizes (Evanoff and Israilevich 1991). On the other hand, the DEA's major shortcoming is that the frontier is sensitive to extreme observations and measurement errors (the basic assumption is that random errors do not exist and that all deviations from the frontier indicate inefficiency). Econometrics approach tends to overcome this problem through the allocation of the residual between random error and X-inefficiency. However, this approach is not free of criticism. It needs specific functional form such as Cobb-Douglas and translog in order to estimate efficiency and the technology is assumed to be suitable for all observations. Bhattacharyya et al. (1997) indicated that,

regulations and other market imperfections in developing countries (especially decades of excessive regulation in the banking industry) may distort input/output prices, and. therefore, may make difficulty to the measurement cost and/or profit function using parametric approaches. In addition, the econometrics method has distributional assumptions regarding the error term to separate the efficiency from the statistical noise. However, the econometric method is still useful to determining the specifications of efficiency, especially when Panel Data Regression method has been used to determinant the specification of efficiency (see next chapter).

5.4.3 Bank Efficiency as Basis for Using DEA Method

The nonparametric programming approach used to measures efficiency is based upon the work of Farrell (1957). While the procedure is computationally rigorous, two simple diagrams will demonstrate how the methodology works and how the efficiency measures are obtained. These measures are illustrated through the use of diagram 5.1 and 5.2. A good explanation to the concept of efficiency are also available in the literature {for example: (Hassan et.al 2004), (Anderson et al, 1998), Avkiran (1999b) ,Qayyum, (2007) and (Aly etal,1990)} explained the mathematical model of DEA clearly. A brief description of the model is provided below.

In diagram 5.1, it is supposed that the bank uses two inputs, x_1 and x_2, to produce a single output y. The bank's production function (frontier) $y=f(x_1, x_2)$ is under the assumption of constant returns to scale. Let unit isoquant y_0 y_0 and the area above and to the northeast represents all combinations of x_1 and x_2 which yield at least output level y_0 for technically efficient using of inputs combinations. In this diagram, technical inefficiency of the bank can be measured by the distance BC while the technical efficiency (TE) can be measured by the ratio of distance from origin to B over the distance from origin to C.

$$TE=OB/OC$$

The technical efficiency can take a value from zero to one for given combination of inputs. The value of zero means that the bank under study is technically fully inefficient while the value one means that the bank under study is fully efficient. Therefore, as the value is closer to one, this indicates that the bank is considered as efficient bank, and the value is closer to zero, this means that the bank is inefficient.

To measure the level of using various factors of production in the best proportion in view of given technology and prices, cost line PP is drawn in the diagram 5.1 which should be the slope of unit isoquant y_0 y_0. The cost line PP represents the allocative efficient of combinations points of the bank under given prices of inputs. To measure the Allocative efficiency of the bank, the distance from origin to point D should be divided by the distance from origin to point B, a point located on unit isoquant y_0 y_0. Therefore, the allocative efficiency of the bank is

$$AE=OD/OB$$

The allocative efficiency also can take a value between zero and one. As the product is closer to one, this means the input combination is closer to allocative efficient point for given level of output. However, as the product is closer to one, this means the input combination for given level of output is closer to the most allocatively inefficient point. When the product equals zero or one, this means the bank is fully inefficient or efficient respectively.

Given the technology and input prices represented by the slope of PP, efficient operation in production (cost minimization) occurs at point A. In other words, the point A represents the point of economic efficiency (EE) or overall efficiency (OE) as at this point bank's output is technically and allocatively fully efficient. For the bank under study the economic efficiency is the ratio from distance from origin to point D, divided by the distance from origin to point C.

$$OE=OD/OC$$

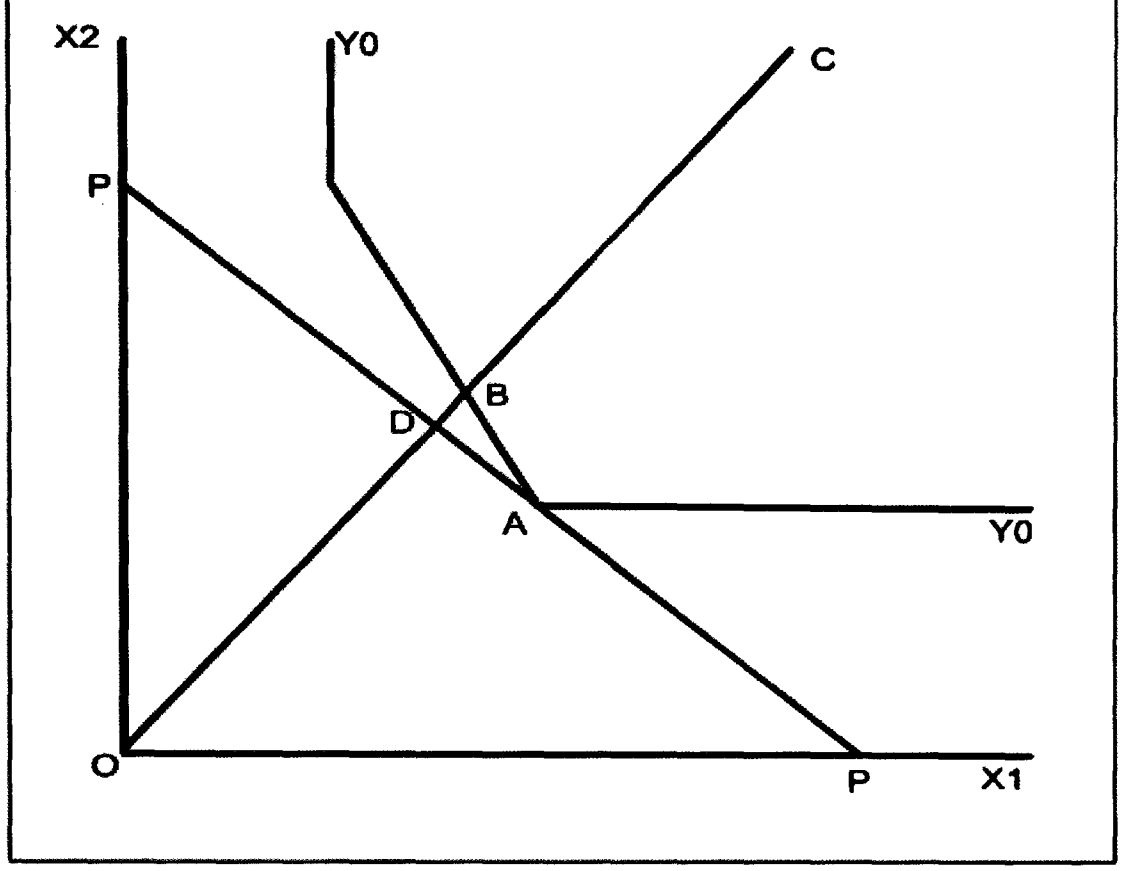
The overall efficiency can be calculated by the product of technical efficiency (TE) and allocative efficiency (AE).

$$OE=TE*AE$$

$$OE=OB/OC*OD/OB$$

$$OE=OD/OC$$

Diagram 5.1- Overall, Technical, Allocative, Efficiency

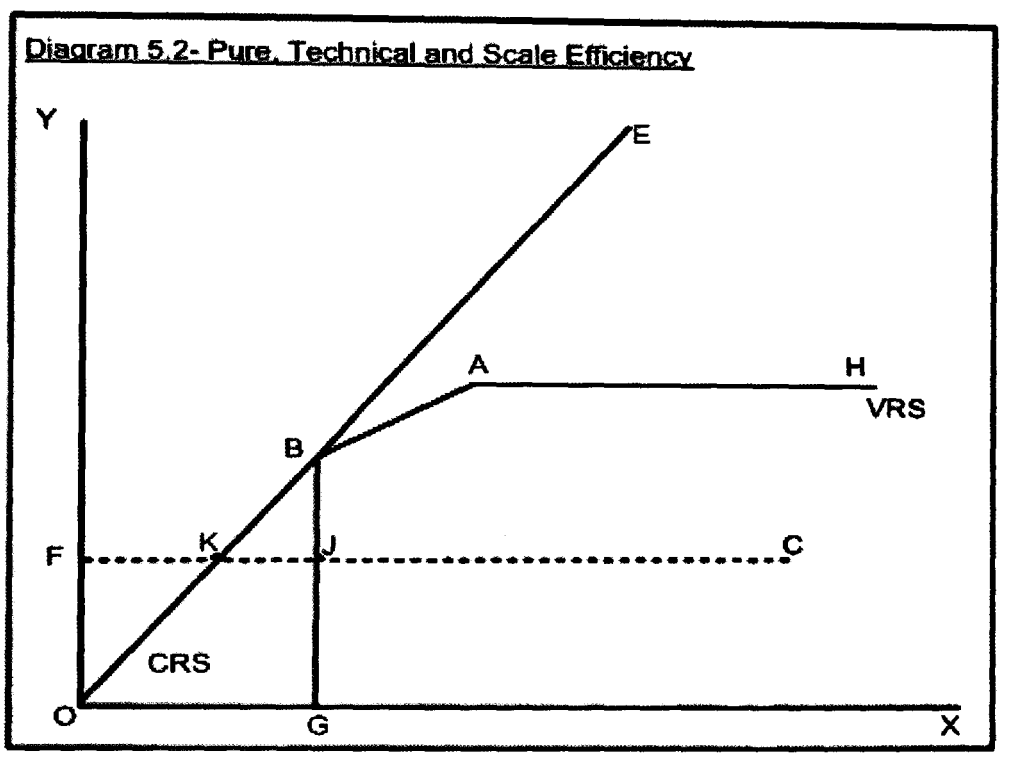


The economic efficiency can take a value from zero to one. As the value closer to one means that the level of output of the bank for given inputs is closer to economically efficient point and the value of one represents fully economically efficient point. On the other hand, as the value closer to zero means that the level of output of the bank for given inputs is closer to the most economically inefficient point for given combination of inputs. The value of zero represents fully economically inefficient point.

This ratio of economic efficiency represents the potential or efficient input to actual input usage. Farrell's original idea had an-input reducing focus and thus is usually termed input-oriented measure. Similarly, different concepts of efficiency can be explained by using output oriented technology measure. The input-oriented measure addresses the question: by how much can input quantities be proportionally reduced without changing the output quantity produced? In contrast, the output-oriented measure answers the question: by how much can output quantities be proportionally increased without changing the input quantities used? Under the assumption of constant return to scale (CRS) results of the technical efficiency measure are the same for both output-oriented and input-oriented methods (Fare and Lovell, 1978). The results, however, change under variable returns to scale (VRS).

As mentioned before, the overall efficiency (OE) or economic efficiency (EE) can further be decomposed into two major components: technical efficiency (TE) and allocative or price efficiency (AE). Hence OE measures the proportional reduction in costs if the bank is both allocatively and technically efficient. The AE by itself measures the proportional reduction in costs if the bank chooses the right mix of inputs given the price (the point of slope between the unit isoquant y_0y_0 and the cost line PP). The TE measures the proportional reduction in input usage that can be attained if the bank operates on the efficient frontier. A bank is technically efficient if it is operating on the unit isoquant y_0y_0. Therefore, bank c in diagram 5.1 is both allocatively and technically inefficient.

Diagram 5.2- Pure, Technical and Scale Efficiency



To account for variable returns to scale (VRS) situation, Banker, et al., (1984) recommended an extension of the CRS/ DEA model. The use of the CRS specification when not all DMU's (banks in present study) are operating at the optimal scale might affect measures of TE which includes scale efficiencies (SE). Therefore, the use of the VRS specification allows the calculation of technical efficiency without scale efficiency effects.

Overall technical efficiency can be further decomposed into scale efficiency (SE) and pure technical efficiency (PTE). With respect to the former, if a bank is not at the optimal long-run scale of operation, i.e. constant returns to scale, the bank can hypothetically produce its

current level of output with less input if constant return to scale is achieved. This is illustrated in diagram 5.2 for one input (x) and one output (y), and three points labelled A. B, and c. A constant return to scale production frontier is represented by OE, which measures the optimal level of output, that can be produced for given input levels. Banks either lie on or below the frontier. Thus for bank C, the measure of technical efficiency TE is:

TE=Fk / FC, which corresponds to OB / OC in the two input case in diagram 5.1. In order to measure scale efficiency, the constant returns to scale assumption is dropped and a variable returns to scale frontier is developed. In diagram 5.2 this is represented by GBAH (A and B being banks). The second measure of technical efficiency, pure technical efficiency (PTE), is determined relative to this variable returns to scale frontier. For observation C this is written as:

$$PTE = FJ / FC$$

From the measures of technical (TE) and pure technical (PTE) efficiency a measure of scale efficiency (SE) is derived as:

$$SE = TE / PTE = FK/FC*FC/FJ= FK / FJ$$

All of these measures will be bounded by zero and one. The scale efficiency measures the proportional reduction in input usage that is achieved if the bank is operating at constant returns to scale. For constant returns to scale the value SE equals 1, and all values less than 1 reflect scale inefficiency.

5.4.4 Justification for Using DEA and the Type of International Comparisons Efficiency

In this study, the DEA method is preferred to measure the efficiency of Libyan and GCC commercial banks. The main reason for using this approach, rather than a parametric approach, was that it was originally developed to measure efficiency in the public rather than private sectors (Berger and Humphrey, 1997). As mentioned earlier, due to the fact that the Libyan banking sector is still dominated by the public sector and also that the banking sector in GCC countries is still supported by the state, using the DEA method is suitable for Libyan and GCC banks. Furthermore, the use of parametric approach require the specification of cost function, and hence data of input prices. Unfortunately, the prices

of inputs and outputs related to public and private Libyan banking sector may not be available or otherwise inaccurate in Libya. For example, the data on the costs of the labour input is available for Libyan banks. However, the data on the number of employees is not.

As for the type of international comparison, Berger (2007) has mentioned three types of comparison as follow:

1. Comparisons of the efficiencies of banks in different countries, with all banks measured against a common frontier.

2. Comparisons of the efficiencies of banks in different countries, with banks from each country measured against their own country-specific frontier.

3. Comparisons of the efficiencies of foreign-owned versus domestically owned banks within the same country, with both types of banks measured against the same country-specific frontier.

The first and second types of international comparison will be used in this study. However, the third type of international comparison which is related to comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation-specific frontier -was excluded since it included foreign banks as discussed later. According to Berger, (2007), international comparison types have advantages and disadvantages so the first and second types will be used to utilize any advantages and avoid any disadvantages of each other. The first and second types are the best to achieve the aim of the study. As mentioned by Berger (2007), there was difficulty to use the first type, Common Efficient Frontier (CEF), like different economic environment in different nations. For example, national differences in regulations, legal system, and financial market development. However, it is still worth using the first type when the economic environment of countries seems to be very similar like Libya and GCC. The CEF was used in several previous studies since 1990s. For example, Dietsch and Lozano-Vivas (2000), Maudos et al (2002), and Kwan (2003) . Other studies compare some of the transition nations of Eastern Europe to a common efficient frontier (e.g., Fries and Taci, 2005; Rossi et al, 2005; Yildirim and Philippatos, 2007).

Berger (2007) criticised the second type, National specific Frontier (NSF) that cannot be used to draw any conclusions about whether banks in one nation are more efficient than those in other nations because they are measured against different frontiers. In this study.

the second type will be used to check the trend of efficiency across a period of time to each country (Libya and GCC countries) before and after joining the WTO (dependents on the situation of country and its date of joining to the WTO during the period of study). This will be different than the aim of using (NSF) mentioned by Berger (2007) in international comparison of efficiency. The NSF was used in several previous studies especially after 1997 in different countries (Berger, 2007). For example, in Australia, (Otchere and Chan. 2003; Sturm and Williams, 2004) and Portugal (e.g., Barros and Borges, 2004), and to developing nations like South Korea (e.g., Gilbert and Wilson, 1998), Pakistan (e.g., Bonaccorsi di Patti and Hardy, 2005), Poland (Havrylchyk, 2006), Croatia (Kraft et al, 2006), Argentina (e.g., Delfino, 2003; Berger et al, 2005, Hungary (Hasan and Marton, 2003), Malaysia (Matthews and Ismail, 2006), and Thailand (e.g., Leightner and Lovell, 1998; Chantapong, 2005).

5.4.5 Definition of the sample and Data Sources

The geographical coverage of this study is as follows: Libya, Saudi Arabia, Kuwait, United Arab Emirates, Oman, Bahrain, and Qatar. The choice of the above countries is based on the nature of economies of these countries. All of them are classified as petroleum countries and the banking sectors in these countries are still supported by the government in direct or indirect way. Data used in this study are collected from balance sheets and income statements of banks, their web pages in the internet, annual central banks reports and also from the Bankscope database. Bankscope is the most important source of data on the bank's, income statements and balance sheets of the above countries. The Bankscope database produced by the Bureau van Dijk contains comprehensive information on 30,000 public and private banks worldwide for over 16 years. It can be used to research individual banks and find banks with specific profiles and analyse them. The database is updated monthly and the latest issue of the Bankscope database used in this study was in July 2009.

Bankscope data are supplemented with data and information from other sources like annual reports of banks and central banks. Each bank report includes detailed consolidated and/or unconsolidated balance sheet and income statement totalling up to 200 data items and 36 pre-calculated financial ratios for each bank. However, sometimes the data for several countries has not completed yet.

To achieve the aim of this chapter, the national efficiency of Libya and Gulf countries commercial banks were evaluated. Other banks like subsidiaries of foreign banks, specialised financial institutions, saving banks, central institutions, joint-venture banks were excluded. The reasons behind excluding these banks and including only the commercial banks in the sample were:

a) Commercial banks are operating as independent legal entities.
b) Including only commercial banks allows examining a more homogenous sample (commercial banks) in terms of services, and consequently inputs and outputs, enhancing further the comparability among countries.
c) The other types of banks (not domestic commercial banks like foreign banks) were excluded since their scope and location of business are highly restricted and their business is within the parent banks' strategy. Also, there are a number of measurement difficulties- for instance if foreign-owned banks receive unmeasured cross-subsidies from the home nation headquarters or may have sample-selection issues owing to the fact that institutions were often host-nation banks that may have been in relatively good or bad condition extant (Berger, 2007). Furthermore, the Libyan market has not completely opened yet to foreign banks. Also, the number of foreign banks in GCC countries is still limited compared to commercial banks. Furthermore, most foreign banks have operated in Gulf countries as subsidiary banks with restrictive entry requirements to the host country.
d) Specialised banks were excluded since the aim and structure of these banks are different than commercial banks. The specialised banks extend medium and long –term loans to certain industries and are funded by the government.
e) Regarding to Libyan banks data, the data of commercial banks are more accessible than data of specialised banks.
f) Also Islamic banks were excluded because they operate within the framework of Islamic shariah principles or Islamic law, where earning and paying of interest are strictly forbidden. To be included in the dataset in this study, banks had to meet two conditions: first, that financial information was available, and second, that according to DEA requirements, financial data do not have negative values (Mostafa, 2007a). However, only a very limited number of small banks were excluded from the sample for the reasons explained above. However, due to the lack of information or insufficient data in specific years, the number of banks in the sample may vary from year to year. It should be stated

that despite the problem outlined before, the sample contains the most important commercial banks in each country. It contains approximately the total assets in four countries (Saudi Arabia, Kuwait, Oman, Qatar, and United Arab Emirate) and around 75 % of total assets in the two remaining countries (Libya and Bahrain). Data were analysed for possible inconsistencies, reporting errors, missing values and outliers. The final sample consisted of 61 domestic commercial banks from seven countries over the period between 1999-2007 for a total of 2004 (bank year) observations. The number of banks from each country and the number of observations are shown in table 5.1. From Table 5.1 it is possible to notice that United Arab Emirate is by far the country with the highest number of banks in the sample, whereas Libya and Kuwait are the countries with the lowest number of banks over the period under study.

Table 5.1: Sample Used for the Empirical Analysis

	Total	Libya	Saudi Arabia	Kuwait	United Arab Emirate	Qatar	Bahrain	Oman
Number of commercial banks	61	6	9	6	15	7	10	8
Percentage	100%	9%	14.8	9%	24.6%	11.5%	16.4%	13.1%
Number of observations	2004	200	342	216	532	208	316	208
Observations by year								
1999	220	20	36	24	56	20	32	32
2000	224	20	36	24	60	20	36	28
2001	220	20	36	24	60	24	32	24
2002	216	24	36	24	60	24	28	20
2003	220	24	36	24	60	24	32	20
2004	224	24	36	24	60	24	36	20
2005	228	24	36	24	60	24	40	20
2006	220	24	36	24	56	20	40	20
2007	232	20	36	24	60	28	40	24

5.4.6 The sample size and estimation strategy:

It is noticed that DEA is sensitive to the number of variables. In other words, as the number of variables increases, the ability to discriminate between efficient and inefficient DMUs decreases. The more variables are added the greater becomes the chance that some inefficient DMU dominates in the added dimension and becomes efficient (Smith, 1997). Thus to protect the discriminatory power of DEA, the number of inputs and outputs should

be kept at a sensible level. It is noticed that there are no diagnostic checks for model misspecification in DEA method. This could result in choosing the wrong variables (Galagedera and Silvapulle, 2003) and (Mostafa, 2007a). DEA can be used with large or small sample and many examples can be found in the literature. The following are examples of DEA studies that used small samples: Avkiran (1999) with 16-19 observations, Oral and Yolan (1990) with 20 observations, Vassilogou and Giokas (1990) with 20 observations, Haag and Jaska (1995) with 14 observations, Giokas (1991) with 17 observations and Chang and Chiu (2006) with 26 observations, Al-Faraj et al, 2006) with 36 observations. The following are examples of DEA using large samples: Al-Muharami (2008) with 484 observations, Ariff and Can (2008) with 230 observations, Casu and Molyneux (2003) with 2120 observation.

Although there is no consensus of the appropriate sample size, several researchers like Avkiran (1999a) suggested a general rule that the product of inputs and outputs should be less than the sample size to discriminate between the efficient and inefficient banks. Dyson et al. (2001) suggested that the number of observations should be at least twice the product of the number of inputs and outputs. Avkiran (2002) suggests an additional rule of thumb-that a sample is large enough if the number of fully efficient DMUs is not more than one third of the sample. However, Raab and Lichty (2002) suggested another rule of thumb-the minimum number of DMUs should be greater than three times the number of inputs plus outputs. In this study, with a total of two inputs and two outputs, a good minimum set is 13 DMUs. According to this study, the sample contains 61 DMUs (banks) ranging from 6-15 banks/per country, and 2004 observations. Therefore, this study's sample size satisfies the requirement to run a robust analysis using (CEF and NSF). Given that the data is a pooled cross-section and time series, several possibilities arise within the evaluation of efficiency, using DEA. The first approach would be to compute a frontier for each nine period and to compare each of these cross-section results. This way, the frontier constructed each year and the efficiency of each bank is calculated to the frontier in each period. The second approach is to treat the panel as a single cross-section (each bank in each period considered as an independent observation), pooling all the 2004 observations together. With this approach, a single frontier is calculated, and the relative efficiency of each bank in each period is calculated in reference to this single frontier. It would be more suitable to test efficiency scores based on the first and the second approaches. In other

word, these approaches represent the practical procedures of the first and the second type (CEF and NSF) mentioned by Berger (2007).

