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AN ECONOMETRIC ANALYSIS OF OIL/NON-OIL SECTORS AND ECONOMIC GROWTH IN THE GCC: EVIDENCE FROM SAUDI ARABIA AND THE UAE

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By

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AN ECONOMETRIC ANALYSIS OF OIL/NON-OIL SECTORS AND ECONOMIC GROWTH IN THE GCC: EVIDENCE FROM SAUDI ARABIA AND THE UAE

Ahmed Ali S. Alodadi

Abstract

As a depletable resource oil is a useful source of economic growth, but may not be relied upon for long-term sustainable development. Diversification from oil is needed to achieve this. This research applies three models to examine the most important determinants of oil and non-oil sector economic growth in two of the largest economies in the Gulf Cooperation Council (GCC), namely Saudi Arabia and the UAE. The empirical analysis applies the Johansen approach and ECM to access the relationship between all variables, both in the long and short-term. Given the governments' determination to reduce dependence on oil income, this study focuses on the role of non-oil sectors. Explanatory variables in the models included exports, government spending, investment (private and public), tourism (religious and international), labour and capital, while GDP is used as the dependent variable.

The results reflect the fact that the main determinants of economic growth in Saudi Arabia are related to the oil sector. The analysis of the long-term relationship between selected variables in the main model find that total exports have the greatest influence on economic growth, while tourism is the least influential variable. Moreover, empirical results show that all variables are important in the growth of the Saudi economy except non-oil exports. The role of religious tourism is not found to be significant in the process of economic growth when the economy as a whole is taken into consideration. Nonetheless, when isolating the non-oil sectors, the effect of religious tourism has a greater influence on economic growth. Concrete evidence also exists as to the

importance of the role of an additional variable – government spending – in enhancing economic growth.

In the UAE, the impact of both oil and non-oil sectors is highly prominent. This is particularly evident when the economy is divided into two segments (oil and non-oil). With the exception of government spending and public investment in the non-oil sector, the estimated results show that overall both sectors (oil and non-oil) are in fact responsible for this growth. With regard to tourism, the study's findings confirm its importance in both models. It is found that non-oil exports in the non-oil sectors have the greatest positive impact on economic growth, followed by tourism and private investment respectively.

Overall, this study's outcomes suggest that the omission or exclusion of important variables and factors in non-oil sectors such as tourism and the exclusive concentration of empirical studies on the role of oil exports and government spending as the engines of growth, might be both biased and misleading. This thesis has both theoretical and practical implications. Through isolating the non-oil sector from the oil sector, the study is able to detect and highlight the potential role of tourism as a future crucial factor in determining economic growth in oil rich countries, especially in the GCC.

DEDICATION

To my parents, Ali and Fatima.

To my wife Reem and my sons Faisal, Fahad and Bader.

To my family and friends.

A special dedication to my supervisors, Dr James Benhin and Prof. Paul Bishop.

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List of Abbreviations

Abbreviation	Full term
λ-trace	Trace Statistic
λ-max	Max-eigen Statistic
ε	Error term
α	Constant
β	Elasticities
Δ	The first difference
μ	The arithmetic mean
σ^2	Variance
γk	Covariance
ADF	Augmented Dickey Fuller
AIC	Akaike's Information Criterion
DF	Dickey Fuller
D-W	Durbin-Watson test
ECM	Error Correction Model
FPE	Final Prediction Error
GDS	General Department of Statistics
GCC	Gulf Cooperation Council
HQ	Hannan-Quinn information criterion
IMF	International Monetary Fund
K	Capital
K_O	Investment in oil sector
KSA	Kingdom of Saudi Arabia
KPSS	Kwiatkowski-Phillips-Schmidt-Shin
Kt	Physical capital
L_T	Total labour force
L_O	Employees in the oil sector
L_N	Employees in the non-oil sector Labour
LM	Breusch-Godfrey serial correlation test
Lg	Lag Length
Ln	Natural Logarithm
MGA	Multi-group analysis
NAFTA	North American Free Trade Agreement

NP	Ng-Perron-test
n/a	Not applicable
OLS	Ordinary Least Squares
OPEC	Organization of Petroleum Exporting Countries
PP	Phillips-Perron
PI_N	Private investments in non-oil sectors
PG_N	Public investments in non-oil sectors
Q-test	Q-statistic
R^2	R-squared
$\bar{R}^2$	adjusted R-squared
SAMA	Saudi Arabian Monetary Agency
SA	Saudi Arabia
S.E	Standard Error
SC	Schwarz information criterion
T	Tourism
t	t-Statistic
TFP	Total Factor Productivity
UAE	United Arab Emirates
UN	The United Nations
UNCTAD	United Nations Conference on Trade and Development
VECM	Vector Error Correction Models
WTO	The World Trade Organization
X_T	Total exports
X_O	Oil exports
X_N	Non-oil exports
Zt	Vector of some selected variables

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Author's Declaration

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- Alodadi, A. A. and Benhin, J. (2014) The main determinants of economic growth and the role of non-oil sectors in oil countries' economies: the case of Saudi Arabia, *International Journal of Business Tourism and Applied Science*, Vol 2. No.2

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INTRODUCTION

1.1 Research Background

1.2 Aims and Objectives of the Study

1.3 Significance of Research

1.4 Research Gap and Contribution

1.5 Thesis Outline

CHAPTER ONE: INTRODUCTION

Chapter One is an introduction; it explains the major research landmarks. In an attempt to discuss all relevant aspects, the chapter has been organised into five main sections. The first of these highlights the research background; the next provides a brief overview of the research gap and contribution; then there is a highlight of the aims of the study; followed by several objectives and specific research questions. Last but not least there is a discussion of the significance of the research, together with the main research outline.

1.1 Research Background

The key purpose of this research is to consider and identify the most important factors affecting economic growth in the two biggest economies in the Arabian Gulf – those of Saudi Arabia and the UAE. The role of oil and non-oil sectors in these two economies is then examined and insights into the role of key neglected factors in the non-oil sectors are offered. Hence, this section focuses on the role of both oil and non-oil sectors in oil-rich countries in general, with particular emphasis on the two largest economies in the Gulf Cooperation Council (GCC).

The world today is witness to significant interest in the vicissitudes of economic growth in oil-rich nations. Economic growth is one of the key macroeconomic indicators. Economic theories and empirical studies have made strong progress in enhancing our understanding of economic growth. Some have focused on external factors affecting economic growth (e.g. Solow-Swan, 1956), while others have concerned themselves with internal factors (e.g. Romer, 1986; Lucas, 1988). The majority of oil-rich countries have focused on a single product (oil and its derivatives) for the most part without trying to diversify their sources of income and without taking into account the perils of falling prices, such as the implications of prices reaching their current lows of less than 50 per cent of their 2014 value, with the potential for further decreases (BBC, 2015).

Given that natural resources like oil and gas are exhaustible a significant number of resource-rich countries, including Saudi Arabia and the UAE, who rely heavily on this resource; may face future economic instability as far as external markets are concerned. In contrast, the non-oil sectors chiefly rely on internal factors and therefore could easily be managed and controlled, to enhance long term economic benefits and sustainability.

In the case of the GCC these countries have continued their attempts to diversify their sources of income and have tried to engage the non-oil sector in their economic policies. As a result, non-oil sectors rose to a 50% share of the total GDP in 2012 (Qatar National Bank (QNB), 2013). Notably, non-oil sectors form a greater share of the gross domestic product (GDP) in the United Arab Emirates than in Saudi Arabia, reaching a level of roughly 62%.

With regard to Saudi Arabia's economy, which is the largest economy in the GCC, the instability of world oil prices and the Saudi economy's reliance on a single product calls for the enhancement of other revenue-generating sectors in the country's attempts to achieve a greater level of growth and sustainable development. Saudi Arabia has to unleash the potential of non-oil sectors if it is to reduce its dependence on oil. In several studies, private investment, non-oil exports and religious tourism have been identified as sectors with huge potential to enhance economic growth (Khan and Reinhart, 1990; Al-Yousif, 1997; Schubert et al., 2011). Religious tourism, for example, has experienced tremendous growth, with the number of tourists visiting Saudi Arabia increasing dramatically. It reached its highest ratio in the Middle East region in 2011, according to The World Tourism Organization (2012), along with an unparalleled growth in non-oil exports. The role of private investment increased steeply too; the contribution of the private sector in gross domestic product (GDP) in Saudi Arabia at constant 1999 prices reached slightly more than 58 per cent, based on the Ministry of Planning's figures, for the year 2013 (Mainstay of Economy and Planning, 2014).

Nonetheless, in oil-rich countries (most prominently Saudi Arabia) there is very limited empirical evidence concerning the relationship between oil and non-oil factors and economic growth. Saudi Arabia is economically a very important country due to the fact that its significant oil stocks allow it to plug into the world oil affect and monitor the stability of oil prices. Hence, the economic stability of Saudi Arabia concerns not only Saudi Arabia but also the world as a whole.