5.4.7 Inputs and Outputs Variables

The most important step in using DEA to evaluate the relative efficiency of banks is the selection of appropriate inputs and outputs. This is a really complicated process since there is no consensus on the banking inputs or outputs. Hence, the efficiency scores may be sensitive to the choice of inputs and output variables (Mlima and Hjalmarsson, 2002).

To justify the choice of inputs and outputs, there are two approaches that have been used. The first approach is the intermediary approach that views banks as financial intermediaries whose primary business is to borrow funds from depositors and lend those funds to others for profit. In this approach loans represent outputs, whereas the various costs such as interest expenses, labour, capital, and operating costs represent inputs. The second approach is the production approach, which considers banks as institutions that use capital and labour to produce loans and deposit account services. Consequently, accounts and transactions represent the outputs for these banks, whereas labour, capital and operating costs represent their inputs (Yue, 1992). Berger et al (1997) recommend that the intermediation approach is superior since it is inclusive, and has the ability to capture the essence of financial institution. Also Avkiran (2000) argued that the intermediation approach is best suited for analysing bank efficiency since at the corporate level management aims to reduce total costs-a large proportion of which is due to interest expense and not just non-interest expenses. As mentioned before, DEA analysis is sensitive to the choice of variables. However, this is also the strong advantage of the techniques as it enables management to look at efficiency from different dimensions depending on the decision-making requirements (Al-Faraj et al, 2006).

Regarding Libya and Gulf countries, the intermediation approach is closely linked to the main objectives of the Libyan and Gulf commercial banks. Several studies use this approach like (Alwdan, 2005), (Al-Muharami, 2008), (Al-Faraj et al, 2006), (Ramanathan, 2007). Also, there are many studies that use the intermediate approach to select inputs and outputs in other countries (eg: Berger and Master, 1997; Yeh, 1996; Drake and Hall, 2003; Tsionas et al, 2003). It is noticed that intermediation approach is preferable since it normally includes interest expense, a large amount of any bank's entire cost (Berger and Humphrey,1991) .

Therefore, the selection of inputs and outputs in this study is based on intermediation approach. The bank's inputs are interest expenses (IE) and non interest expenses (OE). Interests expenses (IE) are the sum of interests paid on all liabilities and thus represent special commission expenses. Non-interest expenses (OE) include salaries and employees 'benefits, expenses associated with rents and premises, depreciation and other general and administrative expenses. The bank's outputs are net interest income (NII) and non interest income (OI). Net interest income is the difference among interest income and interest expense. Interest income is the sum of interest and fees gained on all bank's assets including special commission income and realised gains on investments. Non-interest income includes the income from source differ than interest. For instance, fees from services, exchange income, trading income, dividend income and other operating income.

(Avkiran, 1999a) argues that the above selected variables fall under the intermediation approach to modelling bank behaviour, where interest expense is a proxy for deposits and net interest income is a proxy of loans. Non-interest expense represents the resources expanded in converting deposits to loans and non interest income represents the fees charged for services other than interest income. Table 5.2 provides a brief further description of the data. All the variables are measured in million US$. It is noticed that there is a high degree of variation among variables. All of variables have their standard deviation greater than their means. A huge fluctuation of proxy for size such as total assets is also observed in many other banking efficiency studies such as Aly et al (1990), Khanam and Nghiem (2006),Casu and Molyneux (2003) .

Table 5.2: Descriptive statistics of bank inputs and outputs 1999-2007 for Libya and GCC (US$ Millions)

	Outputs		Inputs	
	NII	OI	IE	OE
Mean	183.7219	99.89877	190.1633	103.0437
St. deviation	241.1903	142.3375	280.7927	133.857

NII = Net interest income; OI = Other income; IE = Interest expenses; OE = Other expenses

5.5 The Empirical Results

To examine the validity of the DEA model specification, an isotonicity test (Avkiran, 1999) was done. An isotonicity test contains the calculation of all inter-correlations

between inputs and outputs to check whether increasing amounts of inputs guide to greater outputs. As positive inter-correlations were found, so the isotonicity test was satisfied and the inclusion of the inputs and outputs was justified. In order to check that the results are not too sensitive to the existence of outliers, the study followed a procedure used, by among others, Resti (1997). After solving the DEA problems using all the observations of the sample, all banks presenting efficiency score equal to one were deleted and DEA problems were solved again on the new sample. The correlation between the efficiency scores obtained on the original sample and on the reduced sample is an indicator of the strength of the results. The correlation coefficient was then calculated to examine the sensitivity to outliers and the results were satisfactory. The collected data were analysed using Professional Software (DEAP 2.1 Computer programme) developed by Tim Coelli (1996). This program is used to construct DEA frontiers for the calculation of technical and cost efficiencies.

The input minimisation DEA model was run with both constant return to scale (CRS) and variable return to scale (VRS) assumptions. The inputs minimisation or input-oriented DEA model used in this study provides outputs with minimum inputs consumption. According to input-oriented, the DEA efficiency scores are interpreted to show how much each bank could reduce the use of its inputs without reducing output if it were as technically efficient as the best practice bank. The opposite is output maximisation where the model estimates how much output can be increased given the current level of inputs.

Basically, the choice of orientation would not have a major effect on efficiency estimations since both approaches will construct the same frontier. Therefore, the same efficient DMUs (best performers) would be identified, although inefficient DMUs ranking may change (Casu and Molyneux, 2003). Most studies have tended to select an input orientated measure since quantities of input seems to be the primary decision variables. Therefore, in this study, an input-orientated approach was assumed.

In the context of DEA, there are two assumptions with respect to modelling banks behaviour, the constant return to scale (CRS) and variable return to scale (VRS).The former assumption (CRS) is a common assumption in DEA analysis. It is only valid when all decision making units (DMUs) or banks are operating at optimal scale. However, banks may not be operating at optimal scale since factors like imperfect competition, constrains to finance, exist. Also the (CRS) is more suitable with small samples. It compares each unit against all other units. The alternative assumption, variable returns to scale, compares

each unit only against other units of similar size, instead of against all other units. As such, an assumption of variable returns to scale is more suitable for large samples. These two assumptions have been used in this study to benefit from the advantages of each one.
The analysis of efficiency of Libyan and GCC banks will be run with/without Libya since the results obtained from the analysis including Libya in the sample are different to the results obtained in the existing literature. Also, two types of comparison will be used since these types of comparison are popular in the literature and to avoid any disadvantages of using each one separately.

The results of application of DEA using NSF and CEF for the efficiency of GCC with /without Libyan banks over the period 1999-2007 are presented in two subsections. The first section using (CEF) discusses the results to GCC countries with/without Libya. The second section using (NSF) will be used to discuss the results of GCC countries with Libya. Results based on input-oriented scale for two subsections are presented in this chapter. The results in more details will be included to the appendixes 1, 2 and 3.

5.5.1 Average efficiencies of GCC and Libya (CEF)

A sample- summary and country summary of the resulting efficiency scores of banks are presented in table 5.3, chart 5.1 and chart 5.2. Tables 1-7 show yearly average technical, pure technical and Scale efficiency of Libyan and GCC countries banks (see appendix 1).

Table 5.3: Sample with GCC countries and Libya

Overall Yearly average technical, pure technical and Scale efficiency

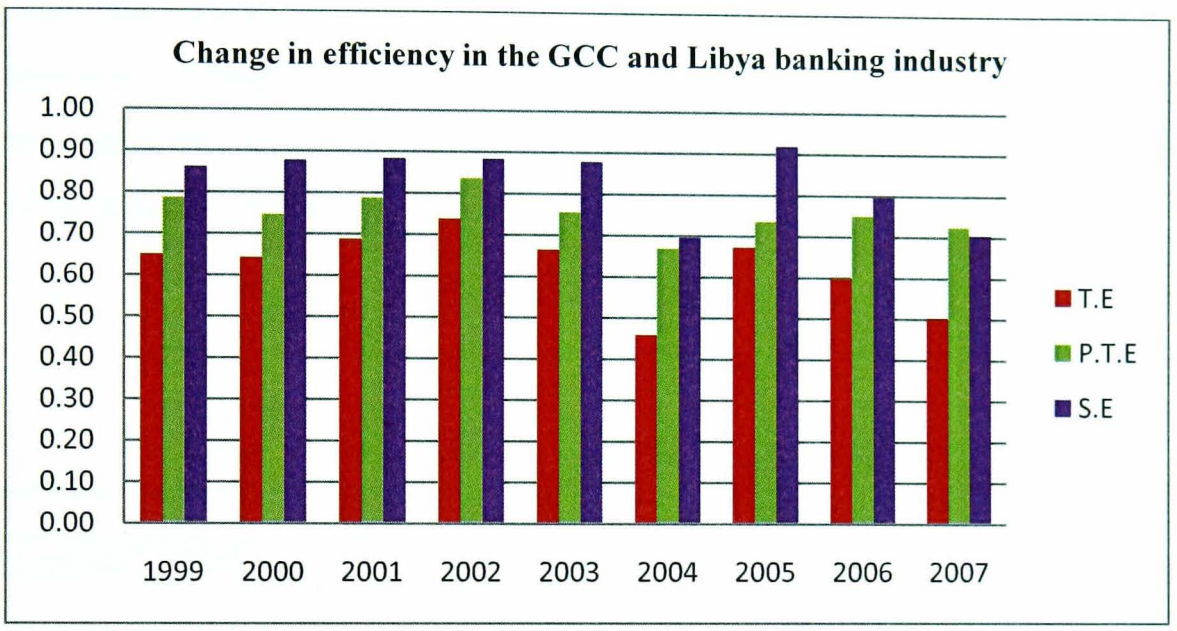
YEAR	TE (CRS scores)	P.T.E (VRS scores)	S.E
1999	0.65	0.79	0.86
2000	0.64	0.75	0.88
2001	0.69	0.79	0.88
2002	0.74	0.84	0.88
2003	0.67	0.76	0.88
2004	0.46	0.67	0.70
2005	0.67	0.74	0.92
2006	0.60	0.75	0.80
2007	0.50	0.73	0.71

Notes: TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency.**

The average efficiency scores have been calculated as geometric means of the DEA scores of individual banks. For example, the average CRS efficiency score of the banks in Saudi Arabia is calculated as the geometric mean of the CRS efficiency scores of the nine banks

of Saudi Arabia. The sample average is calculated as the geometric mean of the CRS, VRS and Scale efficiency scores of all the 61 banks. The results indicate that Mean efficiency scores under CRS and VRS range from 46-92 percent. The mean efficiency scores are the mean efficiencies of banks. The precise results obtained from annually pooled cross-section of efficiency analysis (technical pure technical and scale efficiency) for the entire sample (GCC and Libyan banks) as they are presented in chart 5.1.

Chart 5.1



Notes: TE=Technical efficiency, PTE=Pure technical efficiency, SE=Scale efficiency.

As can be seen from table 5.3 and also from chart 5.1, the efficiencies scores of the entire sample under CRS have fluctuated and there is no a clear indication that the entire score efficiencies of sample has been improving gradually over the sample period. The empirical results suggest that over the sample period, both PTE and SE measures show a great variation and the banking sectors of the sample did not achieve sustained efficiency gains. It is noticed that there was a sharp reduction in mean efficiency scores during the years, 2004 and 2007. The efficiency scores of these years were 46% and 50% respectively. The reason behind the drop in mean efficiency score in 2004 and 2007 might be the reductions in interest rates, which was implemented by the Gulf countries to follow the drop in world interest rate. The GCC fix their currencies to US$. They reduced their interest rate to keep the stability of their currencies (AMF, 2008) and (AMF, 2005).The reduction in interest rate has affected interest income. Therefore, the efficiency has been affected. When VRS is assumed the average efficiency scores seems to be higher than the case of the CRS assumption and, as expected, a greater number of banks seem efficient under the VRS assumption (Banker et al., 1984). It is noticed that all efficiency scores under VRS are

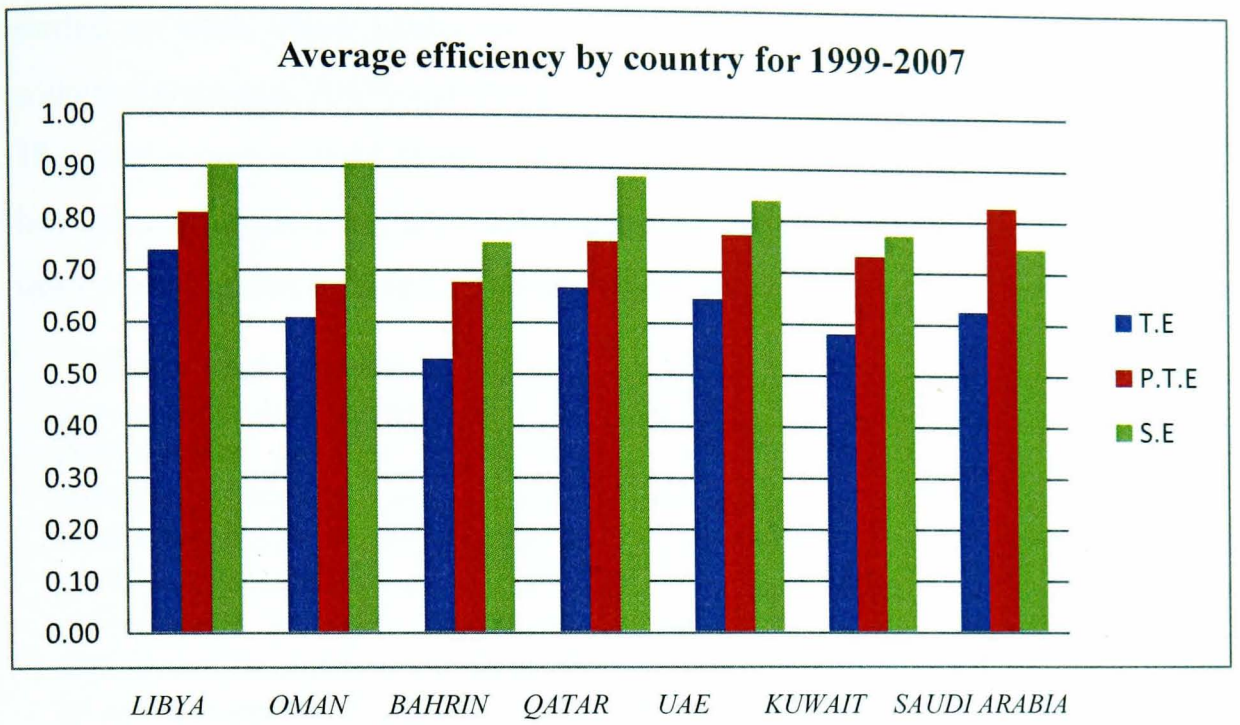
larger than efficiency scores under CRS including the years 2004 and 2007. However, the score of efficiencies of these years were still lower than other score efficiencies over the sample period. Furthermore, there is no clear evidence that efficiency score steadily increased over the period of study. There were many changes and fluctuations under the two assumptions over the period of study. The correlation coefficient between the efficiency ranking derived from CRS and VRS analyses is 0.86. The positive and strong correlation indicates that the rank of each bank derived from applying the two approaches is similar. This implies that the choice of methodology has no significant impact on the estimated mean efficiency scores. Regarding the efficiency scores by countries, chart 2 illustrate banks average overall technical, pure technical and scale efficiency for 1999-2007 of Libyan and GCC banks.

Table.5.4: Average efficiency by country for the period 1999-2007

Country	TE(CRS scores)	PTE(VRS scores)	SE
Saudi Arabia	0.63	0.83	0.75
Kuwait	0.58	0.73	0.77
UAE	0.65	0.77	0.84
Qatar	0.67	0.76	0.88
Bahrain	0.53	0.68	0.76
Oman	0.61	0.67	0.91
Libya	0.74	0.81	0.90

Notes: TE=Technical efficiency, PTE=Pure technical efficiency; CRS=Constant Return to Scale, VRS=Variable return to scale. SE=Scale efficiency.

Chart 5.2



Notes: TE=Technical efficiency, PTE=Pure technical efficiency, SE=Scale efficiency.

When CRS or technical efficiency is considered, Libyan banks came in the first place (0.74). On the other hand, Bahrain banks came in the last place (0.53). Qatar banks came in the second place (0.67), UAE came in the third place (0.65), Saudi Arabia came in the fourth place (0.63), and Oman came in the fifth place and Kuwait in the sixth place (0.61).

When VRS or Pure technical efficiency is considered, Saudi Arabian banks came in the first place (0.83). On the other hand, Oman banks came in the last place (0.67). Libyan banks came in the second place (0.81), UAE banks came in the third place (0.77), Qatar banks came in the fourth place (0.76), and Kuwait banks came in the fifth place (0.73) and Bahrain banks came in the sixth place (0.68).

The results seem to be quite strange, especially to the case of Bahrain and Libya. Al-Muharami (2008) found in his study about the efficiency of GCC banks, Bahrain banks came in the first place. However, Al-Muharami (2008) used different sample of banks which contained commercial and Islamic banks. According to his study, the efficiency of Islamic banks is better than efficiency of commercial banks. This means the results obtained from the analysis is supported and not conflicted to previous literature.

Regarding to the Libyan great scores of efficiency banks, several comments can be made to evaluate before accepting these results:

a) Although, Libyan commercial banks have achieved some progress after private banks started to work, these banks are still backward relative to banks in many developing countries (Alwdan, 2005) and (Porter and Yergin, 2006).

b) The great scores of the Libyan banks efficiency relative to GCC might be justified by the fact that,. although, there are many similarities between Libya and GCC, there are several sides of differences between Libya and these countries.

> *" Banks that operate in different nations often face very different prudential supervisory and regulatory conditions that may affect their cost and profit performance, so they may be measured as being different distances from the common frontier on average for reasons totally unrelated to their competence in minimizing costs or maximizing profits. Similarly, measured efficiency differences could reflect differences in labour laws, usury ceilings, antitrust regulation and enforcement, or other legal conditions under which the banks function. As well, differences in market conditions, such as competition for inputs or outputs, quality of services provided, population density, financial market development, and so forth may help explain measured efficiency differences. Put another way, greater average efficiency for the banks of one nation relative those of another nation measured against a common frontier might primarily reflect any or all of these differences in the economic environments, rather than differences in how efficiently the institutions are operated"(Berger,2007,P.123).*

c) The regulations and the rules of the Libyan banking sector prohibit to any person to keep his salary and benefits out of the public banks. In other words, this situation represents as a kind of compulsory deposit. For this reasons, the analysis will be repeated without Libya in this chapter. Also, the determinants of banks efficiencies, which might affect the banks efficiencies will be analysed in the next chapter.

d) The bank efficiency which gained from the analysis (income efficiency) means one side or one diminution. However, there are other dimensions of bank efficiency. For example, technical efficiency, cost efficiency and profit efficiency. Due to the fact that the data of Libyan and GCC banks is limited, it is difficult to measure the other sort of efficiency.

When VRS is assumed, there were significant changes in the ranking of countries. The banks in Saudi banks came in the first place (0.83). On the other hand, Oman banks came in the last place (0.76) instead of Bahrain banks in the previous analysis under CRS. Libya came in the second place (0.81).UAE banks came in the third place (0.77), Qatar banks came in the fourth place (0.76), Kuwait banks came in the fifth place (0.73), and Bahrain came in sixth place (0.68).

To avoid any shortcoming of (CEF) mentioned by Berger (2007), the analysis will be repeated without Libya (only GCC countries). Also, the efficiency of countries will be assessed separately using National Specific Frontier (NSF).

5.5.2 Average efficiencies of GCC (CEF)

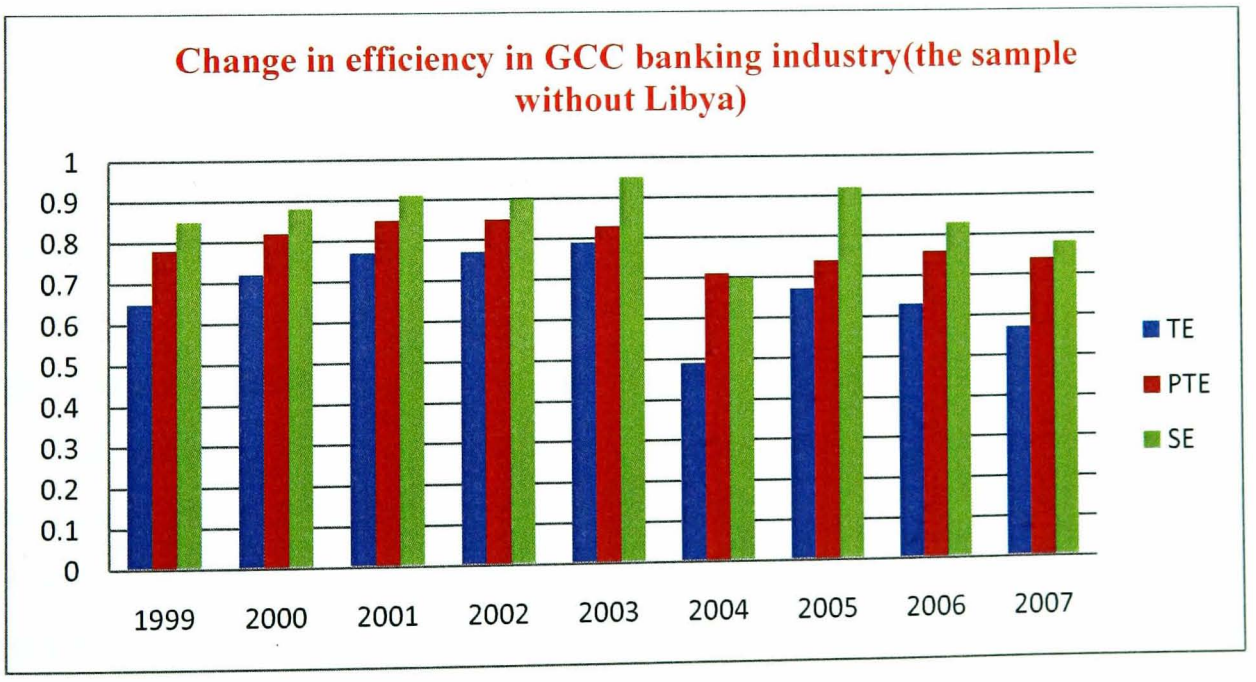
A sample- summary (without Libya) and country summary of the resulting efficiency scores of banks in GCC banks are presented in table 5.5-5.6, chart 5.3 and chart 5.4.Also Yearly average technical, pure technical and Scale efficiency of GCC countries banks are presented in tables 1-6 and also charts 1-6 (see appendix 2).

Table 5.5: Yearly average technical, pure technical and Scale efficiency in GCC countries(the sample without Libya)

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SCALE
1999	0.65	0.78	0.85
2000	0.72	0.82	0.88
2001	0.77	0.85	0.91
2002	0.77	0.85	0.90
2003	0.79	0.83	0.95
2004	0.49	0.71	0.70
2005	0.67	0.74	0.92
2006	0.63	0.76	0.83
2007	0.57	0.74	0.78

*TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency.***

Chart 5.3:



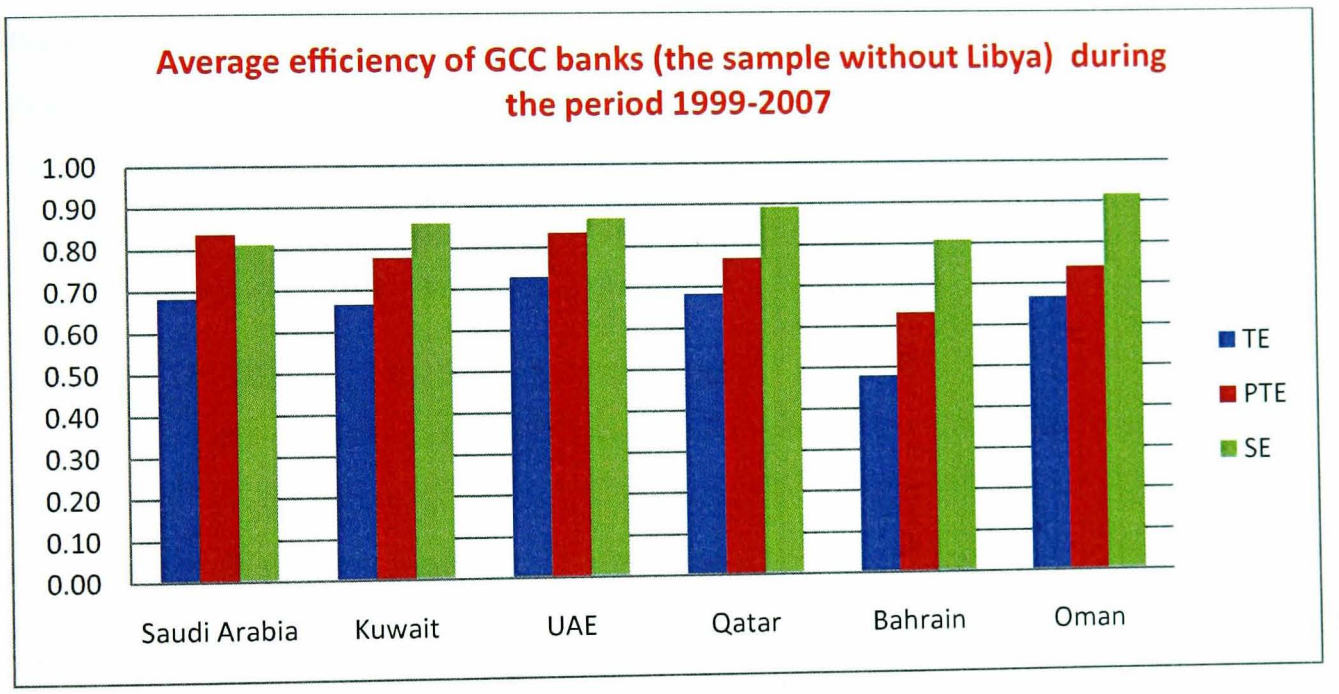
TE =Technical efficiency, PTE=Pure technical efficiency, SE=Scale efficiency.

Table 5-6: Average efficiency by country for the period 1999-2007

Country	TE(CRS scores)	PTE(VRS scores)	SE
Saudi Arabia	0.68	0.84	0.81
Kuwait	0.67	0.78	0.86
UAE	0.73	0.83	0.87
Qatar	0.68	0.77	0.89
Bahrain	0.48	0.63	0.81
Oman	0.67	0.74	0.92

*TE=**Technical efficiency**, PTE=**Pure technical efficiency**;, CRS=**Constant Return to Scale**, VRS=**Variable return to scale**. SE=**Scale efficiency***

Chart 5.4



TE=Technical efficiency, PTE=Pure technical efficiency, SE=Scale efficiency.

It is noticed that there are differences between the results with/without Libya. In every case with the exception of one country (Bahrain), the efficiency scores are larger than the corresponding figure with Libya. However, the correlation between the efficiency scores from the two samples (with and without Libya) under CRS and VRS were 92% and 79% respectively. The coefficient correlation between the efficiency ranking derived from CRS and VRS analyses is .91. As mentioned before, the positive and strong correlation indicates that the rank of each bank derived from applying the two assumptions is similar. This implies that the choice of methodology has no significant impact on the estimated mean efficiency scores.

As can be seen from table 5.4 and also chart 5.3 which show the efficiencies scores of the GCC countries under CRS, there is a clear trend that entire score efficiencies of GCC countries have been improving over period 1999-2003. However, after 2003, the efficiency scores have roughly fluctuated. It is noticed that there was sharp reduce in mean efficiency scores during the years 2004 and 2007. The efficiency scores of these years were 49% and 57% respectively. As mentioned before the reason behind the drop in mean efficiency score in 2004 and 2007 might be the reducing in interest rate which was done by the Gulf countries to follow the drop in world interest rate.

When VRS is assumed the average efficiency scores seems higher than those CRS assumption and, as expected, a greater number of banks seem efficient under the VRS assumption. There was a clear trend that the bank efficiency was improving during the period 1999-2002. However, the efficiency scores have fluctuated during the period 2003-2007. It is noticed that all efficiency scores sample has raised including the years 2004 and 2007. However, the score of efficiencies of these years were still lower related to other score efficiencies over the sample period.

Regarding the efficiency scores by countries, table 1-6 in appendix 2 and chart number 1-6 illustrate banks average overall technical, pure technical and scale efficiency for 1999-2007 to GCC countries banks. When CRS or technical efficiency is considered, the banks of UAE came in the first place (0.73). On the other hand, Bahrain banks came in the last place (0.48). The rank of Bahrain banks is similar to previous analysis. It is noticed that efficiency of Bahrain banks might be significantly reduced compared to other banks in GCC countries or the other banks in GCC countries have improved compared to Bahrain banks. Qatar and Saudi banks came in the second place (0.68), and Oman and Kuwait came in the third place (0.67).

When VRS is assumed, there were significant changes in the rank of countries under this assumption. The banks in Saudi banks came in the first place (0.84). On the other hand, Bahrain banks came in the last place (0.63). UAE banks came in the second place (0.83), Kuwait banks came in the third place (0.78), Qatar banks came in the fourth place (0.77) and Oman banks came in the fifth place (0.74).

It is noticed that the efficiency scores of GCC banks as a block had not been improving under the two assumptions (CRS and VRS) over the entire period of study .The steady

increasing continued until the year 2002 and 2003 according to VRS and CRS assumptions respectively. After these years, there were fluctuations in score efficiencies.

This means that there is no clear evidence that the efficiency of GCC banks as block had improving steadily as these countries have become members in the WTO. All GCC have attended the WTO (except Saudi Arabia and Oman) before the starting point of the period of study in 1999. Table 5.7 below shows the date of accession of GCC to the WTO.

Table 5.7 Date of membership for GCC countries (the sample without Libya)

Country	Date of membership
Bahrain, Kingdom	1 January 1995
Kuwait	1 January 1995
Saudi Arabia	11 December 2005
United Arab Emirates	10 April 1996
Qatar	13 January 1996
Oman	9 November 2000

Source: (WTO, 2009)

5.6 Average efficiency of banks of GCC and Libyan banks (NSF)

To avoid any disadvantages of the previous analysis which mentioned by Berger (2007), the (NSF) was used in this chapter and will be complemented with panel data regression analysis in next chapter.

Regarding the efficiency scores by countries, table 1-7 in appendix 3 and chart number 5 illustrate banks average overall technical, pure technical and scale efficiency for 1999-2007 to Libya and GCC countries. When CRS or technical efficiency is considered, the banks of Oman came in the first place (0.84). On the other hand, Bahrain banks came in last place (0.28). The rank of Bahrain banks is still similar to previous analysis. Saudi banks came in the second place (0.78), Qatar banks came in the third place (0.77), Libyan banks came in the fourth place (0.70), Kuwait banks came in the fifth place (0.69), and UAE banks came in the sixth place (0.64).

When pure technical efficiency or VRS is assumed, there were few changes in the rank of countries under this assumption. Oman banks came in the first place (0.90), Bahrain banks of came in the last place (0.57), Kuwait banks came in the second place (0.86), Qatar and Saudi banks came in third place (0.84), UAE banks came in the fourth place (0.76), and Libya came in the fifth place (0.74).

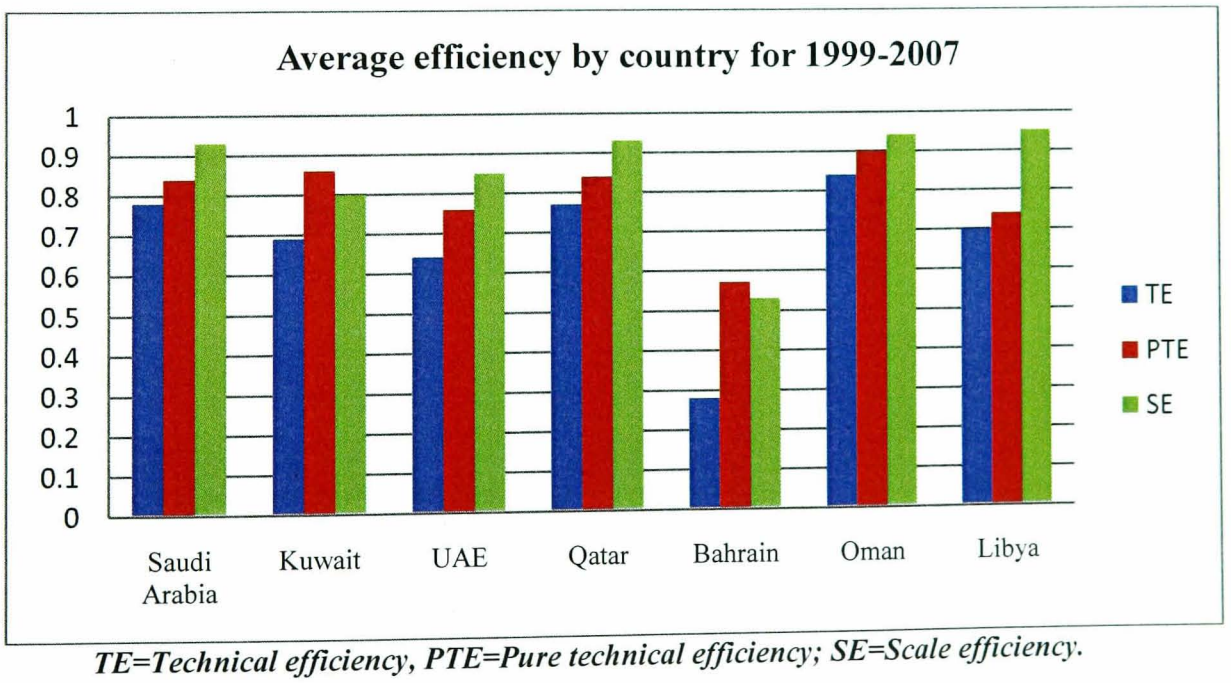
In general, the results of using CEF and NSF showed that there is no strong evidence or clear trend that joining the WTO by GCC countries had improved their efficiency over the study period. The efficiency might be improved compared to the previous period of recent study. However, the lack of available data before WTO establishment in 1995 could not confirm this claim. Also, using CEF showed that the Libyan banks efficiency had not improved significantly after 2005. This means that the Libyan bank efficiency was not improving after issuing the law number (1) of 2005 related to Libyan banking reform. However, using NSF gave enormous different results and showed that the bank efficiency of Libyan banks had improved after 2005. It is noticed that using NSF is more appropriate as observed by the previous literature related to Libya.

Table 5. 8: Average Technical, Pure Technical and Scale Efficiency For the Period 1999-2007

Country	TE(CRS scores)	PTE(VRS scores)	SE
Saudi Arabia	0.78	0.84	0.93
Kuwait	0.69	0.86	0.80
UAE	0.64	0.76	0.85
Qatar	0.77	0.84	0.93
Bahrain	0.28	0.57	0.53
Oman	0.84	0.90	0.94
Libya	0.70	0.74	0.95

TE=Technical efficiency, PTE=Pure technical efficiency; CRS=Constant Return to Scale, VRS=Variable return to scale. SE=Scale efficiency.

Chart 5.5



TE=Technical efficiency, PTE=Pure technical efficiency; SE=Scale efficiency.

5.7 Summary

This chapter aims at evaluating the level of efficiency of Libyan and Gulf commercial Banks over the period 1999-2007 (as an indicator to the ability of Libyan banks to compete with other banks when Libya becomes a full member of the WTO). The efficiency level was calculated using the Data Envelopment Analysis (DEA) technique and two types of comparison, Common Efficient Frontier (CEF) and National Specific Frontier (NSF). Surprisingly, for a sample inclusive of both Libyan and GCCs banks, results reveal that the mean efficiency score of the Libyan banking industry is not dissimilar to the GCC country's mean. Since the results are different from those obtained in previous literature and also to know the implications of WTO on GCC countries, the analysis was repeated without Libya. The first results type (CEF) was slightly different than the results including Libya. However, the second type (NSF) produced significantly different results. Also, the results show that there is no general trend in the efficiency of Gulf countries, indicating that it has not been improving since they joined the WTO (precisely during the period of study 1999-2007). Relating to impact of banking reform on Libyan banks efficiency, although, the results were ambiguous and depending on using CEF or NSF type, the results of NSF which is supported by previous literature showed that there was progress, therefore, efficiency was improved after the reform had started. To support the results and avoid the disadvantages of the first analysis, the results will be complemented with panel data regression model in the next chapter.

CHAPTER SIX
THE DETERMINANTS OF BANK EFFICIENCY: LITERATURE REVIEW AND A PANEL DATA STUDY FOR LIBYA AND GULF COUNTRIES

6.1 Introduction

This chapter follows from and extends the previous one where the efficiency of Libyan banks empirically evaluated by using Data Envelopment Analysis (DEA) method and compared to the efficiency of banks located in the Gulf Cooperation Council (GCC) which have already gained membership of the WTO. In this chapter, the determinants of efficiency of Libyan and GCC banks have been specified for nine years (over the period 1999-2007) to identify the expected effect of the WTO on Libyan banks. The model of this study follows the empirical literature on the determinants of banks efficiency by taking in to account the WTO as one of the factors that may influence banks efficiency. The chapter is divided in five sections. Section two reviews the existing literature about the factors influencing banks efficiency. In particular, the chapter attempts to shed some light on the determinants of efficiency in several developing and developed countries. Section three is devoted to the discussion of the data used and the empirical methodology employed. Section four discusses the results obtained from the empirical exercise. The final section concludes and summarises the main finding of the chapter and make some policy recommendations.

6.2 Literature review

This section provides a discussion of a sample of cross-country studies on bank efficiency as follows:

Jackson and Feethi (2000) investigated the performance of Turkish (TR) commercial banking sector by using DEA on a cross-section of 48 banks taken in 1998 as the first step. Then the determinants of efficiency were explored from a set of explanatory variables (bank size, number of branches, profitability, ownership and capital adequacy ratio). To examine the determinants of efficiency, the Tobit model was used. They found that larger and profitable banks are more likely to operate at higher levels of technical efficiency.

Also another finding reveals that the capital adequacy ratio has a statistically significant adverse impact on the performance of banks, which may reflect a risk-return trade off in the sector.

Casu and Molyneux (2003) applied non-parametric DEA approach to examine whether the productive efficiency of European banking systems has improved and converged towards a common European frontier between 1993 and 1997, following the process of EU legislative harmonisation. They also investigated the determinants of European bank efficiency using a Tobit regression model approach. Then they extended the established literature on the determinants of bank efficiency by taking into account the problem of the inherent dependency of DEA efficiency scores on each other when used in regression analysis. To deal with the dependency problem a bootstrapping technique is used. Overall, the findings suggest that since the EU's Single Market Programme (SMP) there has been slight improvement in bank efficiency levels, although there is little proof to suggest that these have converged. Efficiency differences across European banking markets appear to be mostly determined by country-specific factors. Also the findings suggested that the EU's SMP has not had a major influence in promoting a convergence of bank efficiency levels.

Maghyereh (2004) used Data Envelopment Analysis (DEA) to arrive at the efficiency scores for a panel data sample covering eight Jordanian commercial banks over the period 1984 to 2001. Jordan undertook major financial sector liberalization starting in the early 1990s. The effect of this reform on the efficiency of the banking sector was evaluated. Also the determinants of efficiency of the Jordanian banking sector were investigated by using second-stage of Panel Data Tobit model. The findings indicate that average efficiency score of Jordanian banks compares well with the efficiency score of banks in developed countries and the findings suggest that liberalization program was followed by an observable increase in efficiency. Another finding of the study is that large banks achieved faster productivity growth during the liberalization. The study has crucial implications such as guiding the government policy regarding deregulation and liberalization.

Stavárek (2004) used DEA to evaluate commercial banks' efficiency in the Visegrad region before joining the EU and also to consider differences in efficiency across the

countries. By employing DEA, he analyzed which of the banking sectors is the most efficient and whether there has been an improvement in banking intermediation efficiency from 1999-2002. Incorporating censored Tobit regression analysis. He also tried to detect whether the cross-country differences should be explained by country specific environmental factors or internal variables such as profitability, size or foreign ownership. Overall, the findings suggest that since 1999 there has been, with the exception of Hungary, no improvement in efficiency, and its actual level reaches preferably moderate levels. Efficiency differences among Visegrad banks seem to be in the first place determined by country specific factors, in spite of globalization, integration, harmonization and other similar developments and processes.

Shanmugam and Das (2004).The study contributes to the banking efficiency literature by measuring technical efficiency of banks in four different ownership groups in India during the reform period, 1992–1999. It employs the stochastic frontier function methodology for panel data. The main results indicate that the technical efficiency of raising interest margin is varied widely across sample banks and is time-invariant. Even though several reform measures have been introduced since 1992, they have not so far helped the banks in raising their interest margin. However, the banking industry shows a progress in terms of efficiency of raising non-interest income, investments and credits. The efficiency improvement is considerable in the case of investments in all banks, particularly in private banks. Thus, the result matches with the economic growth objective of the reform measure. However, there are still larger gaps between the actual and potential performances of banks.

Khanam and Nghiem (2006) examined the efficiency of commercial banks in Bangladesh using data envelopment analysis (DEA). The data consist of accounting figures of 43 banks **in** 2003. The results show that on average, the overall technical efficiency of Bangladesh commercial banks is 67 percent, which is below the average estimated by international studies reviewed by Berger and Humphrey (1997). On average, the technical efficiency score of banks in the sample is 84 percent (income based model) and 80 percent (user-cost model), which was consistent with results from a parametric approach call parametric linear programming. Results of the second-stage regressions support the hypothesis that larger and/or more powerful banks are likely to be more efficient owing to advanced technology and superior management. The market share (proxy by share of total

loans) had a positive and significant influence on technical efficiency. However, the evidence on relationship between foreign ownership on bank efficiency is not significant for the income-based model.

Budd (2006) in his study on the efficiency of UAE banking sector, sets out to answer a number of important questions. Are the record profits gained by local UAE banks consistent with best-practice or do they hide inefficiencies? Do banks with the largest profit achieve the greatest efficiency scores? Has productivity improved during the period of rapid asset and profitability growth? Are profits concealing underlying productivity inefficiencies? Finally, are efficiency performance measures explained by structural factors? The study has created a data set that enables important research into the relative efficiency of UAE banks, particularly during a period of rapid growth in assets and profitability. In this study efficiency measures for 16 local, non-Islamic, UAE commercial banks between the years 1998 to 2004 are examined using the non-parametric approach of Data Envelopment Analysis. Furthermore, the study applies DEA with Tobit models to detect any effects of various explanatory variables on efficiency. The study used a unique panel data set covering the period 1998-2004, to evaluate UAE banks efficiency using five levels-based efficiency measures and five change based productivity measures. In spite of overall growing profits in the banking sector, results reveal evidence of cost inefficiency due to over-banking (bigger banks dominate customer deposit market and branch numbers and services) and market concentration in the banking sector as a whole and numerous banks in particular.

Souza et al (2006) used output oriented Data Envelopment Analysis (DEA) measures of technical efficiency to calculate the significance of technical effects for Brazilian banks. The intermediation approach is used and for each measure of efficiency several statistical models are considered as modeling tools to assess the significance of technical effects bank nature, bank type, bank size, bank control, bank origin, and nonperforming loans. Efficiency measurements are computed for a multiple output (securities, loans, and demand deposits) and for a combined measure of output. In this analysis bank outputs investment security, total loans and demand deposits are analyzed combined in a single measure and as a multiple output vector to produce different DEA measurements of efficiency based on inputs labor, loanable funds, and stock of physical capital. The intermediation approach is followed and for each measure of efficiency several statistical

models are considered as modeling tools to assess the significance of technical effects bank nature, bank type, bank size, bank control, bank origin, and nonperforming loans. The latter is a measure of bank risk. The Tobit method was chosen to specify the factors which influence bank efficiency. The response providing both the most informative content regarding the significance of factors and the best fit to the data is an efficiency measure derived from a multiple input – multiple output product oriented DEA computed under the assumption of variable returns to scale. Bank origin and bank type are the only significant effects. The main empirical results are that domestic banks outperform foreign banks and that all levels of bank type outperform retail with no other pair wise contrasts being significant. None of the models show important association of the response with nonperforming loans.

Havrylchyk (2006) investigated the efficiency of the Polish banking industry between 1997 and 2001 by using DEA. According to him, the DEA was used since it allows distinguishing between five different types of efficiency such as cost, allocative, technical, pure technical, and scale. Furthermore, Havrylchyk (2006) performed a number of parametric and non parametric tests to investigate whether domestic and foreign banks come from the same population. In other words, whether they operated in the same environment; these tests are especially important for efficiency studies in order to determine whether to construct separate or common frontiers for domestic and foreign banks. Finally, he attempted to shed light on the determinants of efficiency by using the Tobit model. The findings indicate that bank efficiency has not improved during the years analysed, while Greenfield foreign banks (foreign bank subsidiaries that have been newly established by parent banks), have achieved higher levels of efficiency than both domestic and takeover banks, while foreign banks that acquired domestic institutions have not succeeded in enhancing their efficiency.