Turning to the UAE economy as the second largest in the GCC, the situation is not much different. The government depends to no lesser extent on oil, gas and its derivatives and the main heavy industries are associated with oil and gas (The Government of the UAE, 2007). In 1975 the contribution of the oil sector in GDP amounted to around 66%; this was due to the oil boom at the time, according to the Ministry of Planning in the UAE (1987). However, recently the UAE economy has become more diverse than other Arabian Gulf Countries (Qatar National Bank (QNB), 2013). The government of the UAE has attempted to focus on non-oil sources. Perhaps the most obvious of these attempts is its investment in tourism, resulting in levels of income that have exceeded the oil revenues of Dubai (The Government of the UAE, 2007). The number of tourists visiting the UAE reached more than eight million in 2012, the second highest in the GCC after Saudi Arabia. This is highly significant given the total land area of the UAE, and in light of the fact that the country lacks the high levels of religious tourism attractions found in Saudi Arabia (Makkah and Madinah, for example).

The UAE economic policy achieved an increase in the contribution of non-oil sectors to GDP of about 70% in 2010, compared to 10% in 1971 and 34% in 1975 (Al-Arabia, 2012). Private investment is also considered to be the basic foundation of the UAE economy; governmental focus has contributed effectively to its growth, allowing its contribution to GDP to reach more than 68% in 2012 compared to 35% in 1970. With

regard to non-oil exports, by virtue of opening up the UAE economy to the world the value of non-oil exports has also increased dramatically. In 2011 the UAE became the twentieth largest exporter in world merchandise trade, with revenue from exports reaching US$285 billion (Shayah, 2015), exceeding several countries such as Australia and Sweden.

Furthermore, the Organization of Petroleum Exporting Countries (OPEC) considers the GCC region as the world's largest warehouse for oil. Saudi Arabia, for example, has the highest level of oil production in the world and possesses the largest oil reserves. The United Arab Emirates occupies third place as far as oil reserves are concerned, after Canada. Countries in the GCC region are also famous for their international tourism, particularly the UAE. Saudi Arabia is particularly famous for its religious tourism, given that it includes the most important holy cities in the world for Muslims.

Saudi Arabia and the UAE have therefore been chosen by reason of the fact that they allow all the important variables in the oil and non-oil sectors to be tested simultaneously. These two countries also have the most affluent economies in the Gulf region per the QNB (2012) estimates.

1.2 Aims and Objectives of the Study

The research aims mainly to examine the most important determinants of economic growth in both oil and non-oil sectors of the Saudi and the UAE economies. The primary objective was to develop new models that can successfully model economic growth in Saudi Arabia, the UAE and other oil-rich countries. A second objective was to empirically test the new models in the Kingdom of Saudi Arabia and the UAE. This model will be important in helping decision-makers achieve a steady rate of sustainable growth. In order to achieve such objectives the model will have to take into account the

importance of the oil industry as well as the overall economic structure of Saudi Arabia and the UAE. The following specific research questions are addressed:

1. What is the role of the oil and non-oil sectors in the Saudi Arabian economy? (Chapter 6)
2. What is the role of the oil and non-oil sectors in the UAE economy? (Chapter 7)
3. How does the economic impact of the oil and non-oil industries in Saudi Arabia compare with that of the United Arab Emirates? (Chapter 8)
4. How can policy makers in the Arabian Gulf States, which are similar in their economies to Saudi Arabia and the UAE, reduce the negative effects arising from dependence on oil? (Chapter 9)

1.3 Significance of Research

Economic growth is a top priority among both industrialized and developing nations and has a positive effect on society by promoting a higher standard of living and improved social welfare systems (Dizaji, 2012). It has attracted considerable academic attention within the past few years and, as a result, methods have been developed that attempt to interpret and classify the most important determinants of such growth (Arvanitidis et al., 2009).

The GCC has stimulated international attention for its continuous economic growth during the past few decades. However, it now faces challenges and social problems that threaten to affect its ability to achieve an acceptable level of sustainable economic development in the future. Sustainable development is necessary if the GCC citizens wish to achieve a higher standard of living. Over the past four decades, the GCC has experienced different stages of growth: a high level of growth during the 1970s, followed by a period of economic stagnation during the 1980s and 1990s and then a significant rise in 2000s. Economists have largely attributed these patterns to

fluctuations in oil prices and the revenue that could be derived from this essential GCC resource.

Saudi Arabia and the United Arab Emirates, like most oil-rich countries, rely heavily on oil exports in the process of economic growth; nonetheless, natural resources such as oil and gas are exhaustible and thus lead to future economic instability as far as external markets are concerned.

Thus, this study addresses the most important factors that affect the economic growth of these two Arabian Gulf States' economies (Saudi and the UAE), focussing on economic growth relating to the whole economy, the oil and non-oil sectors. However, the study will focus more on the factors in non-oil sectors as a good future strategy that can avoid a significant number of risks such as lower prices of natural resources in global markets. With Saudi Arabian oil production playing such a key role in the overall economy of the Middle East, isolating methods that can accurately predict its future economic growth will have an impact not only on Saudi Arabia, but on the rest of the Middle East and, indeed, on the rest of those areas of the world most prominently affected by fluctuations in oil prices. This study will endeavour to explore methods to better predict the future of the GCC in general and Saudi Arabia and the UAE particularly, using key economic indicators.

Isolating the factors that influence economic growth plays an important role in determining economic policy, as well as other regulations that affect the welfare of a country. As above, the majority of the GCC is unique in its dependency on a single natural resource; oil plays a significant role in the country's economy, just as it does in the economies of other nations within the Middle East. Their dependency on oil makes determining their economic growth factors a somewhat different process to the one applied to countries possessing a greater diversity of economic resources. This research plays an important role in developing models that can help to assess the effects of

various determinants of future growth in the Saudi Arabian and UAE economy. Understanding these factors would help the GCC to achieve its desired future growth rate. This study hopes to play an important role in the development of models to assist in the realisation of this objective.

Key studies have identified the need to diversify GCC member nations. They have highlighted the fact that there is a particular need to move the Kingdom of Saudi Arabia beyond its heavily oil-based status if it is to attain long-term sustainable growth. In this respect, key non-oil sectors, particularly the tourism industry, non-oil exports and private investment, have been recognised as sectors that could promote this growth. Non-oil sectors are therefore important to any future diversification of economic growth, particularly as they are primarily influenced by internal factors and can therefore be easily managed and controlled.

The study would also help provide further understanding of the factors that determine economic growth (and their specific relationships) in oil-producing countries in general and the economies of the Arab Gulf States in particular, represented here by Saudi Arabia and the United Arab Emirates. It could assist policy makers in the selection of effective and appropriate public policies that would improve and enhance the economic growth of the state in general, through policy development and implementation.

1.4 Research Gap and Contribution

There have been numerous studies on economic growth. However, this study is significantly different in several ways:

First, only a limited number of studies have examined the determinants of economic growth in oil-based countries; this is especially true for those oil-rich nations found in the Arabian Gulf. Most of these studies have focused on the study of one or two variables, hence neglecting some very key variables (Prochniak, 2011). This fact is

taken advantage of in this study, which adopts a novel comprehensive approach. This includes several variables that have been proven to be the most important determinants of economic growth in oil-rich countries, focusing on important and neglected variables in the non-oil sectors.

Second, this study modifies our understanding of the nature of economic growth in oil-producing countries. Therefore, it is important to separate the economic structure into two segments (oil and non-oil) when studying issues related to economic growth in oil-rich countries. This research is the first study that addresses and examines both oil and non-oil sectors related to economic growth simultaneously yet separately. Previous studies failed to separate the structure of an economy into oil and non-oil sectors and isolate these from the whole economy. The main contribution of this thesis is to clarify the importance of the non-oil sectors (such as private investment, religious tourism and non-oil exports) as a future strategy for sustainable long-term growth for oil-rich countries, especially in the two GCC countries, Saudi Arabia and the United Arab Emirates.

Third, as far as is known, no study exists on the impact of religious tourism on economic growth. Knowledge of this impact could inform future studies in other countries influenced by religious tourism, such as Italy. Thus, the current literature has been extended by incorporating new and significant variables in empirical models of economic growth (such as religious tourism) in order to provide more profound insights into the relevance of this variable. The results relating to the non-oil sectors are of great importance to the drawing up of future policies. The Kingdom of Saudi Arabia is a

focal point for several reasons, most notably because of the importance of religious tourism to the country (Aziz, 2001)[1].

Fourth, the effects of some economic variables selected such as government spending and non-oil exports on economic growth in oil-producing countries in general and Saudi Arabia in particular is inconclusive (as indicated by studies such as, Albatel, 2000; Tuwaijri, 2001; Mahdavi, 2007; Aljarrah, 2008; Tabari and Nasrollahi, 2010; Adenugba and Dipo, 2013; Olayiwola and Okodua, 2013), which means that the influence varies from study to study. Additional work is therefore required to substantiate some of these findings.

Fifth, country comparisons have been made through two oil-rich states in the GCC region, namely Saudi Arabia and the United Arab Emirates, using the Johansen approach and the Multi-group analysis. Testing the three models developed in this study in these two countries will enhance the generalizability and applicability of the current findings to other GCC countries such as Kuwait, Oman and Qatar.

Finally, this study opens the door to other studies exploring growth in oil-producing countries by means of the three models used here; future researchers can now test other important variables in oil-producing countries and can further verify the assertion that oil-producing countries might need new independent theories, especially in the oil sector, which depends on physical capital more than human capital.

1.5 Thesis Outline

In order to achieve the objectives of the thesis, this study is comprised of five key parts: the introduction, the literature review (theories and experimental studies), followed by the research methodology, the results of the analysis, the main conclusions and study implications (theoretical and practical) (see Figure 1.1).

[1] Religious tourism is a kind of tourism wherein people travel for religious reasons to Umrah on a pilgrimage or as a missionary (Shinde, 2008). The largest type and most important form of religious tourism in the world is the Hajj pilgrimage in Makkah (Aziz, 2001).

The first chapter presents a brief overview of the thesis, providing the study background and highlighting the scientific contributions. It also reviews the aim of the study and the specific objectives, questions and thesis structure.

Chapter Two examines the economic structure of Saudi Arabia and the United Arab Emirates, particularly those specific factors that have been selected for this study. It provides a comprehensive overview of the main factors affecting economic growth in the Saudi economy and the United Arab Emirates and the level of their impact on the economy.

The literature review is presented over two chapters. Chapter Three discusses the most important theories in economic growth and the specific theory that will be developed and used, whereas Chapter Four discusses key empirical studies. This chapter is divided into two sections: (1) the determinants of economic growth; and (2) key variables influencing economic growth. In the first section a selected number of the empirical studies are reviewed under these three key groupings: (i) developed countries; (ii) developing and emerging countries; (iii) oil-rich countries.

The Fifth Chapter is the research methodology and it is organized into four main sections: Model specification, description of the variables, method of study and econometric techniques, together with several tests, including the unit root test following the Augmented Dickey Fuller (ADF), Phllips-Peron (PP) tests, the Johansen approach and VECM to evaluate the long- and short-term relationship between all the variables and the Multi-group Analysis (MGA).

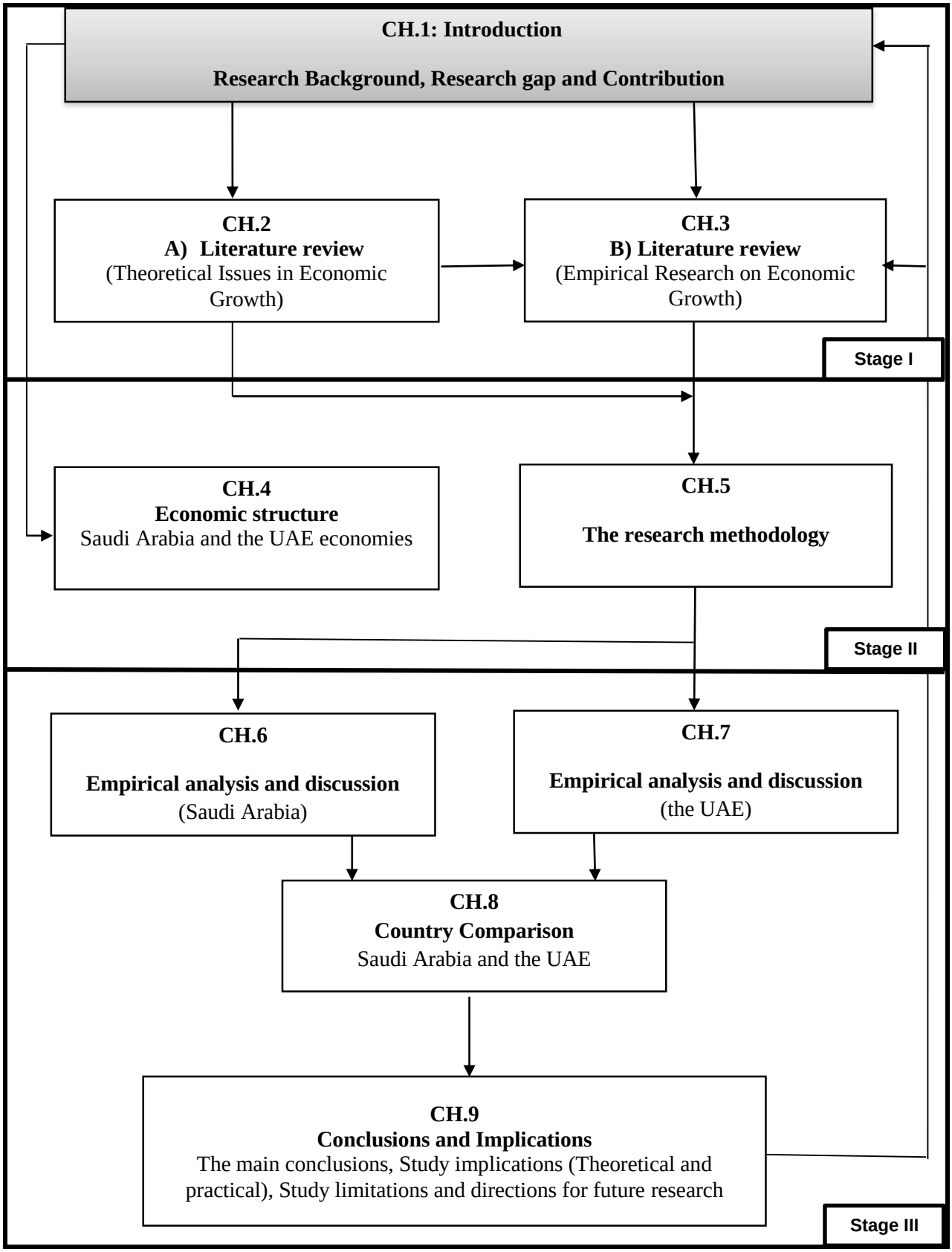
Chapters Six and Seven contain the empirical analyses and discussions. Chapter Six focuses on an analysis of the Saudi economy, whereas Chapter Seven limits itself to the UAE economy. Each of these two chapters starts with an introduction, the presentation of the econometric analyses (stationarity, co-integration, long and short-term

relationships), followed by a discussion of the results in the two countries and the conclusions drawn therefrom.

Chapter Eight is entitled "Country Comparison" and has been organized into three main sections. The first section begins with a brief general comparison of the estimated models for Saudi Arabia and the UAE, while the second section uses a multi-group analysis to assess the differences in the results found in chapters six and seven and the third section discusses and answers the research questions related to the comparative study.

Finally, Chapter Nine contains the main conclusions and study implications (theoretical and practical), with recommendations for the governmental bodies of Saudi Arabia and the UAE. The final section addresses limitations and future research.

Figure 1.1: The Stages of the Research



Source: Author

2

AN OVERVIEW OF SAUDI ARABIA AND THE UAE ECONOMIES

CHAPTER TWO: AN OVERVIEW OF SAUDI ARABIA AND THE UAE ECONOMIES

2.1 Introduction

This chapter will focus on key economic variables and other economic indicators for the two case studies, Saudi Arabia and the UAE. It is organized into three main sections: an overview of the GCC economies and insights into the Saudi Arabian and UAE economies respectively. As noted in chapter 1, Saudi Arabia and the UAE were selected as they possess the strongest economies in the GCC, as identified by several studies, including the QNB (2013).

Oil exports carry great importance to the majority of oil-rich countries, to the Gulf Cooperation Council (GCC) in general and to the two strongest economies in the GCC– Saudi Arabia and the UAE. Despite the oil crisis in the 1970s, the rapid growth in global demand resulted in high revenues during that period for oil-dependent economies, especially Saudi Arabia and the UAE. Prices of natural resources (particularly oil) saw an upturn, continued to rise and peaked in 1981. In the mid-1980s the price of oil dropped from its highest level to the lowest in that era; rose moderately thereafter, then jumped to more than US$ 27 in 2000. Despite a drop in 2009 they soon rose again, reaching their highest rate in 2011 (OPEC, 2015).

However, natural resources such as oil and gas are exhaustible and thus oil-rich countries that rely heavily on oil exports in the process of economic growth (like Saudi Arabia and the UAE) are exposed to several risks, in addition to future economic instability. Hence research into alternative internal, controllable sources of revenue are badly needed (Hvidt, 2013). Key variables in the non-oil sectors such as tourism, private investment and non-oil exports are, economically, the safest targets for investigation. The thesis will begin with a map showing the location of the GCC and then review the economic aspects.

Source: Reproduced from www.news-articles.org

2.2 An Overview of the GCC Economies

The member states of the GCC are located in the continent of Asia. The GCC itself is an Arabian Organization consisting of six countries: Saudi Arabia, the UAE, Kuwait, Bahrain, Qatar and Oman. In general, these natural resource-rich countries' economies are heavily reliant on these resources, with oil and gas as the backbone of their economic existence. Proven reserves of Gulf Oil are considered the largest in the world, totalling 52% of the total oil reserves in OPEC (Harrathi and Almohaimeed, 2015). Table 2.1 presents a brief overview of key indicators of the GCC countries in 2011.