Burki and Niazi (2006) analysed the implications of financial reforms upon banking efficiency of domestic and foreign banks in Pakistan by using 40 banks over the period 1991-2000. They used DEA in the first step. The results suggest that banking efficiency fell during the initial reform period when banks adjusted to enhanced competition, but increased in more advanced stages of reform. Although, in general foreign and private banks show superior efficiency and factor productivity than state-owned banks, the relative performance of foreign banks get worse after the consolidation stage of the financial

reforms is over. To study the impact of banks size, interest income to earning assets, loans to deposit ratio, foreign and private ownership on the estimated efficiency scores, they used Tobit model. They show the importance of the link between bank size, asset quality and bank branches with efficiency indexes, and also they note that for every 10% increase in the share of nonperforming to total loans banking efficiency decreases by 6% to 10%.

Chang and Chiu (2006) used a two-stage approach, data envelopment analysis (DEA) and Tobit regression, to investigate the bank efficiency index and efficiency effect included in to account credit and market risk. They used the DEA method in the first stage to estimate bank cost efficiency and the Tobit regression model in the second stage to estimate efficiency effects. The study used data of 26 Taiwanese commercial banks for the five-year period from 1996 to 2000. The empirical findings were summarized as follows: first, findings indicate that risk factors impact bank efficiency. Banks with a higher degree of nonperforming loans or value at risk will see efficiency decrease by incorporating account risk. Second, there is no important difference with the bank efficiency index taking only credit risk or market risk into consideration, but there are significant differences on the bank efficiency index in situations without risk or with credit and/or market risks. Finally, the study notes that different bank efficiency indexes calculated according to different risks are affected by different factors.

Drake et al. (2006) evaluated the relative technical efficiency of institutions operating in the Hong Kong banking market that was significantly affected by a range of external/environmental factors (mainly macroeconomic and housing market factors) outside the control of the institutions or management in previous years. These environmental factors are specifically included into the efficiency analysis using the innovative slacks-based for DEA which specifically incorporates slacks in the objective function, and second stage Tobit regression approach advocated by Fried et al. (1999).The findings indicate: high levels of technical inefficiency for many institutions; significant variations in efficiency levels and trends across size groups and banking sectors; and also differential impacts of environmental factors on different size groups and financial sectors. Surprisingly, the accession of Hong Kong to the Peoples Republic of China, episodes of financial deregulation, and the 1997/1998 South East Asian crisis do not seem to have had a significant independent impact on relative efficiency. Yet, the results suggest that the

impact of the last-mentioned may have come via the adverse developments in the macro economy and in the housing market.

Pasiouras et al. (2007) used DEA to examine the technical, allocative and cost efficiency of 16 Greek cooperative banks over the period 2000-2004. Following the intermediation approach, DEA was used to estimate the technical, allocative and cost efficiency for each bank in the sample. Then, the Tobit regression was used to determine the impact of internal and external factors on banks' efficiency. The results of DEA show that Greek cooperative banks could improve their cost efficiency by 17.7 percent on average or in other words they could have used only 82.3 percent of the resources actually employed (i.e. inputs) to produce the same level of outputs. Furthermore, the dominant source of cost inefficiency is allocative rather than technical. The results of Tobit regression indicate that size has a positive impact on all measures of efficiency. However, the impact of capitalization, branches and ATMs depends on the efficiency measure and whether the market conditions were controlled or not. He found that well-capitalized cooperative banks were more technically efficient although capitalization was not related to allocative and cost efficiency. Larger banks were more technical, allocative and cost efficient ones. Banks with a broader ATM network and less branches appeared to be more technical and cost efficient. Gross Domestic Product per capita has a negative and meaningful impact on all measures of efficiency, while unemployment rate has also a negative and significant impact on technical and cost efficiency although not on allocative efficiency. Finally, banks working in regions with higher disposal income of households in relation to total disposal income of households in Greece are more efficient in terms of allocative and cost efficiency.

Sufian et al (2007) used DEA to examine the effect of mergers and acquisitions on Singaporean domestic banking groups' efficiency. The sample period is divided into three sub-periods: premerger, during merger, and post merger periods, to compare the difference in Singaporean banking groups' mean efficiency level during all periods. The findings suggest that the mergers have resulted in a higher post-merger mean overall efficiency of Singaporean banking groups. However, from the scale efficiency perspective, the findings do not support further mergers in the Singaporean banking sector. They find mixed evidence of the efficiency characteristics of the acquirers and targets banks. Therefore, the

findings do not fully support the hypothesis that a more (less) efficient bank becomes the acquirer (target). In most cases, the findings further confirm the hypothesis that the acquiring bank's mean overall efficiency improves (deteriorates) post-merger resulted from the merger with a more (less) efficient bank. Tobit regression model was employed to determine factors affecting bank performance .The results suggest that more efficient banks tend to maintain higher level of capitalization, post higher profits and incur higher overhead costs.

Hahn (2007) examined the performance of the Austrian banks which have participated in a domestic in-market merger operation since 1996. For this purpose he applied the Data Envelopment Analysis (DEA) methodology in combination with a Tobit model. The dataset used comprises an unbalanced panel of data of about 800 Austrian banks ranging over 1996 to 2002. Overall, the DEA results indicate that the average efficiency level of the Austrian banks is low and shows no improvement over the years under study. Also, he found evidence supporting the view that banks which participated in domestic in market merger operations achieved a higher productive efficiency level than banks which did not participate in such operations. The analysis also indicates that the merger gains remain important over a longer period of time (more than five years) but show a minor tendency to level off.

Pasiouras (2008a) used DEA to investigate the technical and scale efficiency of the Greek commercial banking industry. The sample ranges between 12 and 18 banks per year and consists of 78 observations in tota over the period 2000–2004. For efficiency estimation, five models were proposed. Four models were based on the intermediation approach whereas one was on the profit orientation approach. In order to investigate the determinants of banks efficiency, Tobit method was used to regress the efficiency scores obtained from DEA on several variables reflecting bank financial characteristics and strategic decisions. He constructed an econometric model with technical and scale efficiency as dependent variables to assess the effect of two groups of factors on efficiency. First, he analysed the influence of various financial characteristics bank. The following variables were examined: equity to assets (EQAS), return on average assets (ROAA), loan to assets (LOANS), and market power (POWER) as measured by the relative size of bank (i.e. market share in terms of assets). Second, he examined the influence of bank's strategies in terms of investments in technology (i.e. ATMs and

branches) and internationalization of operations. He included the number of ATMs (ATMs), the number of branches (BRANCH), and two dummy variables indicating whether banks are offering their services abroad through subsidiaries (SUB ABR, that takes the value of 1 if yes and 0 otherwise) or branches (BR ABR, that takes the value of 1 if yes and 0 otherwise). The main results indicate that inclusion of off-balance sheet items in the outputs does not have any significant impact on the efficiency scores, while the inclusion of loan loss provisions in the inputs contributes to higher efficiency scores. Also, there are slight differences between the efficiency scores obtained through the profit-oriented and the intermediation approaches. Banks that have expanded their operations abroad appear to be more technically efficient than those operating only at a national level. The scores obtained from the profit-oriented model and the full intermediation model over banks' financial characteristics was regressed with variables reflecting strategic decisions. Capitalization, loan activity and market share in terms of total assets are statistically meaningful and positively related to the efficiency measures in all cases. Also, the number of branches has a positive and important impact on efficiency, but the number of ATMs does not. The results are inclusive variables indicating whether the banks are operating in a foreign country through subsidiaries or branches.

Ariff and Can (2008) used a non-parametric technique to examine the cost and profit efficiency of 28 Chinese commercial banks from 1995 to 2004. They also investigated the influence of ownership type, size, risk profile, profitability and key environmental changes on the bank efficiency using a Tobit regression. Consistent with the previous literature, they find that profit efficiency levels are well below those of cost efficiency. This suggests that the major inefficiencies are on the revenue side. The main findings are consistent with prior evidence in the existing literature on bank efficiency and ownership. Firstly, profit efficiency levels of the banks analysed are well below those of cost efficiency, and alternative profit efficiency levels lower than those of standard profit efficiency. Secondly, joint-stock commercial banks on average are more cost and profit-efficient than state-owned commercial banks. The findings suggest the need for speedier deregulation and banking reforms to open the banking market, improving risk management, minimizing the government's capital subsidy and diversifying ownership of Chinese banks.

Aikaeli (2008) used DEA model to evaluate the efficiency of the largest part of financial system in Tanzania, the banking sector. Secondary time series data are used in empirical

analysis of banks' efficiency. Non-parametric Data Envelopment Analysis (DEA) model is used to estimate technical and scale efficiency, while x-inefficiency is using multi-product translog cost function. In terms of technical efficiency, foreign banks ranked the highest, followed by small banks and then large domestic banks; while regarding scale efficiency, small banks ranked the highest followed by international banks and then large domestic banks. Evidence from the findings indicates that x-inefficiency in banks was the outcome of inadequate fixed capital, poor labour compensation, less management capacity as banks expanded, and the overwhelming accumulation of excess liquid assets. Though banks were not fully efficient in all respects, they performed fairly well during the 1998-2004 period. Nevertheless, the major conclusions show that banks still have reasons to improve their performance.

Gaganis and Pasiouras (2009) used a sample of 18 foreign and 21 domestic banks operating in Greece during 1999–2004 to examine the impact of ownership on efficiency. They estimated an input oriented DEA model under variable returns to scale with inputs and outputs selected on the basis of a profit-oriented approach. The findings indicate an average pure technical efficiency equal to 0.7325 showing that the banks in sample could improve their efficiency by 26.75%. Over the same period, scale efficiency was equal to 0.6830. The comparison of the efficiency scores by group of ownership shows that domestic banks have higher pure technical efficiency and lower scale efficiency; however, the differences are not statistically significant. A DEA window-analysis supports the results of the cross-section estimations. Also they estimated a Tobit regression model using pure technical efficiency as dependent variable and ownership as independent variable. They found no evidence to support the argument that ownership has a statistically significant impact on efficiency.

Sufian (2009 b) examined for the first time the efficiency of Malaysian banking sector around the Asian financial crisis 1997.The efficiency of individual banks were evaluated by using the Data Envelopment Analysis (DEA) approach. To investigate the strength of the estimated efficiency scores under various alternatives and to differentiate how efficiency scores vary with changes in inputs and outputs, the study focuses on three major approaches: intermediation approach, value added approach, and operating approach. A multivariate Tobit model was used to examine the relationship between efficiency scores derived from the DEA to a set of explanatory variables, i.e. bank size, profitability, and

ownership. The empirical results clearly bring forth the high degree of inefficiency in the Malaysian banking sector, particularly a year after the East Asian crisis. The results suggest that the decrease in technical efficiency is more than expected under the intermediation approach relative to the value added approach and operating approach. The multivariate Tobit model results focusing on bank efficiency and other bank specific traits suggest that efficiency is negatively related to expense preference behaviour and economic conditions, while bank efficiency is positively related to loans intensity.

In their study, Staub et al, (2009) investigate cost, technical and allocative efficiency for Brazilian banks in the recent period (2000-2007). The empirical results imply that non-performing loans is an important indicator of efficiency level, as well as market share. Evidence is in favor of the home field advantage hypothesis since foreign banks are less cost efficient than their domestic counterparts. Furthermore, the agency theory hypothesis is not accepted as state-owned banks are more cost efficient than private banks. This could be due to: 1. the number of state-owned banks was reduced in the last years and only more efficient banks are left in the Brazilian banking system, and 2.state-owned banks hold very large public servants payroll accounts and therefore have an important advantage. Further research could exploit profit efficiency as private banks may have higher profit efficiency. It is noticed that the results of the study of Staub etal (2009) is different than the study of Souza et al (2006).The differences are related to the relation between non performing loans on bank efficiency and the efficiency of foreign bank compared to domestic banks.

García-Herrero et al (2009) in their study analyze empirically what explains the low profitability of Chinese banks or the main determinants of profitability for Chinese banks for the period 1997-2004. They found that better capitalized banks and banks with a relatively larger share of deposits and for more X-efficient tend to be more profitable. Moreover, a less concentrated banking system increases bank profitability, which basically reflects that the four state-owned commercial banks – China's biggest banks – have been the main drag for system's profitability. Also they found the same negative influence for China's development banks (so called Policy Banks), which are fully state-owned. Instead, more market oriented banks. For example, joint-stock commercial banks tend to be more profitable, which again points to the influence of government intervention in explaining bank performance in China. These results seem not a surprise for a banking system which

has long been functioning as a mechanism for transferring huge savings to meet public policy targets.

6.3 Determinants of Bank efficiency in Libya and Gulf countries:

6.3.1 Model specification

6.3.1.1 Determinants of bank efficiency

This section analyses the factors influencing bank efficiency of Libya and Gulf countries using data from Libya and Gulf countries. The calculated banks efficiency using the DEA in the previous chapter will be used as dependent variables. Relating to the independent variables, these variables were selected on the basis of data availability and previous studies. Therefore, four variables and one dummy variable were selected. As it is known that banks efficiency levels can vary systematically across countries due to differences in the macroeconomic environment.

To capture and control the macroeconomic environment and local market condition, two macroeconomic variables are used (as independent variables): GDP per capita, inflation. Yildirim and Philippatos (2007) indicate that favourable economic conditions will affect positively the demand of supply of banking services, and will possible improve bank efficiency. At the same way, Maudos et al. (2002) find that banks that operate in expanding markets present higher levels of profit efficiency. Also, Kasman and Yildirim (2006) find that the higher the growth rate is, the lower the banking costs are. Furthermore, GDP per capita used as an explanatory variable because it affects numerous factors related to demand for and supply of banking services. Nations with higher GDP per capita have more efficient domestic financial systems and so are more likely to be able to export efficient practices. Buch and DeLong (2004), and Berger et al. (2004) argued that nations with higher levels of economic development as represented by GDP per capita are also more likely to acquire banks in other nations. They found that banks in nations with lower GDP per capita are more likely to be targets in cross-border mergers. It was concluded that banks from developed nations are more likely to act as acquirers in cross-border mergers and this was presumed to be due to their higher efficiency. Buch and DeLong (2004) found some evidence to support this argument in the case of cross border mergers. Most of the studies indicated that GDP per capita has a positive impact on bank efficiency. Therefore,

it is expected to have a negative impact on bank cost and a positive impact on bank efficiency.

As for inflation, as an indicator of macroeconomic stability, is directly related to the interest rate levels and, thus, interest expense and revenue. Boyd et al. (2001) indicate that countries with high inflation have underdeveloped financial systems and banks, while Demirgüç-Kunt et al. (2004) find a robust positive impact of inflation on bank margins and overhead costs. At the same way, Kasman and Yildirim (2006) argue that high inflation may affect behaviour and induce banks to compete through excessive branch networks. Also, Grigorian and Manole (2002) find that high inflation is not necessarily associated with large-scale inefficiencies.

To control differences in the market structure among countries, the degree of concentration was selected. The empirical evidence on the links between concentration and banking sector efficiency does not suggest clearly positive – or negative – relationship.(Demirgüç-Kunt and Levin, 2004). To control the depth of banking activities, the ratio of bank loans to GDP is used as independent variable. The empirical evidence on the links between loans to GDP and banking sector efficiency suggests positive impact on bank efficiency.

As for the WTO and its impact on bank efficiency, there have been rare empirical studies in this area in developing countries (most of the studies belongs to China which suggested positive impact of the WTO on bank efficiency like He and Fan (2004), and Ariff and Can (2008). While part of other studies does not suggest clearly positive – or negative – relationship .In other words, suggested mixed results (negative and positive effect to the WTO on banking sector at the same time).The other part suggested negative / positive impact on efficiency).

To capture the effects of joining the World Trade Organisation, a dummy, 1 for the years after and 0 for the years before World Trade Organization accession is created.

Once the income efficiency of Libyan and Gulf banks is calculated and compared, the next step is to explore what factors have impacted on such efficiency levels. In particular, it is interesting to assess whether differences GDP per capita, inflation, concentration, and the WTO accession commitments significantly influence efficiency. The issue of what variables to be included in the model is complicated due to the fact that theory does not

offer much guidance (Mester, 1996). Therefore, previous research in this area is used as an index. The model will be as follow:

$$(EFF_{it}) = C_0 + C_1 (LOA/GDP_{it}) + C_2 (CONC_{it}) + C_3 (INF_{i,t}) + C_4 (GDPPERCAP_{i,t}) + WTO + u_{it}.$$

Where i is the cross section unit (Gulf countries/Gulf countries plus Libya) or 6/7 countries and t is the time series (1999-2007) belongs each countries. Due to the fact that the efficiency of banks to each country is needed to compare bank efficiency between countries the average score for each country rather than the individual banks will be used as follow;

EFF=Average of income efficiency scores under constant return to scale CRS per year/ Average of income efficiency scores under variable return to scale VRS per year. The first type will be denoted by EFFCRS and the second one will be denoted by EFFVRS. These two types of income efficiency will be used in the equation as dependent variable under Common efficiency frontier CEF and National specific frontier NSF, to distinguish between them, variables EFFCRSN and EFFVRSN will denote to Income efficiency scores under NSF, and EFFCRS, EFFVRS will denote to the income efficiency under CEF respectively.

(GDPPERCAP) = GDPPERCAPITA.

(LOA/GDP) = Loans to GDP.

(CONC) =Bank concentration Index. This index is calculated as the share of the assets of the three largest banks in total banking sector assets.

(INF) =Rate of inflation (Based on Consumer price index (CPI))

(WTO) =World Trade Organisation. A dummy variable, 1 for the years after a country accession and 0 before a country accession.

Where C_0 is the constant term and C_1, C_2, C_3, C_4, are regression coefficients to be estimated by Panel data least square.

u= is the error term following a normal distribution.

6.3.1.2 Panel unit Root Test

Before proceeding to Panel data least square, this part of this section carries out unit roots tests to check whether the variables are stationary or not stationary. Although, it is

generally agreed that the tests perform best with large samples, using these tests are still useful to confirm the accuracy of the results of analysis (Saci et al, 2005). The generally used unit roots test like augmented Dicky- Fuller (ADF) and Phillips&Perron (PP) (1988) lack power of distinguishing the unit root null hypothesis from stationary alternative. Also, it is common that the traditional Augmented Dickey-Fuller (ADF)-type to test of unit roots suffer from the problem of low power in rejecting the null of stationary of the series . especially for short –spanned data (like data of the present study). Literature developed in the 1990s suggests that using panel data unit root test is one way of increasing the test power based on a single time series , as argued in Oh (1996), Wu (1996), MacDonald (1996) and Frankel and Rose (1996), who try to revive the purchasing power parity (PPP) theory using panel data unit root tests.

Several tests have appeared in the literature. Recent developments in the panel unit root tests include: Levin, Lin and Chu (LLC) (2002) and Im, Peasaran, and Shin (IPS) (2003) tests are the most widely used methods for panel data unit root tests in the literature. The LLC and IPS tests are based on the ADF prescription. However, LLC hypotheses homogeneity in the dynamics of the autoregressive coefficients for all cross – sectional. In contrast, the IPS is more general in the sense that it allows for heterogeneity in these dynamic (Ben -Taher and Giorgioni, 2009). As a result, the test developers have shown that the LLC test has higher power than other tests in its class including IPS if the cross sectional is homogeneous / nearly homogeneous.

The LLC test is based on the regression equation.

$$\Delta y_{it} = \alpha i + \delta_{i\,t} + \beta i y_{it\text{-}1} + \Sigma \phi_{ij}\, \Delta y_{it\text{-}j} + \xi_{it}. \quad (1)$$

Where i = 1, 2, ..., N cross-section units or series and t = 1, 2, ..., T denotes the time period. The intercept, trend and coefficient on y are allowed to vary with the cross section.

The t-statistics for β determines whether or not the variable is stationary. So it is assumed that in (1) $\beta_i = \beta$. This will mean a common value of β across all cross-sections. The hypotheses are:

H_0: $\beta = 0$ hence y_{it} there is a unit root

H_1: $\beta < 0$ there is no unit root.

If the null hypothesis is y_{it} is I (1) all the cross-sections are non-stationary. The alternative is all individual cross-sections are stationary.

This study applies the LLC to check the stationary of used variables .The reason behind relying on LLC is the hypotheses that cross sectional used in the study are expected to be homogenous or nearly homogeneous. The cross sectional are homogenous countries (Libya and /or Gulf countries) since these countries have many of similarities. For instance, GDP, exports, imports, level of income, and culture. All of these countries are petroleum developing Arab countries and oil is still represents the back bone of their economies. As a result of petroleum surplus, these countries are classified as high level of income countries and they have been categorised in one group according to annual Arab economic reports.

Tables 6.1 and 6.2 show the results of stationarity test to GCC countries and Libya, and GCC countries respectively.

Table (6.1): Stationarity test results for GCC countries and Libya

Variable Name	Using Homogeneous Panel Unit Root Test (LLC) Level
LogEFCRSN	-3.48249***
LogEFFVRSN	-1.95707**
LogEFFCRS	-4.61060***
LogEFFVRS	-4.83401***
LogINF	-2.02788**
LogCONC	-2.15884**
Loggdppercap	-1.76376**
Logloans/gdp	-3.75233***
Note: ***significant at 1%, **significant at 5%,*significant at 10%.	

Table (6.2): Stationarity test results for GCC countries

Variable Name	Using Homogeneous Panel Unit Root Test (LLC) Level
LogEFFCRSN	-3.32995***
LogEFFVRSN	-1.95284**
LogEFFCRS	-5.87503***
LogEFFVRS	-3.24598***
LogINF	-1.48503*
LogCONC	-1.96672**
Loggdppercap	-1.53444*
Logloans/gdp	-4.14980***
Note: ***significant at 1%, **significant at 5%,*significant at 10%.	

As can be seen from the tables, the results of (LLC) test indicate that the null hypothesis is rejected for all series tested at their levels. That means the series have not a unit roots. Therefore, they are stationary in level.

6.3.2 Methodology

The Panel data least square method will be used in this study. Although, several studies in the literature has used Tobit method (for instance, Casu and Molyneux, 2003; Maudos et al., (2002); Weill, (2003) among others), this method has been excluded since It is not appropriate to the data of recent study. When efficiency scores are treated as descriptive measures of the relative performance of units in the sample, McDonald (2009) argued that the efficiency scores are not generated by a censoring process but are fractional or proportional data .Therefore, the Tobit estimation in this situation is inappropriate and the best can be said for it is that Tobit estimates are often similar to OLS. Moreover, the dependent variable (efficiency scores) of the recent study does not contains any Zero. Furthermore, there are several shortcomings for this approach. For example, a part of the variation in the calculated efficiencies can remain uncounted for ending up mixing with white nose error term and contaminating the estimated coefficients ((Bhattacharyya et al, 1997). For these reasons, there is no clear reason to use the tobit method. In contrast, ordinary least squares is a consistent estimator, and, if White's heteroskedastic- consistent standard errors are calculated, large sample tests can be performed which are robust to heteroskedasticity and the distribution of the disturbances. There is considerable merit in using familiar, easy to compute methods, such as OLS, which are understood by a broad community of people (McDonald, 2009). Also, the OLS has been used in several studies (for instance, Banker and Natrajan, 2008; Maudos et al, (2002); Beccalli et al. 2006; Weill, 2003).

6.3.3 Data Source and Description of variables and model

The sample period runs from 1999 to 2007 for the GCC countries and Libya. All variables expressed in monetary units are in US dollars. As can be seen from table 6.3 data are drawn from several databases and are widely been used in research studies. The information of these databases are supplied from official international organisation like international Monetary Fund and World Bank.

Table (6.3): Variables and Sources

Variable	Definition	Source
GDPPERCAP	Gross Domestic Product Per Capita	GMID&AMF
CONC	Bank concentration Index .This index is calculated as the percentage of assets held by the three largest commercial banks in the country.	WB
INFL	Annual Rate of inflation based on Consumer price index (CPI).	GMID&AMF
LOA/GDP	LOANS/GDP. This measure measures the financial depth of the banking sector.	AMF&CBL

Note: AMF: Arab Monetary Fund. Data is available on Arab Monetary Fund website: http. WB: world Bank database. Data is available on the World Bank website at:
http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20696167~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html.
GMID: Global Market Information database of Euromonitor international, Market line data base: Business Information from around the world, across markets and inside companies. CBL : Central Bank of Libya. Data is available at:http://www.cbl.gov.ly/.

The tables below present statistical features of the data. Table (6.4) and table (6.5) present the descriptive statistics for the principal variables used in the sample including/without Libya respectively.

Table (6.4): Statistical Description of the Sample (including Libya)

series	No of Obs.	mean	std Deviation	minimum	maximum
INFL	63	2.00	3.94	-9.80	13.80
GDPPERCAP	63	39197	33431	8434	160734
LOA/GDP	63	0.43	0.14	0.10	0.73
CONC	63	0.73	0.15	0.47	0.96

Table (6.5): Statistical Description of the Sample (without Libya)

series	No.of Obs	mean	std Deviation	minimum	maximum
INFL	54	2.57	3.39	-1.30	13.80
GDPPERCAP	54	44110	33693	14958	160734
LOA/GDP	54	0.47	0.11	0.23	0.73
CONC	54	0.71	0.15	0.47	0.93

6.3.4 Results and Interpretation

The empirical work is conducted with panel data least square analysis of Gulf countries and Libya (or without Libya) for the period of 1999-2007. Pooling these countries increases the number of observation significantly, therefore, giving more information and more degree of freedom and making the regression more efficient. In the case of Libya and Gulf countries, the increase in the number of observation will be useful due to lack of data in these countries as developing regions.

Tables (6.6 and 6.7) show the equation of Panel data least square estimation of the efficiency of the sample including/without Libya. After the income efficiency of Libyan and Gulf banks is calculated from the previous chapter, the next step is to explore what factors have impacted on such efficiency levels. In particular, it is interesting to assess whether differences in GDP per capita , loans as percentage from GDP, concentration , and reform effort under the WTO accession commitments significantly influence efficiency of banks of Gulf countries . The Gulf banks have been used as an indicator to the ability of the Libyan banks to compete with foreign banks as Libya become a full member of the WTO. The analysis will be repeated without Libya in a second stage to confirm and compare the results.

The fixed effects (regression) model (FEM) will be used in this study to estimate panel data regression model. In the literature, the term "fixed effects" is due to the fact that, although the intercept may differ across individuals (here the six /seven countries), each countries' intercept does not vary over time; that is, it is time invariant. If we were to write the intercept as $\beta 1$, it will suggest that the intercept of each countries is time variant. It may be noted that the FEM assumes that the (slope) coefficients of the repressors do not vary across countries or over time, (for more details see e.g.Gujarati, 2003, p.642). To provide evidence that the option of fixed effects specification was correct, the redundant fixed effects test has been used . Most of the results of the redundant fixed effects test for joint significance of dummy variables reject the null hypothesis of the test are equal. As can be seen from table (6.6 and 6.7) the fixed effect approach is applied instead of the random effects (RE) because it is focused on a specific set of countries, i.e. the Gulf countries and Libya. To test whether to use a random or fixed effect estimation approach, the Hausman test has been used. To perform this test a model with random effects must be estimated first. Unluckily, the characteristics of panel data do not allow the estimation of

random effect since the number of time series data (here nine years) is large and the number of cross sectional units (here six/seven countries) is small so there is likely to be little differences in the values of parameters estimated by FE and RE. Therefore, the FE estimators may be preferable (Gujarati, 2003).

The white and Arch tests are used to detect the problem of hetroscedasticity in the estimation. In other word, to test whether the current variance of residual (approximately by the squared residuals) depends on the variance of previous residuals (Arch test) or varies with combinations of the explanatory variables. The null hypothesis (The variance of residuals is constant) in these test are the same. The results of these tests under Common Efficient Frontier (CEF) show that there is no hetroscedasticity problem. However. some of the estimates under NSF show that there is hetroscedasticity problem. The results for autocorrelation test under CEF accept the null hypothesis that there is no autocorrelation in all specifications at 5% significant. However, most of the results for autocorrelation under NSF reject the null hypothesis that there is autocorrelation at 5% significant. There is only one case which refers to the analysis under Constant Return to scale (without Libya) do not suffer from autocorrelation problem.

To test the normality of residuals, the Jarque-Bera (JB) test has been used. Null hypothesis is that residuals are normality distributed while alternative hypothesis indicate that the residuals are not normality distributed. The critical value of (JB) test at level of significant 5% is 5.99.

As can be seen from table (6.6) , the results of the (JB) test show that the residual are normally distributed except for one case which belongs to the efficiency of Libya and GCC countries under VRS/CEF .In this case, the (Jb) statistical value is equal to 47.03077 which is above the critical value, therefore, the Null hypothesis is rejected. This means that the residuals are not normality distributed.

As can be seen from the tables, the results are depending on common efficient frontier (CEF), Nation specific frontier (NSF), and the sample as (including/without Libya). The efficiency scores of (CEF) and (NSF) under constant return to scale (CRS) and variable return to scale (VRS) have been used as dependent variables. The results under CEF (including/without Libya) show that the coefficient of the WTO is insignificant (mixed between negative and positive). However, most of the results under NSF (including /without Libya) show that coefficient of the WTO is significantly negative. The results are

consistent with Stiglitz (2001), Murinde and Ryan (2003) (in the short run) and Aburime (2008). The result is supported by theoretical and empirical evidences from Amel and Liang (1997) and Claessens et al. (2001). However, these results might be taken in the context that the opening of banking sector in the Gulf countries still has not completed yet. Also, comparing to several WTO members, the degree of discrimination against foreign banks is still high (Barth et al, 2006). This will be clear from the lists of specific commitments. They show that Gulf countries have permitted to foreign banks to operate in these countries; however, several restrictions have been founded. For example, the restrictions related to getting bank licences for branches and representative offices of foreign banks, and also, foreign financial institutions. Furthermore, the condition of Economic Needs Test which is related to developing infant financial and banking sector. For example, to keep the stability of the banking sector, foreign suppliers must operate in a way without causing any harmful competition to the domestic banking sector; developing the National cadre training programme; the condition of nationalism related to the manager or representative of financial institution. Therefore, these restrictions might limit the positive impacts of the WTO on banking sectors of these countries. Also, the efficiency of these countries might be low when these countries joined the WTO. Therefore, these countries could not benefit from the WTO. The experience of developing countries like china shows that china could benefit from the WTO since its banks efficiency were high when it joined the WTO (Chen et al,2005) and (Yao et al, 2008).

Relating to GDP per capita, most of the results under CEF show that the coefficients of GDP per capita are insignificantly negative. However, most of the results of coefficient under NSF is negative but significant. This result is consistent with the finding of Sturm and Williams (2005), Pasiouras et al (2007) and conflicted to several studies like Buch and DeLong (2004) and Berger et al. (2004).This means that GDP per capita has inverse relationship with bank efficiency of Libya and Gulf countries.

As for inflation, the results under CEF show that the coefficients of inflation are negative and insignificant .However, most of the results under NSF show the coefficients are positive and insignificant. The rest of coefficient results is significantly (5%) positive .This was only in one case (without Libya).

These results are consistent with Kasman and Yildirim (2006) which indicated that high inflation may affect behaviour and induce banks to compete through excessive branch

networks. Also, the results might be consistent with Grigorian and Manole (2002) find that high inflation is not necessarily associated with large-scale inefficiencies.

Relating to concentration, the results under CEF show that the coefficients of concentration are insignificantly negative. However, the results under NSF show that the coefficients are significantly positive. The latter results are consistent to Demirgüç-Kunt et al (2004) , Abbas et al(2009) and Petersen and Rajan (1995).

As for loans to GDP, most of the results under CEF show that loans to GDP coefficients are insignificantly negative and the rest of results are insignificantly positive. However, the results under NSF show that the coefficients are significantly positive. The results are consistent with most of studies in the literature like Hasan et al (2009) and Saad and El-Moussawi (2009). This result shows that the most efficient banks are those which record the highest risk level (reflected in higher percentage of loans to GDP). Thus, an increasing degree of risk would be offset by higher pricing of loans. This can release a higher interest margin and, therefore, cover production costs (Saad and El-Moussawi, 2009). This result is not consistent with those of Berger and DeYoung (1997), who find an opposite relationship between the level of risk and efficiency: banks that limit their risk-taking improve their creditworthiness, their future profitability, and, hence, their productive efficiency.

Table (6.6) Results using Common efficient Frontier (CEF) as dependent variable

	LOGEFFCRS		LOGEFFIVRS	
	Including Libya1	**Without Libya 2**	**Including Libya1**	**Without Libya 2**
C	7.266351 (1.721460)*	5.147511 (1.118709)	-1.008707 (-1.948678) *	-0.583887 (-0.172444)
LOG(INFL)	0.351645 (-0.281372)	-0.002947 (-0.001609)	-1.050130 (-1.585238)	-1.839499 (-1.364640)
LOG(CONC)	-0.114158- (-0.305008)	-0.228030 (-0.335487)	-0.084772 (-0.857543)	-0.627947 (-1.255470)
LOG(GDPPERCAP)	-0.751554 (-1.872113)*	-0.563393 (-1.357152)	0.075753 (1.528823)	-0.012467 (-0.040811)
LOG(LOANS/GDP)	0.022876 (0.177910)	-0.191811 (-0.589268)	-0.023790 (-0.309302)	-0.267519 (-1.116841)
WTO	-0.051316 (-0.463543)	0.067782 (0.610199)	-0.130709 (-1.746060) *	0.051130 (0.625504)
F-statistics	(4.444744)***	(5.577331)***	(2.369856)**	(3.576450)***
Redundant fixed (cross –section/period F) effect test	(4.073728)***	(5.533926)***	1.492911	(2.260333)**
Chi-square-value(Hausman test)				
t-value(B.G(L.M))	(0.911704)	(0.628670)	(-0.211853)	(1.740003) *
t-value(Arch test)	(-1.545133)	(-0.317309)	(-0.801639)	(-0.864396) *
F White(no cross-term)	(0.945846) *	(1.258759)	(0.702018)	(1.662174)*
Jarque-Bera-value	0.180232	0.476312	(47.03077)***	0.499937

Note: ***significant at 1%, **significant at 5%,*significant at 10%

Table (6.7): Results using National specific frontier NSF as dependent variable

	LOGEFFCRSNEW		LOGEFFIVRSNEW	
	Including Libya1	**Without Libya 2**	**Including Libya1**	**Without Libya 2**
C	8.262599 (2.621110)**	12.72018 (3.839160)***	2.790123 (1.102218)	5.409942 (2.144709) **
LOG(INFL)	-0.683783 (-0.732626)	1.352282 (1.025204)	0.708539 (0.945372)	2.114660 (2.105796)**
LOG(CONC)	0.651319 (2.330168)**	1.471852 (3.007264) ***	0.546259 (2.433703)**	0.808313 (2.169302) **
LOG(GDPPERCAP)	-0.780534 (-2.603466)**	-1.125506 (-3.765200)***	-0.256019 (-1.063428)	-0.470585 (-2.067811) **
LOG(LOA/GDP)	0.313145 (3.260958)***	0.838449 (3.577161))***	0.175356 (2.274027) **	0.477905 (2.678158) **
WTO	-0.239967 (-2.902536) ***	-0.292550 (-3.657439) ***	-0.111145 (-1.674147)	-0.131753 (-2.163568) **
F-statistics	(37.72985) ***	(49.38999)***	(11.17943)***	(16.63140)***
Redundant fixed (cross –section/period F) effect test	(43.208301)***	(50.580842)***	(13.604375)***	(18.860988)***
Chi-square-value(Hausman test)				
t-value (B.G(L.M))	(3.219717)***	(1.836877)*	(2.678229)**	(2.167701) **
t-value (Arch test)	(-1.195608)	(-3.062262)***	(0.292935)	(2.335453) **
F White(no cross-term)	(1.865753)**	(1.007183)	(2.425219)***	(1.404849)
Jarque-Bera-value	3.859453	1.286802	1.418967	4.278086

Note: ***significant at 1%, **significant at 5%,*significant at 10%.

6.4 Summary

This chapter follows from and extends the previous one where the efficiency of Libyan banks was empirically evaluated by using Data Envelopment Analysis (DEA). The Libyan bank efficiency was compared to the efficiency of banks located in the Gulf Cooperation Council (GCC) which have already gained membership of the WTO. In this chapter, the determinants or factors affected the efficiency of Libyan and GCC banks have been specified for nine years (over the period 1999-2007) to identify the expected effect of the WTO on Libyan banks. The model of this study follows the empirical literature on the determinants of banks efficiency by taking in to account the WTO as one of the factors that may influence banks efficiency. Regarding to the main results of this chapter, the results under CEF show that WTO coefficients are insignificant and most of them are

negative. However, the results under NSF which is more appropriate according to previous literature showed that WTO coefficients are negative and most of them are significant. Also, the results showed that the loans to GDP and concentration index have significant and positive impact on the efficiency of Libyan and Gulf banks while inflation has important and positive impact only on Gulf banks. However, the results showed that the GDP per capita has significant and negative effect on the efficiency of Libyan and Gulf banks.

CHAPTER SEVEN

CONCLUSION AND RECOMMENDATIONS

7.1 Review

The main motivation for carrying out this research was to advance the knowledge on the impacts of the WTO on Libyan banking sector. The impacts of the WTO on banking sector have attracted a lot of attention in several developing countries. This study contributes to the existing literature by addressing the expected impacts of the WTO on the Libyan banking sector based on empirical analysis of Libya and Gulf countries. To the best of the author's knowledge, this is the first study has used the quantitative method to assess the expected effects of the WTO on Libyan banking sector. As discussed earlier, chapter 2 has provided an overview of Libya's historical and economic background to the Libyan economy. The main feature of the Libyan economy shows that Libya is still classified as a developing country. Also, the structure of population has shown that Libya is a very young country and its population still limited compared to the extreme wealth which is created by oil. Furthermore, they concentrate in a small area of land (exactly near the cost), in spite of the vast area of the country. Also, the chapter has shown that Libya still relies on oil sector while other sectors have limited contribution in GDP, exports, investment and public revenue of the country. Due to the fact that the ability of oil sector in employment is limited since it relays on high skilled people, the rate of unemployment are getting high even though the Libyan human resources is limited. Also, Libya has a high rate of literacy. Although, the service sector is one of the most important sectors of the Libyan GDP, Libya is still a net importer to services. The chapter pave the way to next chapter 3 to address the nature and the environment that Libyan banks operate in.

Chapter 3 gave a summary of Libyan banking sector. It started by providing historical background about Libyan banking sector and its development. Then, the current Libyan banks structure was presented. Finally, the expected role of the banking sector in Libyan development was briefly discussed. The historical background shows that even the long period of banks establishment in Libya, the role of banking sector in development is still limited. Also, the current structure of Libyan banks shows that the Libyan banks are still occupied by public banks which have also insignificant role in development. However, this occupation has started to reduce during recent years by establishing the private banks and entering of foreign banks. In order to change the situation, the decision makers expected

that joining the WTO as a part of Libyan banks reforms will increase the banks efficiency and improve the role of banks in development and reduce the rate of unemployment.

Chapter 4 aimed to shed light on the main characteristic of the WTO/GATS and their historical development and present the important previous studies about the impact of World Trade Organisation on banking sector with reference to Libya. Also, the debate related to the impact of the WTO on Libyan banking sector was discussed in more details. The chapter addressed the gap in the literature regarding to Libya .Also, it opens the door to study the expected impact of World Trade Organisation on Libyan banking sector across measuring the efficiency of Libyan banks using the Gulf countries as a case study in next two chapters.

Chapter 5 aimed at assessing level of efficiency of Libyan and Gulf commercial Banks over the period 1999-2007 as an indicator to the ability of Libyan banks to compete with other banks when Libya becomes a full member of the WTO. The efficiency level was calculated using the Data Envelopment Analysis (DEA) technique and two types of comparison CEF and NSF. Surprisingly, for a sample inclusive of both Libyan and GCCs banks, results reveal that the mean efficiency score of the Libyan banking industry is not different to the GCC country's mean. Since the results are different to results in previous literature, and also to know the implication of WTO on GCC countries, the analysis was repeated without Libya. The first results type (CEF) was slightly different than the results including Libya. However, the second type (NSF) has a massive different than the first one. Also, from check the trend of efficiency, the results show there is no clear evidence that the efficiency of Gulf countries has been improving since they joined the WTO. Relating to impact of banking reform on Libyan banks efficiency, the result was unclear and depending on using CEF or NSF. To support these results and avoid the disadvantages of the first analysis, the results were complemented with panel data regression model in chapter 6.

Chapter 6 follows from and extended the previous one where the efficiency of Libyan and Gulf banks empirically measured by using Data Envelopment Analysis (DEA). The Libyan bank efficiency was compared to the efficiency of banks located in the Gulf Cooperation Council (GCC) which have already gained membership of the WTO. In this chapter, the determinants or factors affecting the efficiency of Libyan and GCC banks were specified for nine years (over the period 1999-2007) to identify the expected effect of

the WTO on Libyan banks. The model of this study followed the empirical literature on the determinants of banks efficiency by taking in to account the WTO as one of the factors that may influence banks efficiency.

Chapter 7 summarises the main results of the thesis, recommendations to decision makers, and the limitations of the thesis and offers some suggestions for future research.

7.2 Summary of the Major Findings of the Study

Libya has not gained its full membership of the WTO yet. However, Libya has gained observer status since 2004. Since Libya has not joined the WTO yet, knowing the impacts by addressing the period pre and after joining the WTO is not possible. Therefore, to know the final expected impacts of the WTO on the Libyan banking sector, two ways were selected. The first one is by assessing rules of the WTO and the existing literature on the impacts of the WTO on banking sector and draw some conclusion on the Libyan banking sector. The other one, by using the efficiency of banks as a mean to know the impacts of the WTO on Libyan banking sector . The efficiency was empirically measured using DEA method to allow the comparison of the efficiency of the Libyan banks to that of countries similar to Libya that have already gained their membership of the WTO. Also, to check whether there are any changes in the general trend of efficiency since these countries have joined the WTO. To know how to improve the bank efficiency, the determinants of bank efficiency were investigated using panel data regression and the WTO was used as one of the determinants of bank efficiency. The main results of this study could be summarised as follow:

a) There is no general trend or clear evidence that the efficiency of Gulf countries as a block has been improving since their joining the WTO. These results have been obtained from using the DEA method with/without Libya, and also Panel Data Regression Model. The reason might be that, the Gulf countries have not fully opened their banking sector and they still have several discriminations against foreign banks. Also, they still enjoy some of the exemptions given to developing countries. Therefore, Libya's joining the WTO as full member- at the present -might affect the banking sector negatively. However, these results should be taken carefully since the lack of data availability to the period before and after WTO establishment in 1995.Therfore, reviewing the general trend of banks efficiency during the period 1999-2007 was used instead of obtained the efficiency of Libyan and Gulf banks before and after WTO establishment.

b) There is evidence that the efficiency of Libyan banks has improved after issuing the Law number 1 in 2005. As mentioned earlier, this law is aimed to reform the Libyan banking sector. Although, the results in this area are conflicting and highly dependent on the use of CEF or NSF, the results of NSF, which is supported by the previous literature, showed that the Libyan efficiency banks has improved after the Law number 1 was issued.

7.3 Recommendations

a) In order to benefit from the trade in the context of the WTO, Libya should continue to raise the efficiency of banking sector before completing its joining the WTO quickly as full member. Also, it might be useful to raise the efficiency of other sectors before gaining its full membership. As it is known that the decision to take further steps in joining the WTO might be depending on the expected effects of the WTO on banking sector and other sectors.

b) After reviewing the literature and the experience of other countries, and also, to avoid any instability in the banking sector in short run, Libya should continue to open its banking sector gradually to foreign competition without high rate of discriminations against foreign banks, and also remove this discrimination gradually.

c) The approach of efficiency measurement and its determinants followed in this study for the banking sector could be generalised to other sub- service sectors to specify the most efficient one for opening in the context of the WTO. Also, if the efficiency of other sectors is acceptable and higher than the efficiency of the banking sector, Libya might take further step in joining the WTO as full member and delay opening its banking sector to further competition with foreign banks according to the WTO/GATS rules.

d) Modifying the banking regulatory system of Libya and completing the monitory regulations regarding to the foreign operation in Libya with WTO entry, is crucial for Libya to adjust the regulatory regime regarding the financial activities of foreign funded financial institutions. Since the massive flow of foreign financial institutions is one of the most significant outcomes after Libya become a member of the WTO. By joining the WTO, the banking supervision of Libya is no longer an exclusive domestic problem anymore. The globalization and the gradual integration of Libya into the world financial system make the banking supervision of Libya an important part of the global financial supervision. The internationalization of Libya's banking supervision is also the

requirement of banking reform of Libya. It will help Libya's banking industry overcome its difficulties with efficient and standard international measurements.