Table 2.1: Summary of the most important economic indicators in 2011[2]

	SA	UAE	Bahrain	Oman	Qatar	Kuwait
Nominal GDP (US$ Billion)	592.5	366.2	25.8	67.9	173.5	158.0
Real GDP growth (%)	7.1	3.3	2.2	5.0	14.1	4.8
GDP as % of total GCC GDP (at Current Prices)	40.89	27.97	2.06	5.44	11.96	11.68
Population (million)	28.1	8.7	1.2	3.0	1.8	2.8
International tourism, number of arrivals (million)	17.4	10.5	6.7	1.0	2.0	0.26
GDP Per Capital (US$)	23.256	39.778	22.238	21.164	89.115	47.553

Sources: Saudi Arabian Monetary Agency (SAMA, (2012)); Gulf Investment Corporation GCC Economic Statistics (2011) and the World Bank (2015).

Table 2.1 shows some of the key economic and other indicators of the GCC and clearly shows the importance and strength of the Saudi and UAE economies in relation to the other member states. It can also be seen that the gross domestic product (GDP) of the Saudi and UAE economies combined constituted nearly 70% of the total GDP of the entire GCC in 2011, making them the most powerful economies in the GCC. Further, they constitute the largest proportion of the population in the six nations – around 80% of the total GCC population; this enables them to utilise significant resources in the production process. With regard to international tourism, Table 2.1 confirms (in accordance with the figures of the World Bank (2015) and the World Tourism Organisation (2012)) that both countries are accountable for the largest share of tourists (70%).

This data illustrate the importance of these two countries, Saudi Arabia and the UAE, in comparison to the rest of the GCC. The next section presents a more comprehensive overview of how these two countries form the largest and most powerful economies not only in the Arabian Gulf Region but also in the entire Arabian World. It focuses on the main features of economic growth in both the Saudi and UAE economies before and

[2] 2011 was chosen as it is the end period selected for the empirical analysis.

after the oil era. Saudi Arabia is addressed first, then the UAE. After an initial overview, the economy is divided into two main parts: the era before and then during, the discovery of oil in the region.

2.3 An insight into the Saudi economy

Saudi Arabia is located in southwest Asia, with a total land area of approximately 2,149,690 km^2. According to the SA Central Department of Statistics and Information, in 2014 Saudi Arabia's population exceeded 30 million people, more than 20 million of whom were ethnic Saudi.

Saudi Arabia is the largest oil exporter in the world, making it the most powerful economy in the Arabian and Gulf regions; it also became a member of the Group of Twenty (G 20)[3] and is home to the holy mosques of Makkah and Madinah – two of the most important Muslim sites in the world.

Development plans initiated in 1970 in the SA have had considerable impact on the country's GDP and have improved upon the level of service in the fields of health, education and the economy in general. According to the World Bank (2009), the SA has the strongest Arabian economy. Comprehensive governmental planning has led to unprecedented levels of economic growth and development. Positive fundamental changes in the structure of the SA economy were the most important factor; increasing the contribution of the private sector to the GDP (Ministry of Economy and Planning, 2013) led to Saudi Arabia's accession to membership in the World Trade Organization (WTO) in 2005.

Saudi Arabia's economy is characterized in general as being based on the principle of a free economy (freedom of trade), following the creation of an appropriate environment by the state. This is consistent with the classical theory of Adam Smith (Rosenberg,

[3] The G20 officially began in 1999 with what is known as the 'GROUP OF TWENTY - G-20', which includes 20 countries to discuss and study the issues related to the international economy.

1965), who called for a non-intervention of the governments in the operation of the market, except for supervisory and law-enacting roles. According to Smith, this approach promotes the success of the application of specialization; Saudi Arabia and other countries are, however, trying hard to avoid specialization on a single product by attempting to diversify their sources of income.

Over the period 1970 - 2011 of the current analysis the Saudi government has achieved remarkable growth rates in all economic sectors, taking advantage of the improvement in oil prices in the global market. There have, however, been periods of crises in the oil markets, most notably in 1973, when the Saudi government decided to reduce production of oil (Kilian, 2006). The SA's GDP has risen as a result of the expansion of its oil/oil derivatives sector, where the GDP at current prices has risen from 22.3 billion riyals (US$ 5.368 billion) in 1970 to around 2221.7 billion riyals (US$ 592.472 billion) in 2011 (SA Ministry of Economy and Planning, 2012).

Saudi Arabia's Ministry of Economy and Planning has been developing strategic economic plans since 1970; the next section will focus on these plans and the results they have achieved. To this end, the economy of Saudi Arabia will be divided into the nine main phases of the economic development plans of the Ministry of Economy and Planning. The first phase covers 1970 - 1974; the final phase covers 2010 – present times and currently Saudi Arabia is 10th time period.

First, the Saudi's economic reality before the discovery of oil has to be explained, as do the economic policies and procedures that had been followed, together with how the country can benefit from this earlier approach in the future. Therefore, the next section examines some important economic information from the era before the discovery of oil in the Kingdom of Saudi Arabia and what economic policies were adopted at the time.

2.3.1 Saudi Arabia before the Oil Era

The Arabian Peninsula has been famous since ancient times with the presence of the Sacred House (Kaaba) and the Mosque of the Messenger of *Allah*, peace be upon him, (the Prophet's Mosque). Pilgrims flock to them every year to perform religious rites.

When King Abdul Aziz Al-Saud united the Kingdom in 1932, there were problems with the provision of the financial resources necessary for the management of the country. During this challenging time period, government revenue came mainly from fees levied on the pilgrims coming to Makkah and Madinah (religious tourism), plus a small percentage of customs taxes (Al Jazeera Newspaper, 1999). There were no other industries (such as agriculture and manufacturing) due to the desert nature of the kingdom and the predominantly Bedouin (Arabian nomad) culture.

These revenues, particularly the fees on pilgrims, were sufficient to some extent to manage the state. Such an income source was not, however, sufficient in itself to meet the country's expansionary plans and needs and to sustain economic growth. Factually, these sources could not be relied upon to expand the country's civilian infrastructure, public services, military infrastructure and the expenses associated with the increase in population (Al-Askar, 2006). There were also other reasons and events, both internal and external, that made the government of Saudi Arabia look for other sources of income. Most importantly, the First World War sparked a severe shortage in oil supplies on a global level; this triggered a global oil search on the part of the developed and industrialized countries, especially the United States of America, particularly in the Middle East (Metz, 1993). The most important internal reason for searching for alternative sources of income was the fact that there was less than half the number of pilgrims travelling to Saudi Arabia during the "Great Depression" in the 1930s. The resultant reduction in pilgrimage revenue caused the country to shift its emphasis as far as economic exchange and customs were concerned. As a result, the Saudi government

signed huge contracts with international companies for the production of oil – especially US companies (Grutz, 1999).

Exploration of oil in the region began in 1933 and after several attempts, was discovered in 1938. With the commercial investments that followed, oil became a revenue source that was now pivotal to the overall wealth of the country. The Saudi government no longer depended on the annual returns of pilgrimage revenue. This discovery led to a radical change in the economic policy of the Kingdom; from that point onwards the government focused on infrastructure and raising per capita income.

In summary, it is clear that the revenue from religious tourism (a non-oil source) was the main source of income for the government of Saudi Arabia before the discovery of oil, although the number of pilgrims did not exceed 100,000 a year at that time (Grutz, 1999). Furthermore, the limited private sector at that time undoubtedly benefited from the number of pilgrims through hotel rental fees and the sale of family products. Any attempt, therefore, to concentrate on the religious tourism sector and its relationship with economic growth and how to benefit from it economically would be a wholly justifiable one as initially religious tourism was the main source sustaining the country before the discovery of the oil.

2.3.2 Saudi Arabia During and After the Oil Era

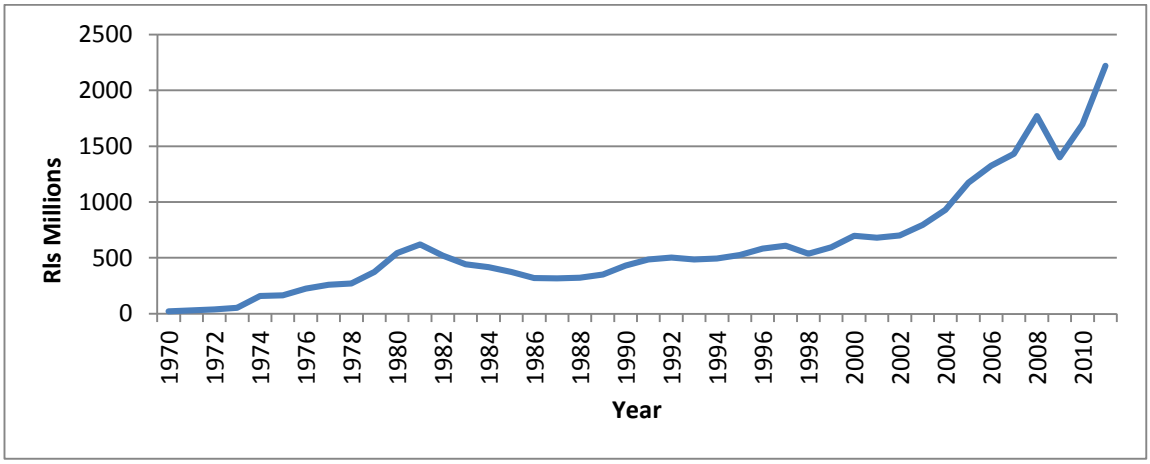
The commercial benefits following the discovery of oil in Saudi Arabia began in 1938, resulting in oil reserves of the Kingdom forming an estimated one-quarter of the world's oil reserves (Cowie et al., 2007). This led to a radical change in infrastructure and an increase in Saudi Arabia's per capita income from about 5,083 riyals (US$ 1,355) in 1971 compared to 34,511 riyals (US$ 9,203) in 2000 and 87,210 riyals (US$ 23,256) in 2011 (Saudi Arabian Monetary Agency, 2012). The resultant huge oil revenue was the basis of modern economic growth in Saudi Arabia, providing the revenue for the projected budgets of the five-year development plans.

In spite of the progress and prosperity that has accompanied the production and export of oil, oil revenue cannot be relied upon for future strategic plans, given the uncertainty that surrounds it as a resource. Natural resources like oil and gas are exhaustible, and revenue on world market development, thus placing the Saudi economy at the mercy of developed economies and world market developments.

History, whether ancient or modern, teaches us that oil cannot be relied upon and all manner of economic setbacks surrounding this resource have occurred from the moment of its discovery through to the present day. The crisis of 1973, when the production and export of Saudi oil stopped altogether, exemplifies this, as does the 1980s crisis when the production of oil decreased from about 8 million barrels to about 2 million. A modern example is the global crisis of 2008 and 2009, where oil prices underwent a sharp decline and, more recently still, in 2014 oil prices fell globally to more than half the prices of 2011 and 2012, the legacy of which was a rise in prices of goods and services in oil-rich countries.

From the beginning of the first Five-Year Plan in 1970 until the middle of Ninth Development Plan in 2011, Saudi's GDP has seen a strong rise – together with a concurrent reliance on oil exports. Figure 2.1 shows the evolution of the country's GDP at current prices during this period.

Figure 2.1: Nominal GDP for Saudi Arabia during the period 1970 – 2011



Source: Saudi Arabian Monetary Agency (SAMA) (2012).

Figure 2.1 also portrays the trend of nominal GDP in the Kingdom of Saudi Arabia during all the stages of the development plans between 1970 and 2011, where the nominal GDP rose from 22279 million riyals (US$ 5368.4 Million) in 1970 to 2221773 million riyals (US$ 592472.8 Million) in 2011. During the first and second phases of the development plans from 1970 to 1980, the real GDP growth amounted to 11.5%, with almost 15% growth for financial services and over 10% for construction (Aljazerah, 2013). From 1980 to 1984 (the third five-year plan), oil prices rose, reaching a peak in 1981 as result of an increased global demand for oil, but soon fell after that as a result of a decline in economic activity in industrialized countries. However, the plans of the third, fourth and the first year of the fifth plan (i.e., from 1981 to 1990), had seen a contraction of GDP growth at 1.2%, where the world oil production (and Saudi production in particular) decreased, with Saudi Arabia's oil export dropping to nearly 2 million barrels per day in 1985 compared to 10 million in 1980 and 1981.

In 1990, the price of oil climbed 23.6% as a result of the Gulf War between Iraq and Kuwait. This rise in prices continued following improvements in the global economic environment and increased international demand between 1991 and 2000and the GDP growth increased by 2%. From 2001 to 2011, the GDP of Saudi Arabia has risen at an annual rate of 6.1% as a result of an improving business environment in addition to the huge oil revenues, where oil prices rose by around 12.8%, reaching their peak in 2011 (SA Ministry of Economy and Planning, 2013).

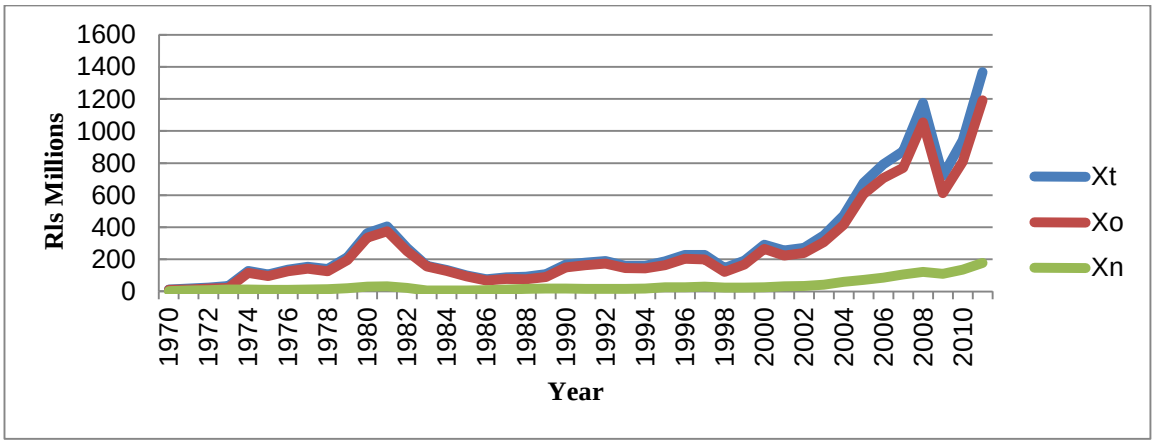
In spite of this growth and development of the Saudi economy, its current circumstances do not support the promotion of economic stability in the long term, given the country’s dependence on overseas markets. The huge oil revenues are the backbone of the economy and the only way out of this problem of resource constraints is to search for non-oil sectors, which rely on internal domestic factors, given that these are relatively easier to control. Private investment, support of non-oil exports and religious tourism all

carry considerable potential as future strategies. The following section gives an overview of these factors and their impact on economic growth factors.

2.3.2.1 Non-oil Exports and the Saudi Economy

Exports, particularly oil, play an important and essential role in the Saudi economy, despite the state's attempts to reduce dependence on petroleum resources. The government has tried to promote and support non-oil exports through successive five-year plans involving a series of measures that support non-oil exports such as the establishment of the Saudi Development Fund in 1974 to encourage non-oil exports and financing (SA Ministry of Economy and Planning, 2013). However, Saudi Arabia still relies primarily on oil and non-oil revenues have not kept pace with this expansion. This emphasis on alternative exports coincided with the rise in value of total exports from 10907 million riyals (US$ 2628.2 Million) in 1970 to 1367620 million (US$ 364698.7 Million) in 2011. However, the contribution of the non-oil sector did not exceed 11%, 10% and 13% in 1970, 1990 and 2011 respectively; the rest were from oil exports. Figure 2.2 shows the exports trends in all their forms: total exports, oil and non-oil exports.

Figure 2.2: The value of exports (Total, Oil and Non-oil) during the period 1970 – 2011



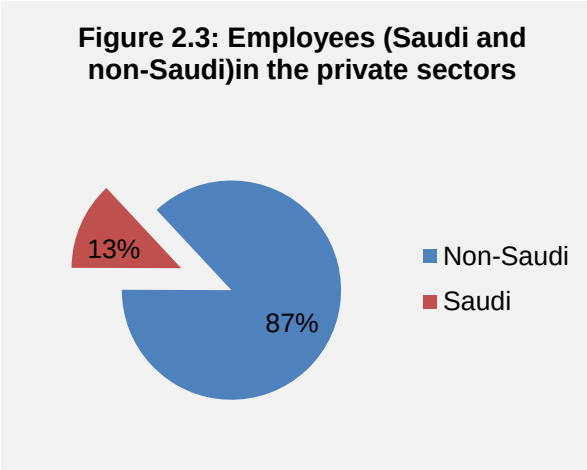
X_T, X and X_N are total export, oil export and non-oil export respectively.
Source: Saudi Arabian Monetary Agency (SAMA) (2012).

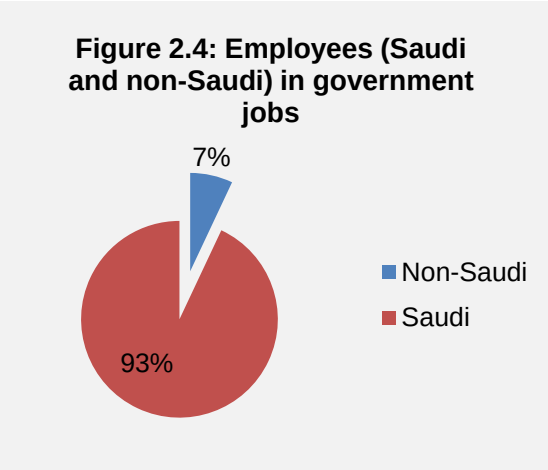
Figure 2.2 clearly shows the strong economic contribution of oil exports, which constitute the majority of exports and the weakness of non-oil exports during these time

periods. Total exports reached their highest peak in 2011. Regarding the non-oil sector, although exports have gradually increased since 1970, the increase has not been as extensive as was hoped; it went from 1209 million riyals (US$ 291.3 Million) to a peak of 121622 million (US$ 32432.5 Million) in 2008, declined in 2009 due to the global crisis sparking a recession in global demand for oil, then quickly rose to 176569 million riyals (US$ 47085.1 Million) in 2011.