7.4 Limitations of the Study and Suggestions for Future Research

This study has achieved some important results that have advanced the knowledge on the impact of the WTO on Libyan banking sector. However, there are some important issues that this research has identified but was not able to investigate within the given time limit of this study. The most important limitation of this study was the lack of data availability for Libya and Gulf bank countries. Although, Bankscope, the most important data base was used in this study, the Bankscope cannot cover the entire period of data used in this study. For example, the period pre 1999 and the period post 2007. Also, it was difficult to complete the data from other sources like banks website or official financial statements of banks. Regarding to the data of Libya, there was further difficulty since a part of the data of 1999-2007 are not available in Bankscope. Hence, it was obtained from other sources like financial statements and websites of banks. Further future studies can be carried out in several ways:

a) Using the same methodology, the period of the study could be expanded to cover the period pre 1999 and post 2007. This will help to improve identifying the expected impact of the WTO on Libya and Gulf countries before/after these countries (Gulf countries) joined the WTO. In this study, due to lack of data availability, the impact of the WTO was identified by check the general trend of efficiency during the period 1999-2007.
b) This study has only measured efficiency by applying the DEA technique under the intermediation approach. One possibility for further research would be to conduct a comparative study which will incorporate both the production and the intermediation approaches.
c) This study has mainly employed a non-parametric methodology in order to evaluate banking performance of Libya and Gulf countries in the context of WTO. It may be possible to evaluate banking efficiency and the impact of reform policies on banking performance by applying different frontier approaches i. e. a parametric methodology, and to compare the results of the different methods. This might provide an empirical identification of the impact of WTO and the reforms policy on the banking performance in general and on the banking efficiency in particular.

d) To overcome the problem of autocorrelation and hetroscedasticity as a common problem in most panel datasets that raised after running the regression model, using the Generalised Least square (GLS) technique might be one of alternative to solve this problem in further future studies.

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Appendix1

Table 1: Saudi Arabia Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E(VRS scores)	SE
1999	0.56	0.77	0.76
2000	0.57	0.81	0.74
2001	0.69	0.85	0.75
2002	0.72	0.88	0.74
2003	0.73	0.89	0.82
2004	0.53	0.81	0.67
2005	0.65	0.75	0.88
2006	0.66	0.88	0.75
2007	0.51	0.83	0.63
Average	JUHH0.63	0.83	0.75

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 1

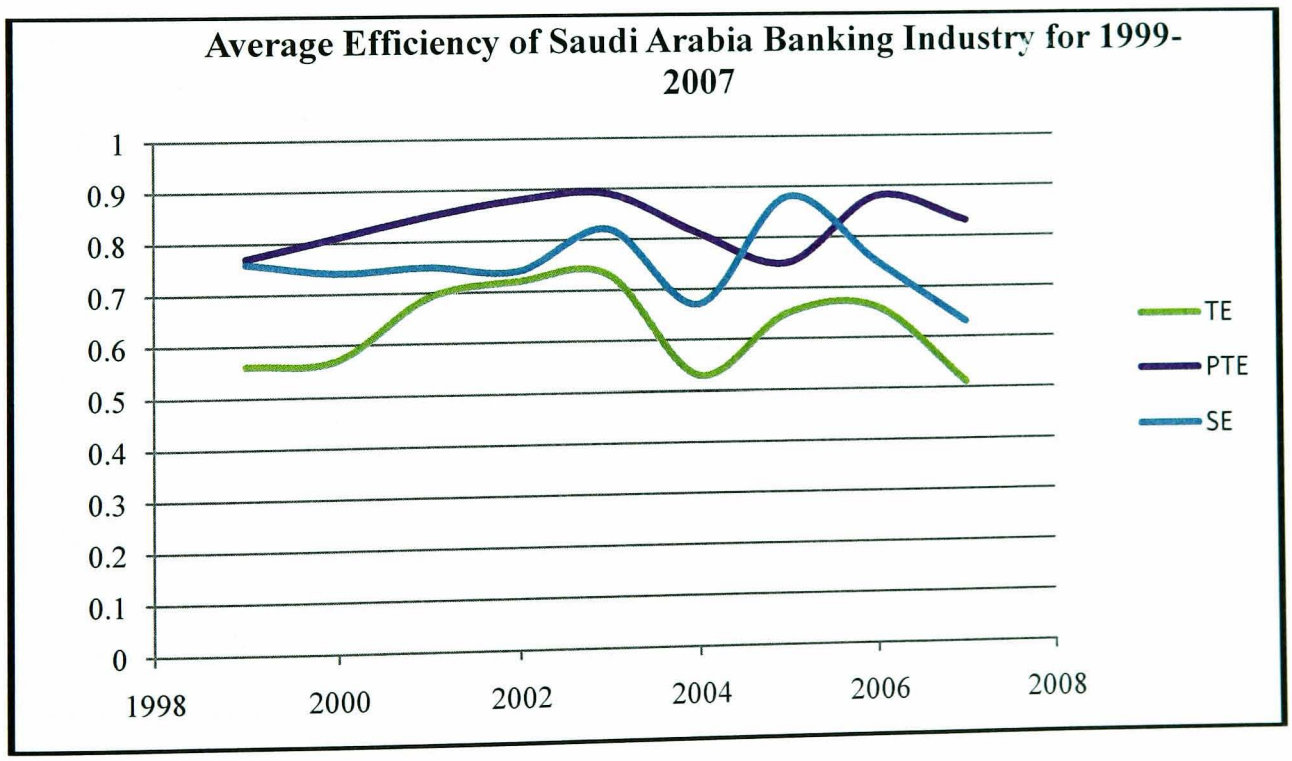


Table 2: Kuwait Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E(VRS scores)	SE
1999	0.56	0.64	0.90
2000	0.59	0.66	0.91
2001	0.68	0.79	0.86
2002	0.79	0.89	0.89
2003	0.44	0.50	0.60
2004	0.35	0.75	0.48
2005	0.83	0.84	0.99
2006	0.58	0.79	0.75
2007	0.41	0.74	0.57
Average	0.58	0.73	0.77

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 2

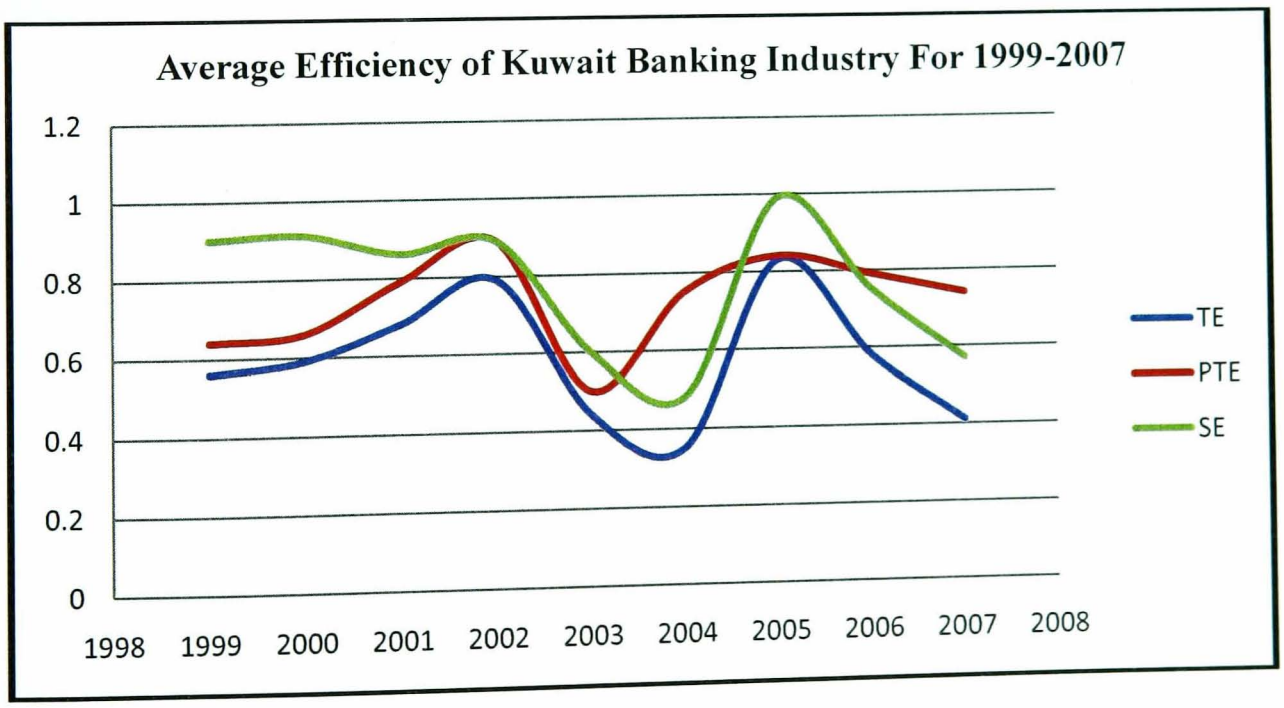


Table 3: UAE. Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E(VRS scores)	SE
1999	0.76	0.83	0.91
2000	0.69	0.76	0.91
2001	0.72	0.80	0.91
2002	0.83	0.91	0.85
2003	0.73	0.82	0.90
2004	0.48	0.68	0.73
2005	0.66	0.74	0.91
2006	0.50	0.67	0.77
2007	0.46	0.74	0.65
Average	0.65	0.77	0.84

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 3

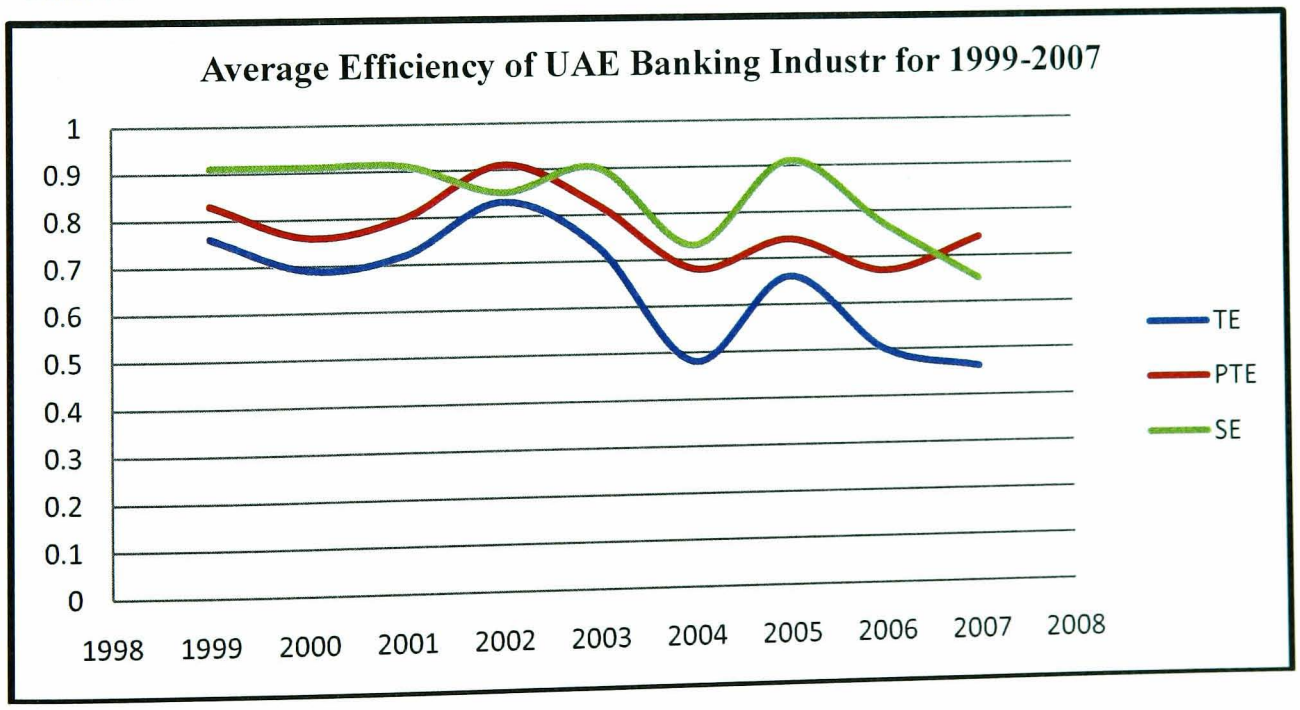


Table 4: Qatar .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.70	0.80	0.89
2000	0.63	0.66	0.94
2001	0.70	0.74	0.94
2002	0.83	0.93	0.90
2003	0.82	0.88	0.94
2004	0.56	0.69	0.83
2005	0.68	0.75	0.91
2006	0.54	0.63	0.87
2007	0.55	0.75	0.73
Average	0.67	0.76	0.88

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 4

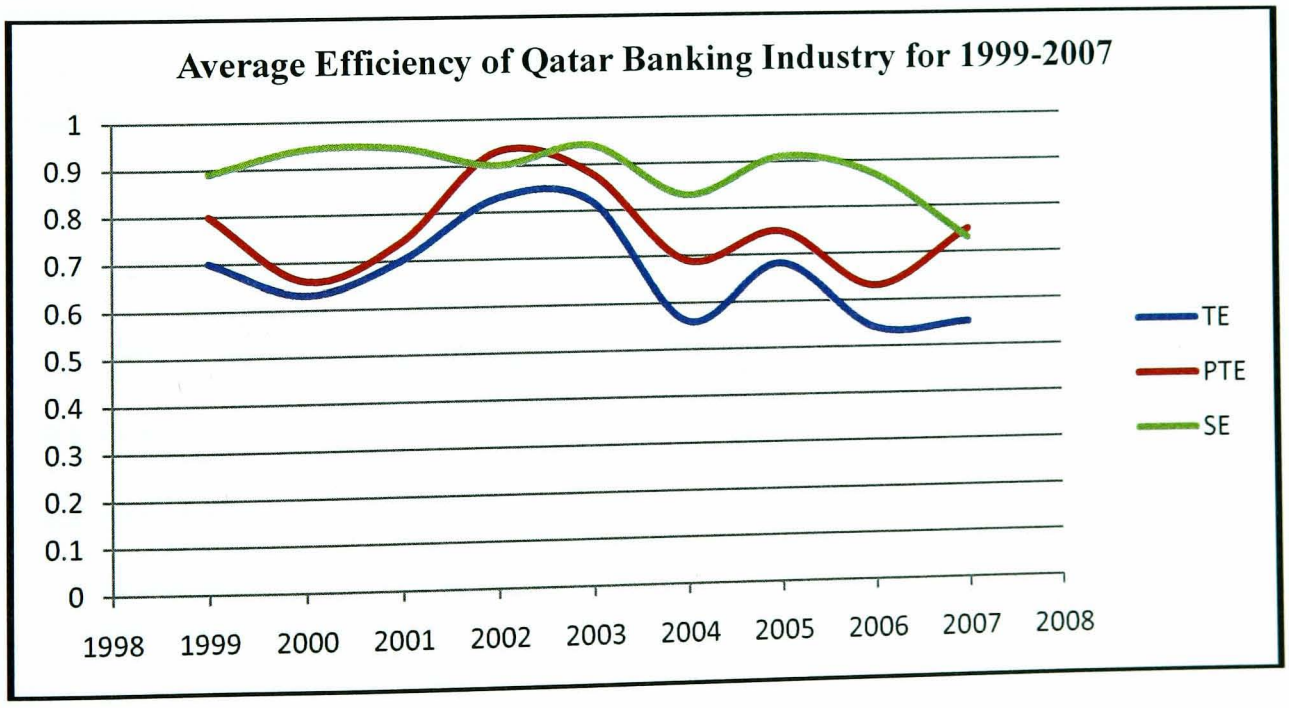


Table 5: Bahrain Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E(VRS scores)	SE
1999	0.72	0.88	0.97
2000	0.58	0.76	0.70
2001	0.56	0.76	0.77
2002	0.44	0.59	0.54
2003	0.47	0.54	0.81
2004	0.39	0.61	0.60
2005	0.62	0.64	0.95
2006	0.53	0.69	0.74
2007	0.47	0.63	0.72
Average	0.53	0.68	0.76

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 5

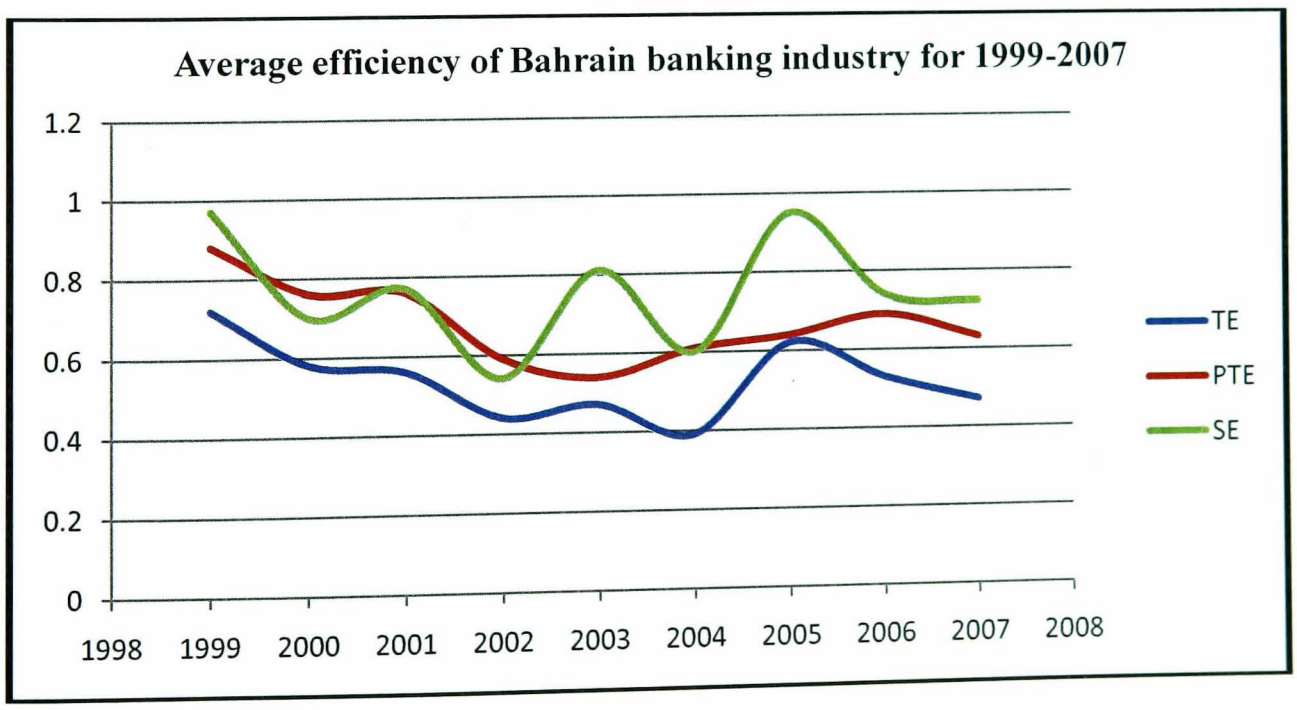


Table 6: Oman Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E(VRS scores)	SE
1999	0.63	0.68	0.92
2000	0.61	0.64	0.95
2001	0.61	0.63	0.97
2002	0.66	0.71	0.93
2003	0.64	0.67	0.95
2004	0.52	0.66	0.79
2005	0.66	0.73	0.91
2006	0.71	0.78	0.91
2007	0.46	0.57	0.82
Average	0.61	0.67	0.91

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 6

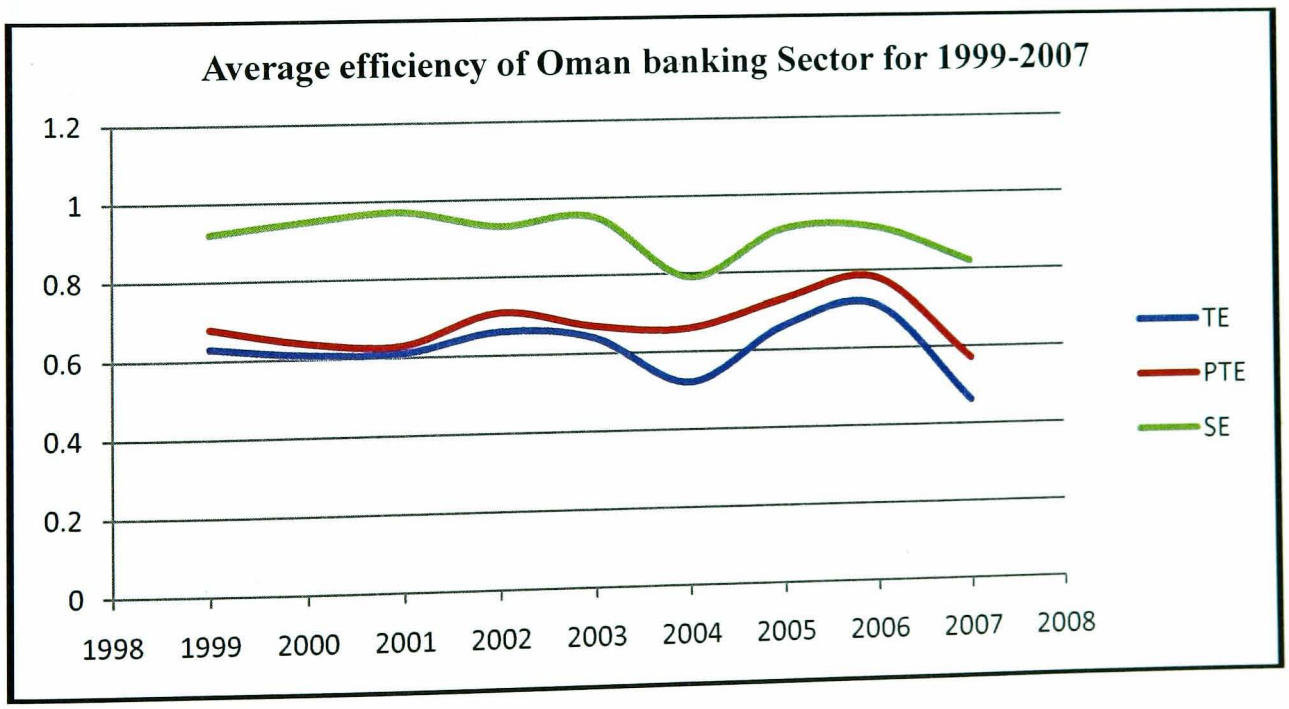
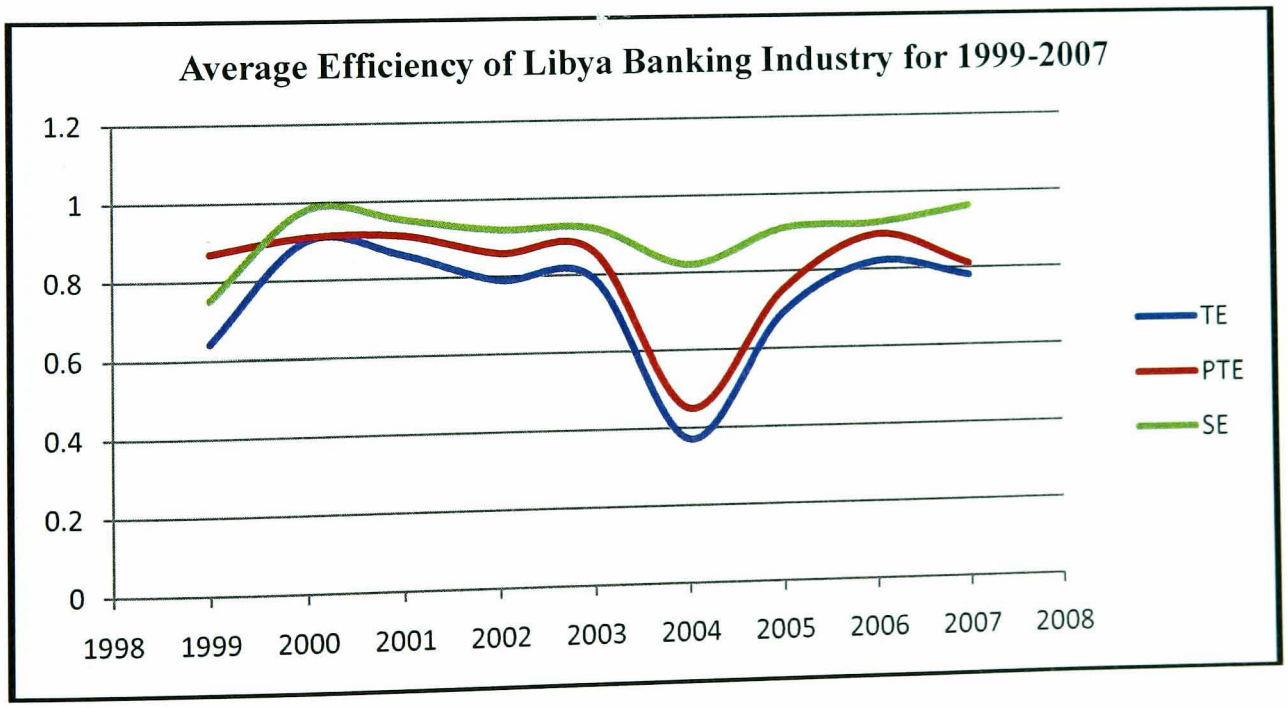