The failure to diversify the production base of non-oil exports in the Saudi economy is one of the most important obstacles to sustained growth, where chemical products are considered the highest percentage to the total non-oil exports. According to the Saudi Arabian Monetary Agency (SAMA, 2015), chemical products amounted to almost 66% of total non-oil exports in 2014, reflecting the importance of the diversification of this sector.

It seems that all attempts by the government to strengthen the role of non-oil exports failed for several reasons. Firstly, oil revenues stimulate booms in the natural resource sector of an economy; this financial swell leads to higher prices locally for goods and services and therefore prompts inflation (Carton et al., 2010). Secondly, the high cost of non-oil based production locally due to reliance on a specific product (oil exports) prompts externally based alternatives. This has, in turn, encouraged the private sector to look for solutions to reduce costs, including the reduction of salaries. As a result, Saudi nationals have tended to look for employment in the public sector (government jobs) rather than the private sector. Figure 2.3 and 2.4 show the percentage of Saudis and non-Saudis in the public and private sectors.





Source: Ministry of Civil Services in Saudi Arabia, 2005.

The majority of Saudi employees thus have governmental jobs; the largest proportion of non-Saudis is in the private sector. The figures above show that Saudi citizens represent around 93% of government sector employees and the remaining 7% are non-Saudis. However, this percentage is totally different in the private sector, where Saudi citizens represent only 13% of employees, compared to 87% non-Saudi; this unbalanced state of affairs constitutes both a burden and a challenge to the state.

The indirect negative impact of the oil sector on the Saudi economy thus becomes clear. There is also another effect, relating to the workforce. Statistics show that the number of workers in the Saudi oil sector does not exceed about 1.3% of the labour force (Saudi Arabia Ministry of Statistics, 2012). The IMF reported that the workers in the oil sector in 1989, 1999 and 2009 constituted 1.1%, 1.6% and 1.1% of the total employment respectively. Table 2.2 shows the labour force for oil and non-oil sectors during the period of the study (1970 – 2011).

Table 2.2: Labour Force (oil and non-oil) in Saudi Arabia (in '000)

Years	Oil sector ('000)	Non-oil sector ('000)	Total labour in the oil sector (%)
1970	17.5	1571.5	1.1
1980	27.3	2452.7	1.1
1990	46.5	4951.5	0.9
2000	76.3	5886.7	1.2
2011	96.6	9703.4	1.0

Source: The Ministry of Economy and Planning (2008), Saudi Arabian Monetary Agency (SAMA, (2012)), UNCTADSTAT (2013).

As indicated in Table 2.2, the labour force in the oil sector does not seem to have a strong effect on economic growth, given that it constitutes about 1.3% of the total workforce, whereas the impact of the workforce on non-oil sectors seems more influential. Most of this workforce comes from the tourism industry. According to the Council of Saudi Chambers (2010), tourism is expected to provide more than 1.5 million jobs for Saudis in 2015 and 2.2 million jobs in 2020. Skilled and trained personnel are required in the oil-sector, whereas the tourism sector is far more flexible and possibly less problematic. Religious tourism in Saudi Arabia and the positive impact it has on economic growth thus becomes of considerable interest.

2.3.2.2 Religious Tourism and the Saudi Economy

Saudi Arabia is famous for its religious tourism, which represents by far the greatest proportion of its total tourism. It is of interest that there is no specific visa for tourism in the Kingdom. The Saudi Commission for Tourism and Antiquities is trying to develop and enhance the industry by enacting laws and legislation that support the tourism sector. The attention given to increasing the number of tourists has had a considerable impact on the industry; the number of visitors to Saudi Arabia has risen from around one million in 1970 to more than 17 million in 2011. Table 2.3 presents the stages of the development of religious tourism from 1970 - 1989:

Table 2.3: Religious Tourists arrivals in Saudi Arabia

Year	Religious Tourism (million)
1970	1.0
1975	1.5
1980	1.9
1982	2.5
1985	1.6
1989	1.5

Source: The Ministry of Hajj (2013).

As can be seen from Table 2.3, the number of tourists increased from over one million visitors in 1970 to 1.5 million in 1989, an increase of 50%, although this shows a decrease if compared to the1982 figures, a year which saw the largest number of tourists arrivals. The above dates are taken as phases of the country's religious tourism for several reasons. Firstly, the overall period of 1970 to 1989 has been selected due to the lack of specific data on the tourism in Saudi Arabia before1990. Secondly, this period embraces the first, second and third stages of the development plan, during which the infrastructure (which forms the backbone to the attraction of tourists) had not been completed. Finally, there was no specific visa for tourists in Saudi Arabia during these periods. Table 2.4 shows further information on tourism, from 1990 to 2011.

Table 2.4: Tourists arrivals during the period 1990 – 2011

Year	Tourism (million)
1990	2.2
1995	3.8
2000	6.5
2005	9.1
2006	10.9
2007	13.4
2008	14.7
2009	10.9
2010	10.8
2011	17.4

Source: The Saudi Commission for Tourism and Antiquities (SCTA) (2014); World Tourism Organisation (2014).

An analysis of the data in Table 2.4 shows an increase in the number of tourists to more than 14 million in 2008, followed by a decline in 2009 and 2010 to about 11 million. These figures, however, rebounded dramatically, reaching more than 17 million in 2011. Nonetheless, the proportion of outbound tourism in Saudi Arabia is far from low. Table 2.5 reveals the level of tourism and the resultant levels of spending, both in terms of arrivals and departures, over three years (2009 - 2011).

Table 2.5: Inbound Tourism and Outbound Tourism in Saudi Arabia (2009 - 2011)

Inbound and Outbound Tourism	*Years*			Annual change % 2010-2011
	2009	2010	2011	
Inbound Tourism				
Trips (Million).	11.0	11.0	17.0	54.5
Expenditure (Billion Riyals)	29.0	26.0	45.0	73.1
Outbound Tourism				
Trips (Million)	6.0	18.0	15.0	-17.6
Expenditure (Billion Riyals)	28.0	56.0	61.0	8.9

Source: Saudi Arabian Monetary Agency (SAMA) (2012).

As can be seen, the number of tourist arrivals exceeded departures in 2011, although in 2010 the opposite occurred, at which time the largest proportion of spending stemmed from outbound tourism rather than inbound. The number of outbound tourists decreased in 2011; this may be due to the recent political events in the Middle Eastern countries such as Egypt and Syria.

2.3.2.3 Private Investment and the Saudi Economy

The development plans, especially the sixth development plan, emphasized that the government would provide the private sector with more economic opportunities. This represents a policy shift on the part of the government not to undertake any economic activity that could be performed by the private sector. As a result, the government has begun to transfer some of the economic activities to the private sector, including: telecommunications, airlines, railways, postal services and electricity (SA Ministry of Commerce and Industry, 2015). Table 2.6 illustrates the gross fixed capital formation GFCF) during selected periods.

Table 2.6: Gross Fixed Capital Formation at current prices (Million Riyals)

Year	Government sector	Private sector In non-oil	Oil sector	Gross Fixed Capital Formation
1970	1.204	1.150	577	3.649
1980	66.874	28.691	10.811	117.563
1990	42.491	28.078	4.234	57.453
2000	16.353	92.953	14.018	132.227
2011	173.390	195.681	59.014	471.830

Source: Saudi Arabian Monetary Agency (SAMA) (2012).

The figures in Table 2.6 reveal the contribution of the private sector; its contribution, in terms of the gross fixed capital formation in Saudi Arabia, has risen from about 31.5% in 1970 to nearly 42% in 2011, which indicates a significant increase. This requires continual support and encouragement. For the government sector, the contribution has also increased from about 33% in 1970 to 36.7% in 2011.

2.4 An Insight into the UAE Economy

Turning to the United Arab Emirates (UAE), the country has the second largest economy in the Arab world and the GCC, per a report issued by QNB (2013) and GCC Economies (2013). The country is also located in southwest Asia, with a total area of 71,023.6 $km^2$and gained independence in 1971. According to the World Bank (2015) the population of the UAE exceeded 8.7 million in 2011. United Arab Emirates consists of seven emirates namely, Abu Dhabi (Capital City), Dubai (Business capital), Ajman, Sharjah, Fujairah, Ras Al Khaimah and Umm Al Qaiwain.

The UAE has made a huge leap in all directions, especially economically, despite a late start in the race for economic diversity. However, according to GCC Economies (2013), approximately 85% of the Emirate's economy depended on oil and gas exports in 2009and it accounted for 77% of the state budget in 2011 (Hvidt, 2013). This has made cities like Abu Dhabi famous for their oil production.