Table 7: Libya .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E(VRS scores)	SE
1999	0.64	0.87	0.75
2000	0.90	0.91	0.98
2001	0.86	0.91	0.95
2002	0.79	0.86	0.92
2003	0.79	0.86	0.92
2004	0.37	0.45	0.82
2005	0.69	0.75	0.91
2006	0.82	0.89	0.92
2007	0.78	0.81	0.96
Average	0.74	0.81	0.90

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 7



Appendix2

Table 1: Saudi Arabia. Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.58	0.78	0.76
2000	0.67	0.84	0.82
2001	0.76	0.88	0.88
2002	0.72	0.88	0.72
2003	0.79	0.90	0.88
2004	0.57	0.81	0.72
2005	0.65	0.75	0.88
2006	0.73	0.88	0.84
2007	0.67	0.81	0.82
Average	0.68	0.84	0.81

TE=Technical efficiency, **PTE**=Pure technical efficiency;, **CRS**=Constant Return to Scale, **VRS**=Variable return to scale. **SE**=Scale efficiency

Chart1

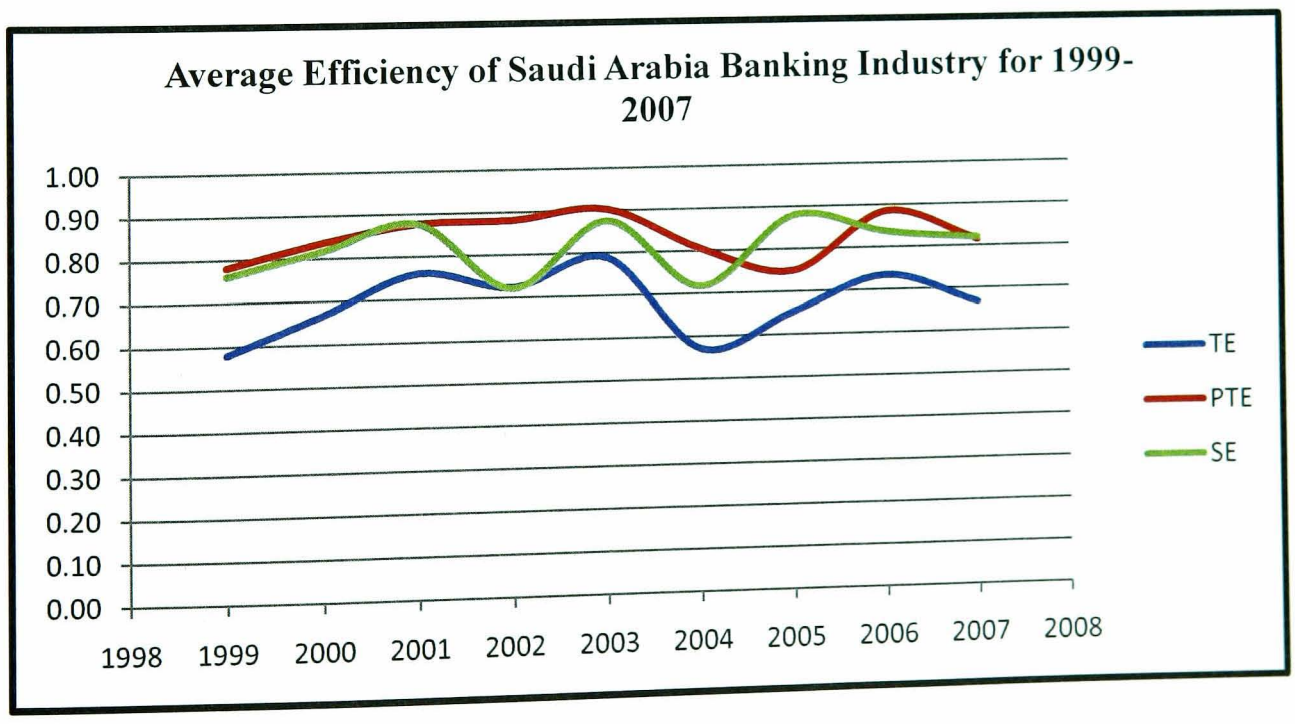


Table 2: Kuwait .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores	SE
1999	0.56	0.64	0.90
2000	0.66	0.71	0.94
2001	0.80	0.85	0.94
2002	0.83	0.89	0.94
2003	0.85	0.88	0.97
2004	0.36	0.75	0.48
2005	0.83	0.84	0.99
2006	0.63	0.79	0.82
2007	0.47	0.66	0.76
average	0.67	0.78	0.86

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart2

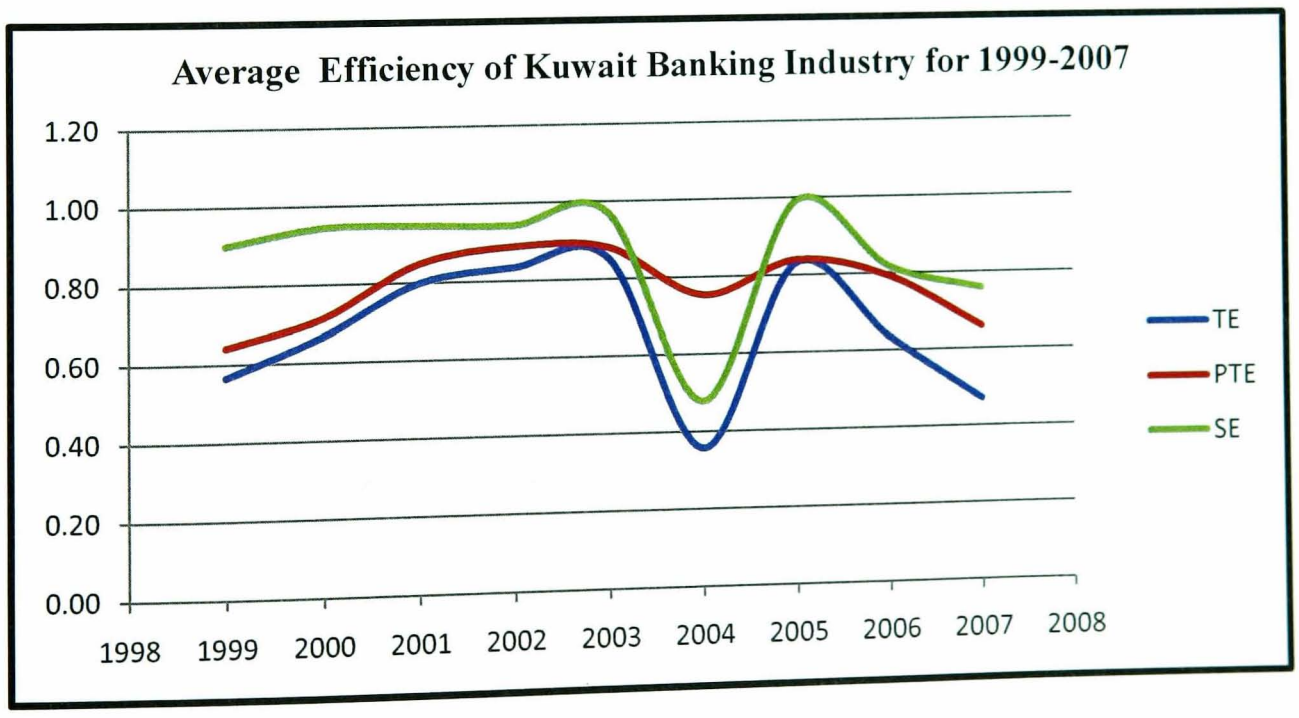


Table 3: UAE. Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores	SE
1999	0.79	0.89	0.89
2000	0.86	0.93	0.93
2001	0.86	0.92	0.94
2002	0.86	0.91	0.94
2003	0.85	0.88	0.97
2004	0.51	0.66	0.76
2005	0.67	0.75	0.90
2006	0.56	0.74	0.77
2007	0.59	0.84	0.71
average	0.73	0.83	0.87

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart3

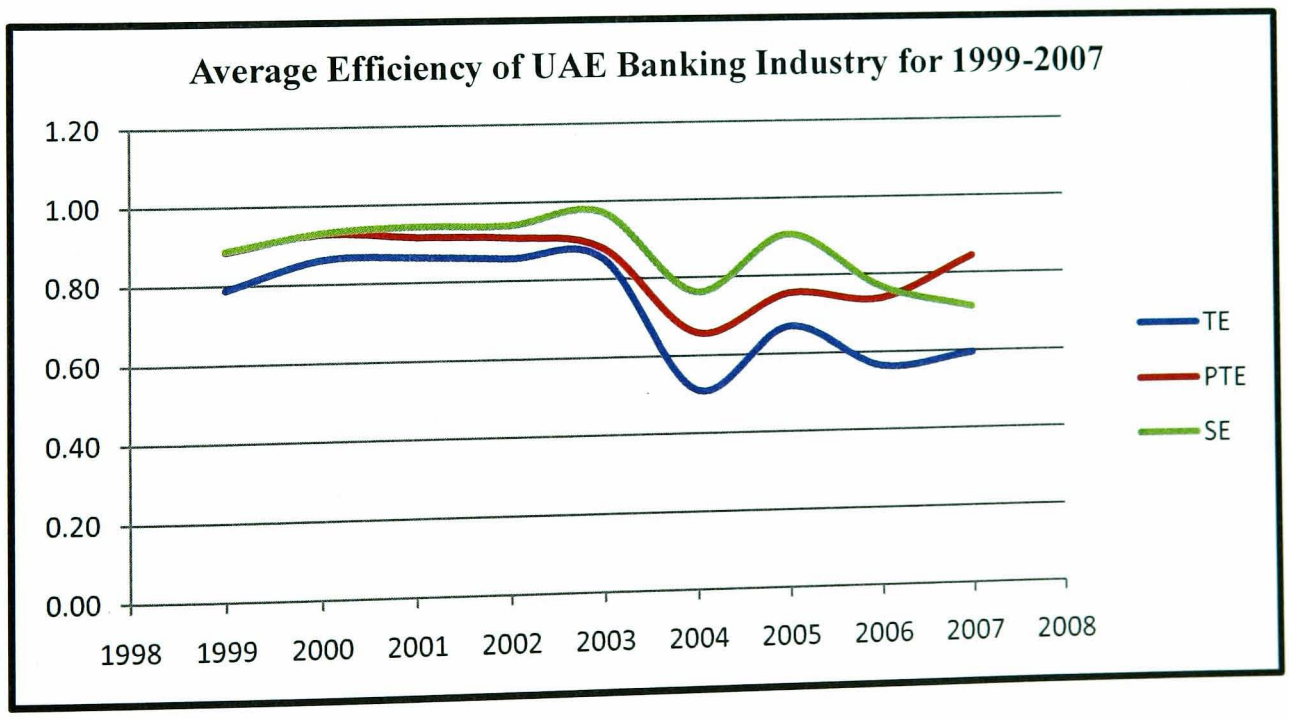


Table 4: Qatar Yearly Average Technical, Pure Technical & Scale Efficiency

LYYY

YEAR	TE (CRS scores)	P.T.E (VRS scores	SE
1999	0.72	0.77	0.95
2000	0.66	0.76	0.89
2001	0.74	0.81	0.90
2002	0.86	0.91	0.94
2003	0.87	0.92	0.95
2004	0.50	0.70	0.74
2005	0.66	0.70	0.95
2006	0.62	0.68	0.91
2007	0.52	0.66	0.79
average	0.68	0.77	0.89

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 4

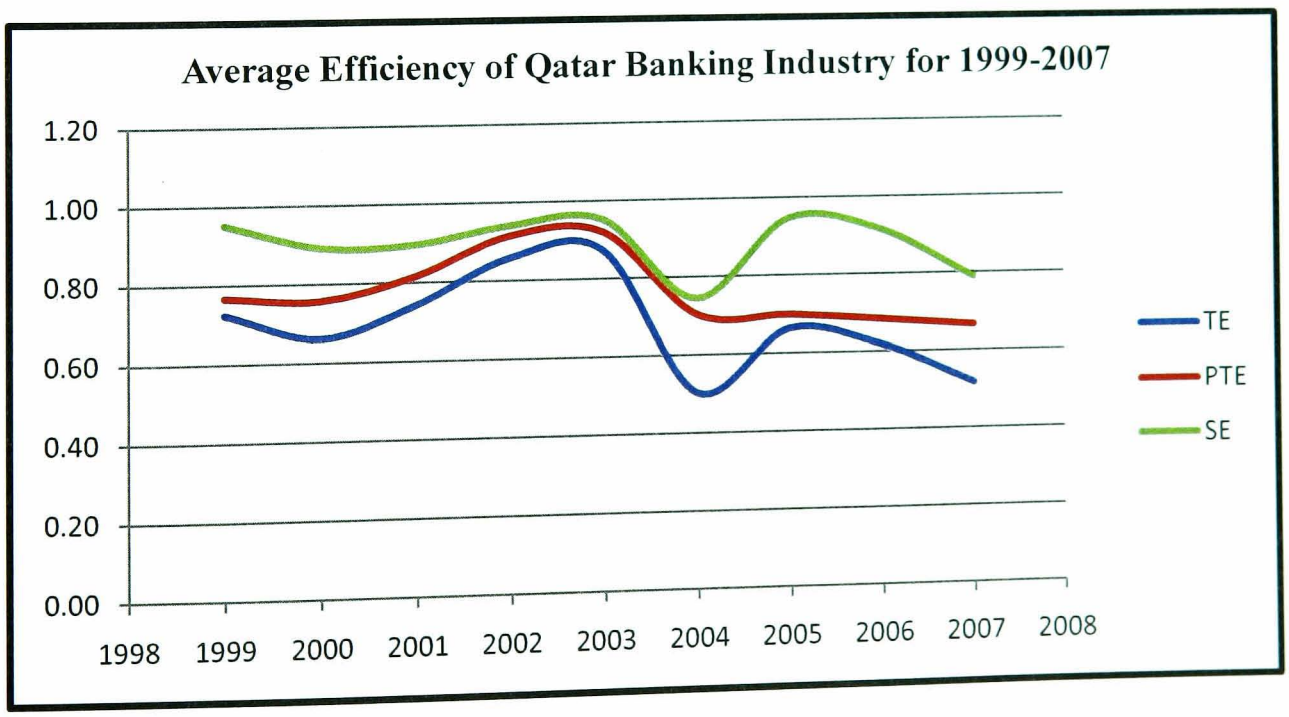


Table 5: Bahrain .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores	SE
1999	0.54	0.74	0.78
2000	0.55	0.75	0.78
2001	0.56	0.71	0.83
2002	0.41	0.68	0.81
2003	0.50	0.52	0.97
2004	0.37	0.64	0.56
2005	0.52	0.55	0.95
2006	0.46	0.56	0.78
2007	0.40	0.54	0.80
average	0.48	0.63	0.81

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 5

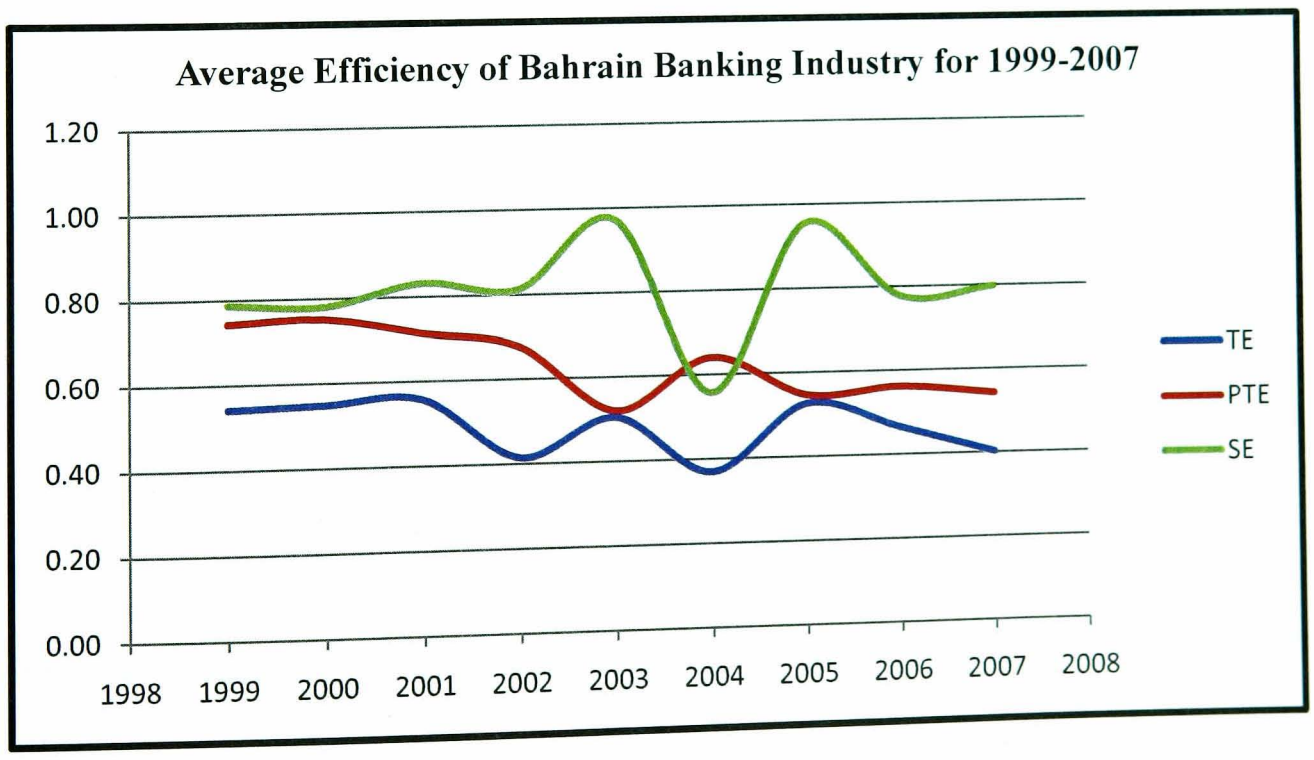
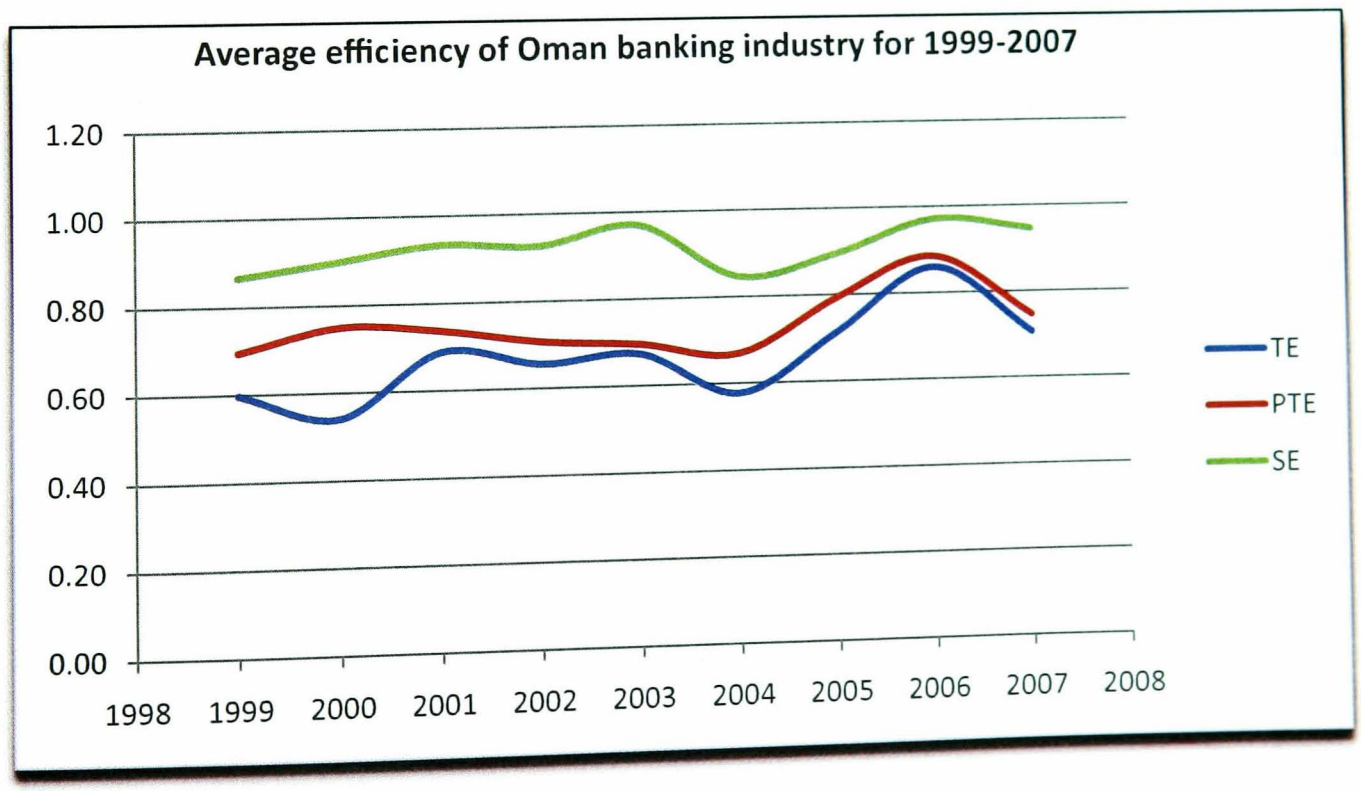