The government of the UAE, like most oil-rich countries, is trying to diversify its sources of income and decrease dependence on single products like natural resources (oil and gas). From 2008, the government of the UAE has achieved remarkable success, particularly in the sectors of tourism and foreign trade, for which Dubai City is famous. The UAE has also become a member of three international organizations – the WTO in 1996, GATT in 1994 and OPEC in 1967.

The following section will proceed with a brief overview of these areas, focusing particularly on the role of key non-oil sectors and their impact on economic growth.

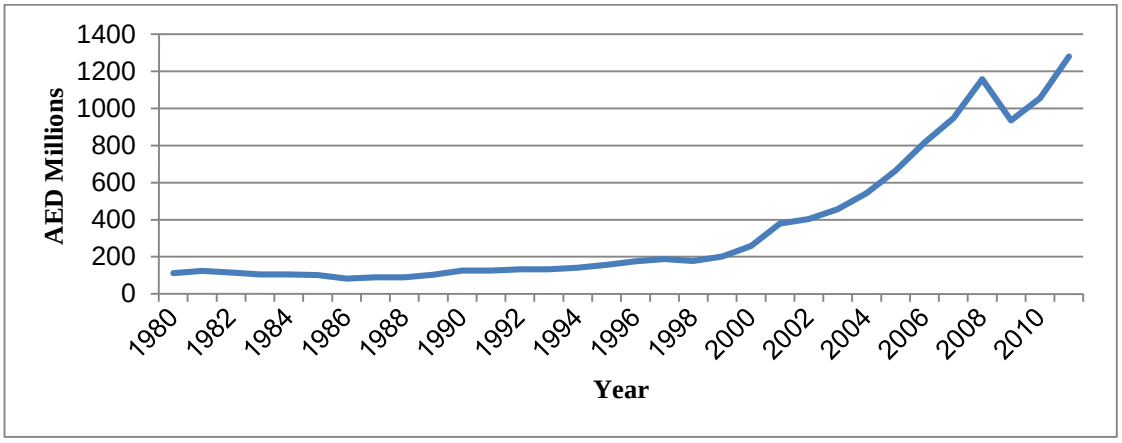
Before independence (i.e. before the discovery of oil) the United Arab Emirates were known as the Trucial States. These states were famous for fishing and trade, particularly the pearl trade (The Government of the UAE, 2007). The pearl trade was badly affected by the First World War and the Great Depression of the 1930s; these, together with the appearance of Japanese-produced cultured pearls, led to the collapse of this trade. In response, the UAE began, particularly in Abu Dhabi and Dubai, to look for economic alternatives until oil was discovered in the region in 1960.

The tangible commercial benefits of this discovery first began to be felt in 1962 (UAE Library of Congress, 2007), stimulating a rapid economic evolution, a radical change in infrastructure and an increase in the UAE's per capita income. This economic revival and development was founded on the country's huge, newly discovered oil revenues.

In spite of the progress and prosperity that has accompanied the country's oil production and export, it cannot be relied upon as a resource for future strategic plans, owing to its fundamental unpredictability. Realizing these risks, the UAE government has become engaged in a race against time to search for other sources of income. Perhaps the most important of these is tourism, where dramatic development has occurred despite the country's desert-based location. Its progress in strengthening the state of its non-oil exports has also exceeded expectations and the government's support of private investment has resulted in private investment accounting for 55% of the country's gross domestic product.

Looking at the UAE's economy from 1980 until 2011, Figure 2.5 shows the evolution of the country's gross domestic product during this period.

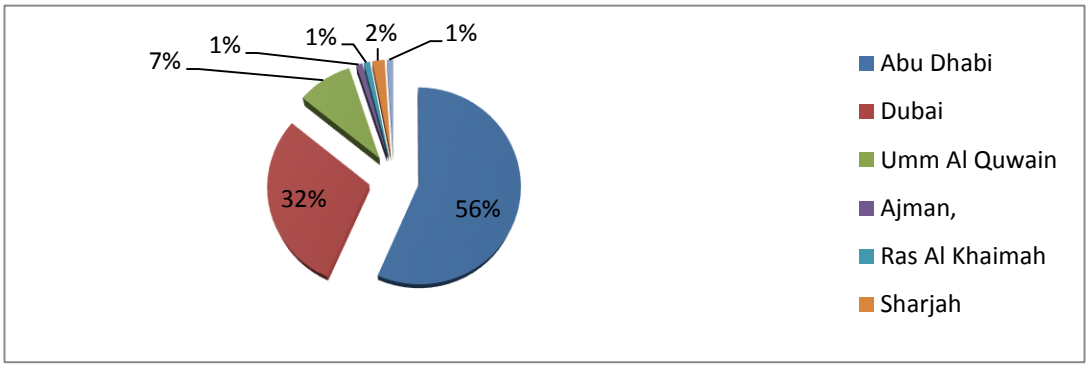
Figure 2.5: Nominal GDP for the UAE during the period 1980 – 2011



Source: UAE Ministry of the Economy and Planning (1985); National Bureau of Statistics in the UAE (2012).

Figure 2.5 illustrates that the nominal GDP rose from 111470 million dirham (US$ 30045.8 Million) in 1980 to 1280215 million (US$ 348832.4 Million) in 2011. The emirate of Abu Dhabi is rich in natural resources (oil and gas) and has contributed almost 62%, 56% and 57% in 2000, 2005 and 2011 respectively to the nation's gross domestic product (GDP). Figure 2.6 below shows the contribution of each Emirate to the GDP in 2005.

Figure 2.6: The Emirates' Contributions to the GDP for the year 2011



Source: The National Bureau of Statistics in the UAE, (2013).

Figure 2.6 shows that about 80% of the UAE's total GDP comes from only two emirates, namely Abu Dhabi and Dubai (see also, UAE Library of Congress (2007)). Abu Dhabi is the capital city of the UAE and is famous for producing oil and gas, whereas Dubai is a commercial city as well as an international tourist destination. However, the importance of the emirate of Abu Dhabi to the UAE economy is

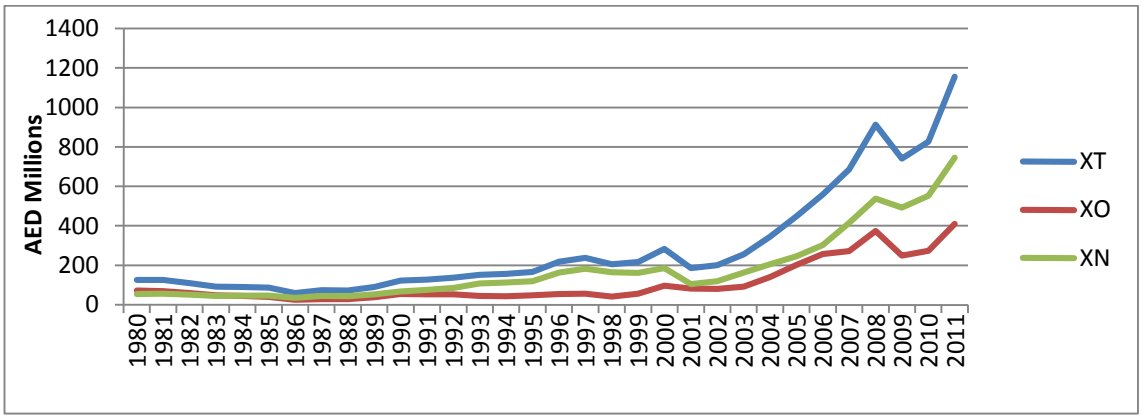
significant, accounting for more than half of the GDP, while the emirate of Dubai constitutes nearly a third of the country's GDP. With regard to the five other emirates, the ratio of their contribution to the GDP does not exceed 15%.

In spite of the growth and development of the UAE economy and the government's attempt to diversify its sources of income, the strong contribution on the part of Abu Dhabi (Oil City), confirms that the UAE is still heavily dependent on oil. That said, the contribution of Dubai is also remarkable, especially as it only began to focus on non-oil sources very recently (in 2008). There is therefore no doubt that the support of the main non-oil sectors, especially international tourism, private investment and non-oil exports, contributed significantly to the diversity of the UAE's economy. The next section proceeds to provide an overview of these sources and their impact on economic growth.

2.4.1 Non-oil Exports and the UAE Economy

With respect to exports, Figure 2.7 shows the trends of all three types of exports: total exports, oil exports and non-oil exports in the UAE:

Figure 2.7: The value of exports (Total, Oil and Non-oil) during the period 1980 – 2011



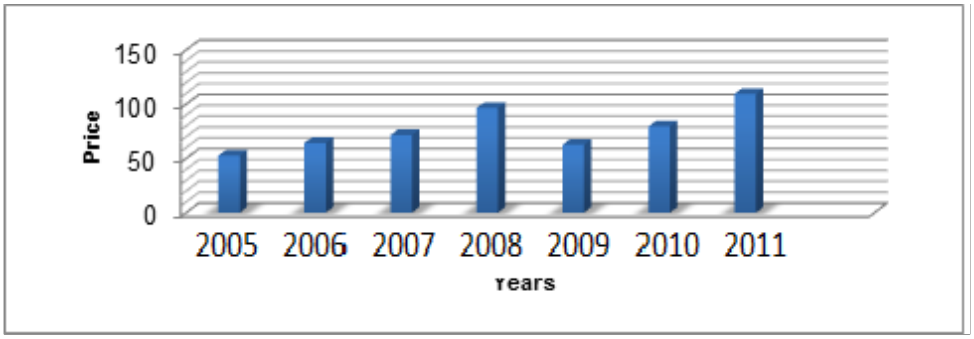
X_T, X_O and X_N are total export, oil export and non-oil export respectively.
Source: Ministry of Planning (1985); National Bureau of Statistics (2012); OPEC (2013); Undata (2012).