Table 6: Oman .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.60	0.69	0.86
2000	0.54	0.75	0.90
2001	0.69	0.74	0.93
2002	0.65	0.71	0.93
2003	0.67	0.70	0.97
2004	0.58	0.67	0.85
2005	0.71	0.79	0.89
2006	0.86	0.88	0.97
2007	0.71	0.75	0.95
average	0.67	0.74	0.92

TE=**Technical efficiency,** PTE=**Pure technical efficiency;,** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 6



Appendix 3

Table1: Saudi Arabia. Yearly Average Technical, Pure Technical and Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores	SE
1999	0.62	0.72	0.89
2000	0.66	0.75	0.89
2001	0.74	0.82	0.91
2002	0.80	0.87	0.92
2003	0.83	0.91	0.91
2004	0.87	0.93	0.94
2005	0.87	0.89	0.98
2006	0.89	0.90	0.99
2007	0.75	0.79	0.95
average	0.78	0.84	0.93

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 1

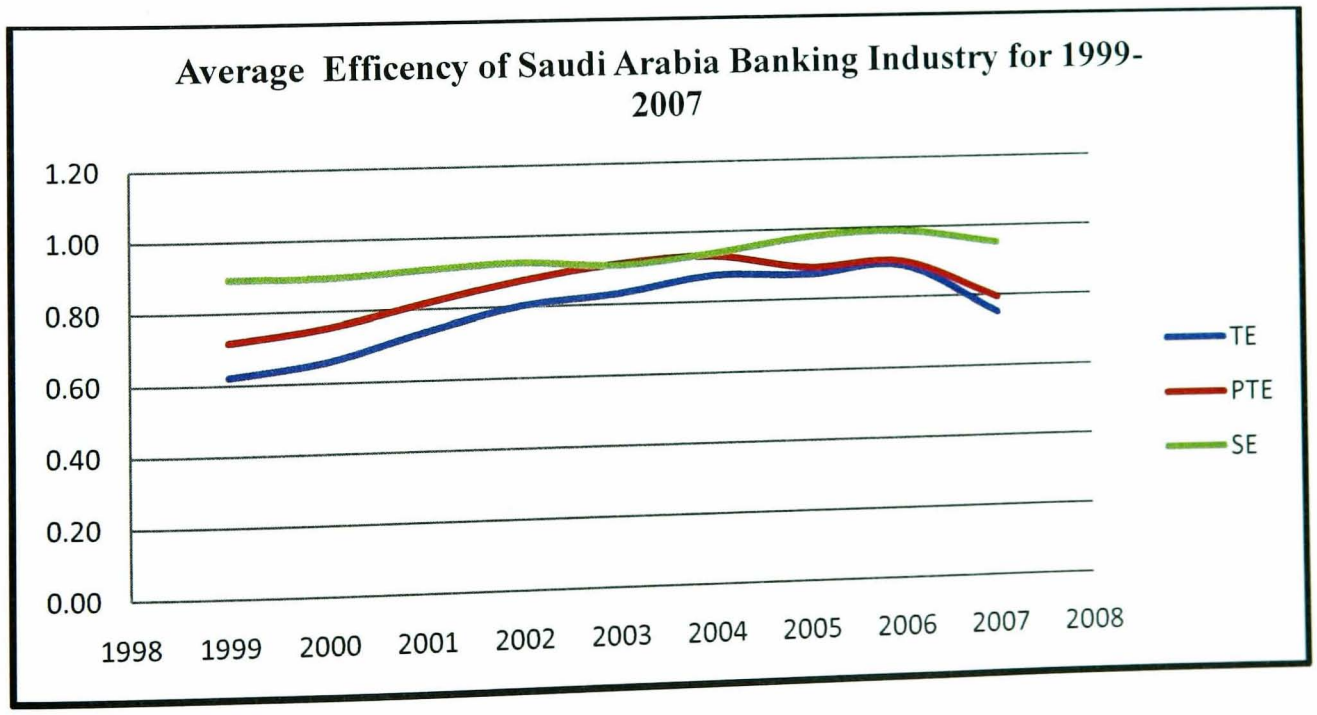


Table 2: Kuwait. Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.47	0.72	0.66
2000	0.55	0.79	0.71
2001	0.60	0.83	0.72
2002	0.67	0.90	0.75
2003	0.77	0.95	0.81
2004	0.75	0.91	0.82
2005	0.83	0.89	0.93
2006	0.78	0.87	0.90
2007	0.79	0.87	0.92
average	0.69	0.86	0.80

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

LY

Chart 2

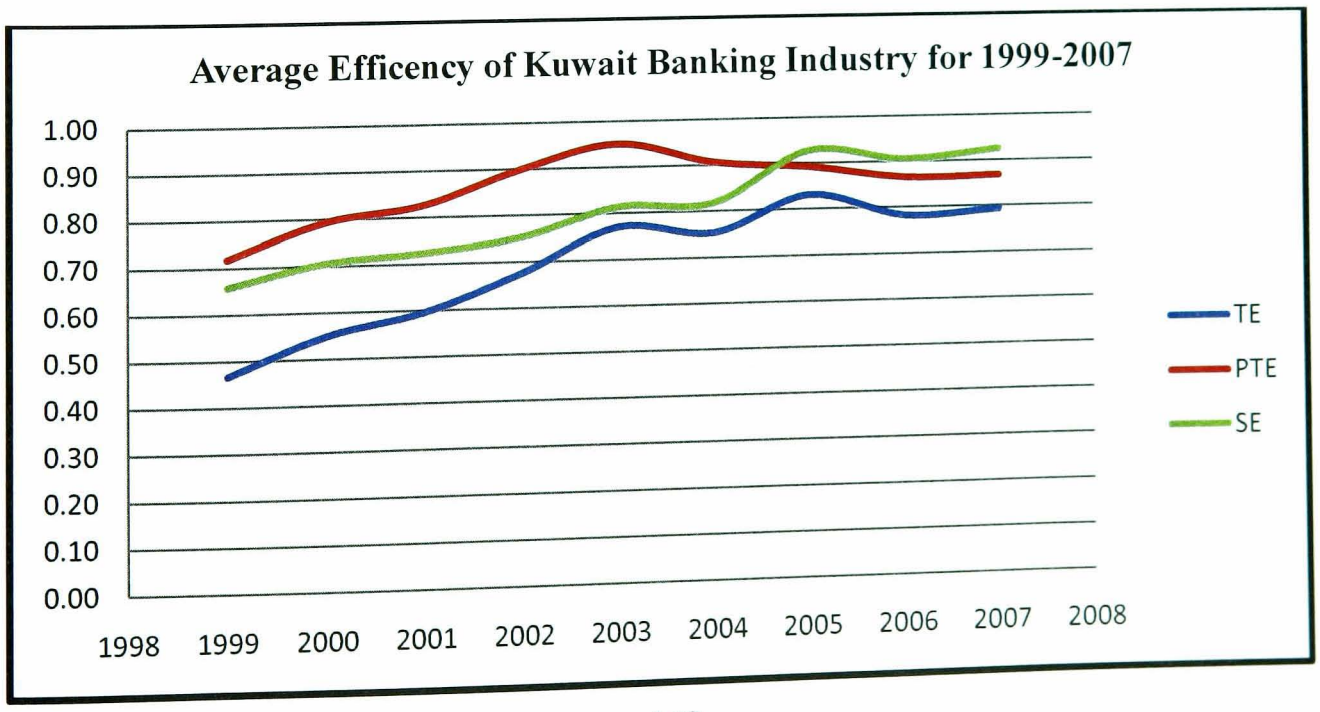


Table 3: UAE. Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.59	0.71	0.84
2000	0.57	0.68	0.86
2001	0.58	0.69	0.86
2002	0.69	0.80	0.86
2003	0.72	0.84	0.86
2004	0.71	0.81	0.88
2005	0.71	0.84	0.85
2006	0.59	0.70	0.84
2007	0.59	0.79	0.77
average	0.64	0.76	0.85

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 3

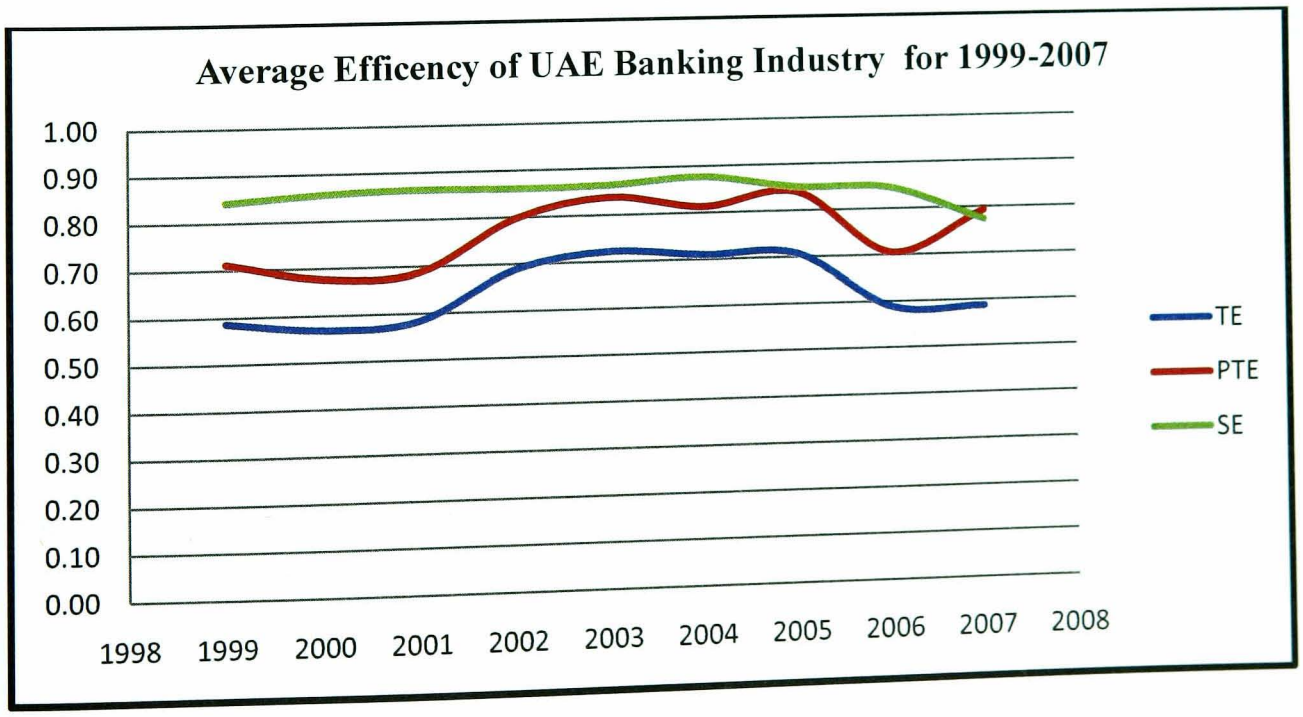


Table 4: Qatar .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.71	0.82	0.89
2000	0.65	0.71	0.93
2001	0.72	0.77	0.94
2002	0.84	0.90	0.93
2003	0.81	0.91	0.90
2004	0.83	0.86	0.97
2005	0.82	0.88	0.93
2006	0.74	0.78	0.96
2007	0.85	0.95	0.90
average	0.77	0.84	0.93

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 4

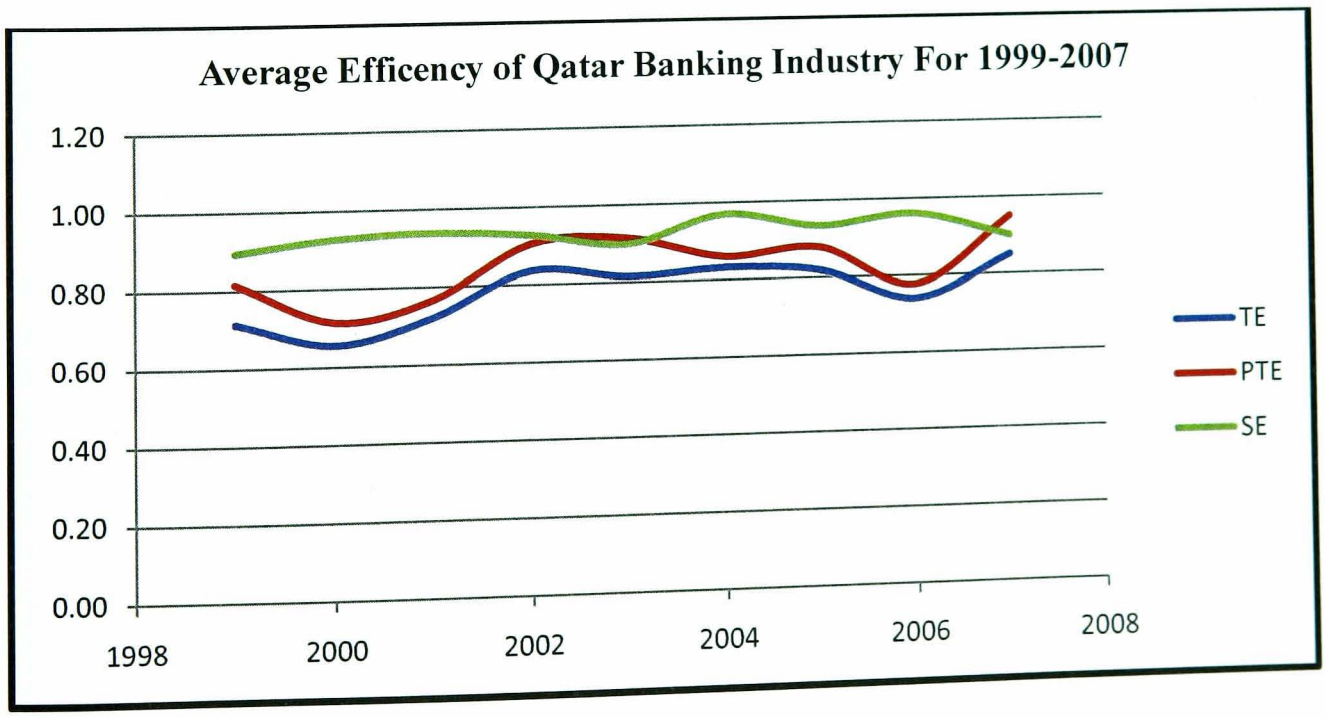


Table 5: Bahrain .Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.17	0.38	0.56
2000	0.19	0.41	0.54
2001	0.20	0.52	0.46
2002	0.19	0.60	0.44
2003	0.30	0.66	0.47
2004	0.40	0.75	0.51
2005	0.40	0.68	0.61
2006	0.33	0.61	0.59
2007	0.32	0.54	0.60
average	0.28	0.57	0.53

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 5

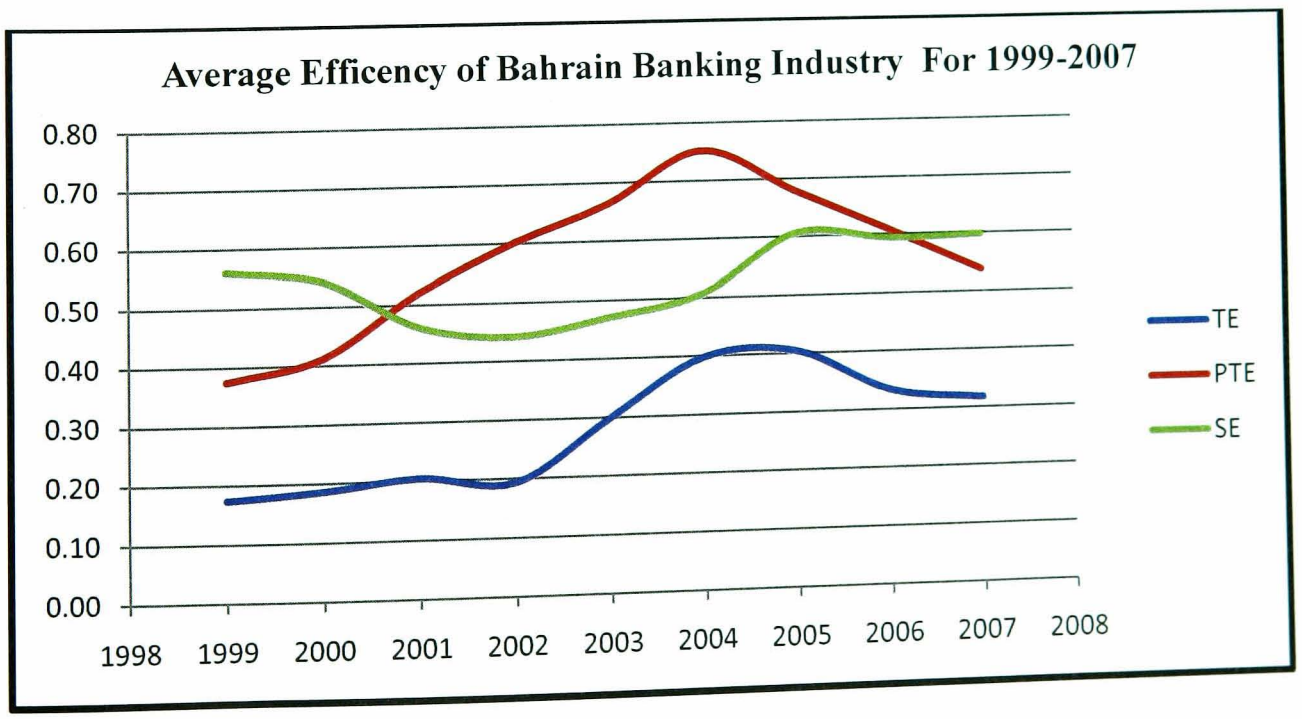


Table 6:Oman.Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores	SE
1999	0.77	0.84	0.93
2000	0.77	0.81	0.95
2001	0.75	0.80	0.94
2002	0.85	0.90	0.95
2003	0.83	0.88	0.95
2004	0.85	0.94	0.91
2005	0.87	0.93	0.93
2006	0.93	0.96	0.96
2007	0.96	0.99	0.97
average	0.84	0.90	0.94

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE=**Scale efficiency**

Chart 6

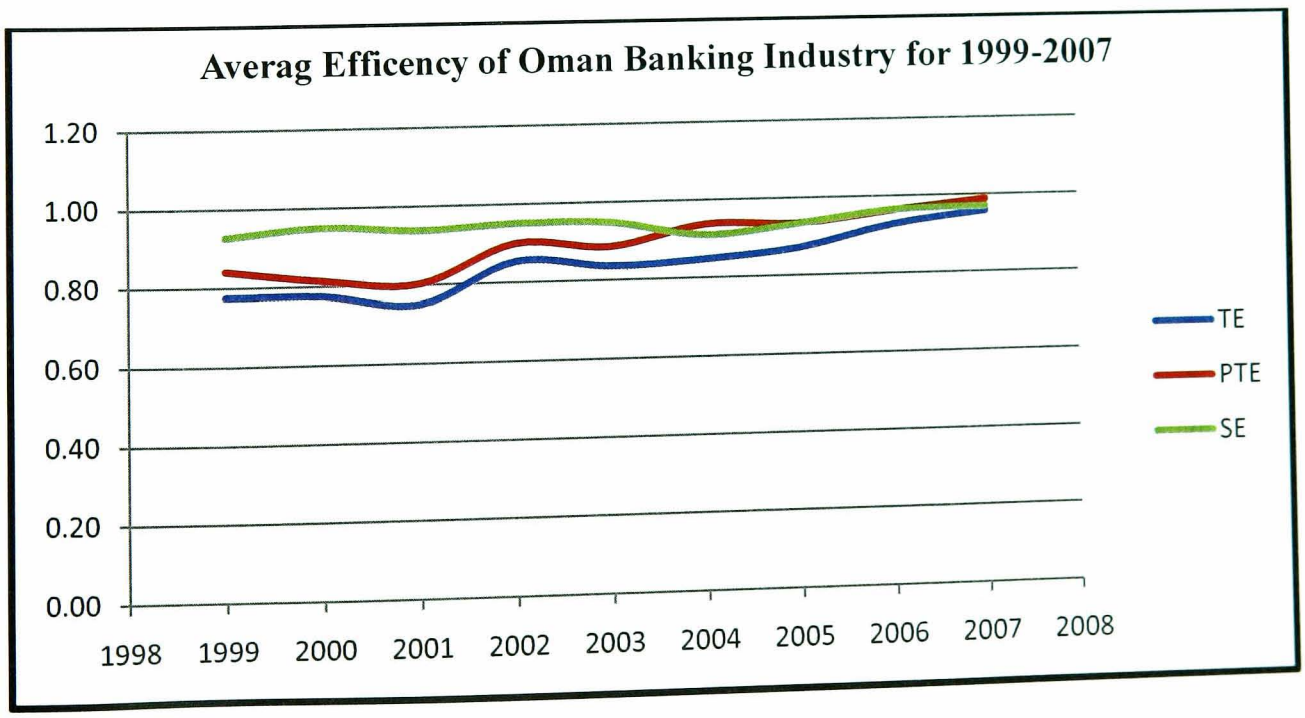


Table 7 Libya Yearly Average Technical, Pure Technical & Scale Efficiency

YEAR	TE (CRS scores)	P.T.E (VRS scores)	SE
1999	0.55	0.72	0.83
2000	0.72	0.73	0.99
2001	0.79	0.80	0.98
2002	0.72	0.73	0.98
2003	0.57	0.59	0.96
2004	0.68	0.69	0.98
2005	0.69	0.73	0.95
2006	0.73	0.78	0.93
2007	0.84	0.87	0.96
average	0.70	0.74	0.95

TE=**Technical efficiency,** PTE=**Pure technical efficiency;** CRS=**Constant Return to Scale,** VRS=**Variable return to scale.** SE= **Scale efficiency**

Chart 7