Figure 2.7 confirms that the total value of exports in the UAE has seen a significant increase during the period under study (1980 - 2011), as reflected in the development of the UAE economy and its association with the global economy. Total exports reached

126050.96 million dirhams (US$ 33976 Million) in 1980 and rose dramatically to about 1155440.78 million (US$ 314834 Million) in 2011. During this period some setbacks occurred, the most recent being the crisis of 2009, where exports declined from about 741185.86 million dirhams (US$ 201958 Million). Oil exports accounted for this decline, decreasing from 249104.92 million dirhams (US$ 67876 Million) in 2009 compared to 374659.29 million in 2008 (US$ 102087 Million); prices did, however, quickly rebound in 2010 and 2011. Non-oil exports were not affected significantly. The rise in non-oil exports was noticeable, rising from 54 114 million dirhams (US$ 1485.9 Million) in 1980 to more than 745 843 million dirhams (US$ 203226.9 Million) in 2011, while there was a slight impact during the global crisis in 2009 as shown in Figure 2.7.

According to OPEC (2015), the average oil price for 2011 stood at $107.46 a barrel, compared to $61.06 in 2009. The following diagram illustrates the course of this change over a seven-year period.

Figure 2.8: The average oil prices per barrel (2005 - 2011)



Sources: OPEC (2015).

Figure 2.8 shows the price of oil from 2005 to 2011. As can be seen, oil prices increased from $50.59 a barrel in 2005 to $61.00 in 2006 and continued to increase until 2008, when it hit a record peak of $94.1. However, due to the global financial crisis, the average price fell in 2009 to around $60.86 a barrel and then rebounded to $107.46 in 2011.

These fluctuations in oil prices confirm that oil may not be a reliable major source of income. Most oil-rich countries, including the member states of the GCC, are developing countries with no alternative industries and rely wholly on this natural resource, yet such a resource cannot be consistently relied upon to sustain the economy. Moreover, as with Saudi Arabia and other oil-rich countries, there are a lot of indirect negative impacts from the oil sector on the UAE's economy. The labour force is one such example, as the number of workers in the oil sector does not exceed about 1% of the total labour force of the UAE (National Bureau of Statistics in the UAE, 2012). Table 2.7 presents a brief summary of labour force participation in the oil and non-oil sectors for different time periods.

Table 2.7: Labour Force (oil and non-oil) in the UAE (in '000)

Years	Oil sector ('000)	Non-oil sector ('000)	Total labour in the oil sector (%)
1980	4.6	555.3	0.8
1990	7.9	916.1	0.9
2000	23.5	1796.5	1.3
2010	53.5	4850.4	1.1
2011	61.0	5177.0	1.2

Source: UAE Ministry of the Economy and Planning (1985); National Bureau of Statistics in the UAE (2012).

Table 2.7 confirms a rise in workers in non-oil sectors from over five hundred thousand in 1980 to over five million in 2011. It is also clear that those employed in the oil sector represent a small percentage of the total workers. On the other hand, this issue about labour force in the oil sector opens the door for a discussion about tourism in the UAE, its relationship to the labour force and its positive impact on economic growth.

2.4.2 International Tourism and the UAE Economy

The tourist boom recently contributed to an increase in tourism to the UAE from all over the world, especially in the city of Dubai. Tourism is one of the most powerful sources of national income in the United Arab Emirates, particularly in Dubai, where the state's dependence on oil and gas as a source of income has decreased (UAE

National Bureau of Statistics, 2014). The contribution of the tourism sector to GDP rose from about 3% in the mid-1990s to more than 16.5% at the end of 2010, per the UAE National Bureau of Statistics (2012). Table 2.8 illustrates the stages of change during the period under study:

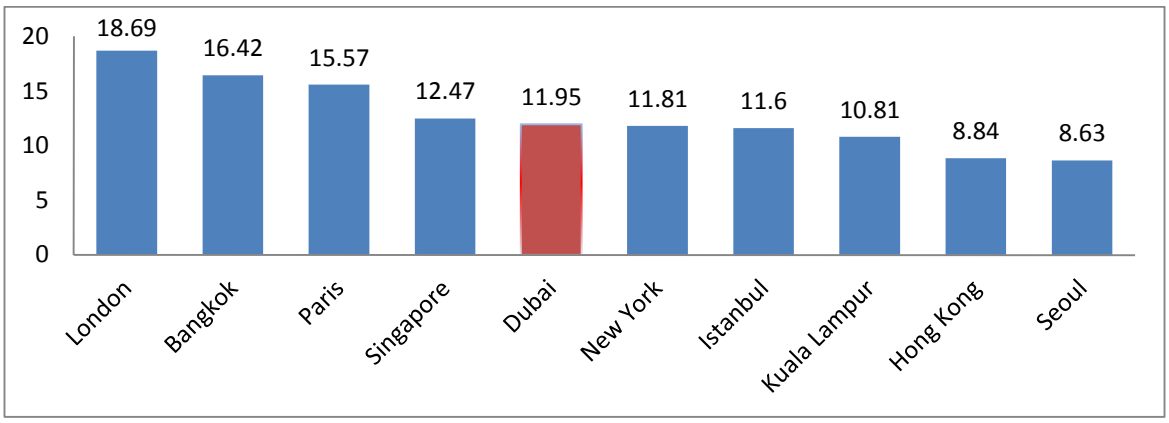
Table 2.8: International Tourists arrivals in the UAE

Year	International Tourists (million)
1980	1.2
1990	1.6
2000	3.9
2010	9.8
2011	10.5

Sources: World Tourism Organisation (WTO) (2006); UAE National Bureau of Statistics (2012).

The number of tourists arriving in the country increased from over one million in 1980 to around 1.6 million in 1990 and continued to rise dramatically until the end of 2011, when it reached over ten million visitors. This rapid increase was due to the completion of the country's infrastructure, together with the high quality and highly diverse services offered to tourists (UAE National Council of Tourism and Antiquities, 2012). Based on the Master Card Global Destination Cities Index, in 2014 Dubai City became one of the top ten destinations in the world in terms of international passengers arrivals and spending (Emirates NBD, 2014). This achievement undoubtedly has a positive impact on the UAE economy, where it is estimated that the total workers in the tourist sector amounted to 429,000 employees in 2010, compared with 53,000 workers in the oil sector in the same year (Schwab, 2010). Thus, the following Table 2.9 shows the rank of the UAE among nations in terms of tourist arrivals.

Figure 2.9: The top ten destination cities by international overnight visitors in 2014



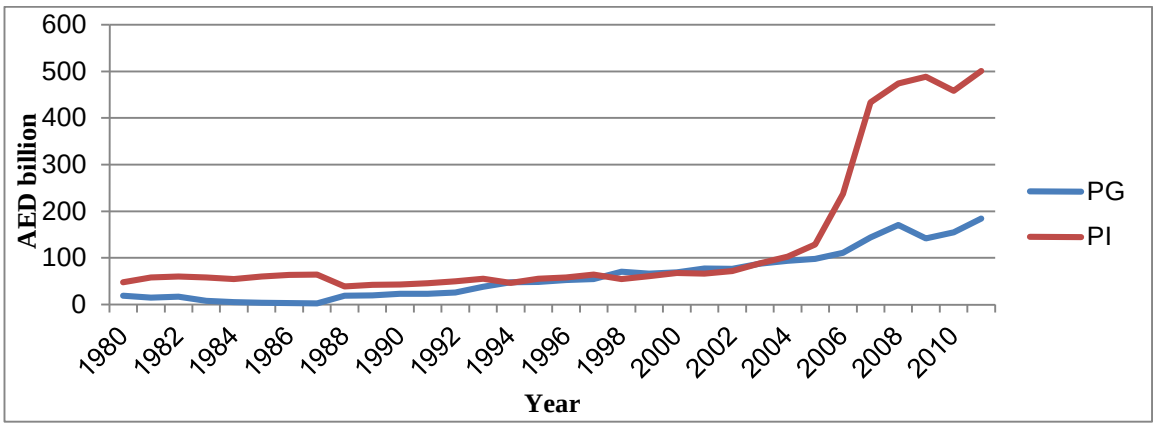
Source: MasterCard, Emirates NBD Research (2014).

It is clear in Figure 2.9 that the UAE, particularly Dubai City, is ranked fifth in the world, after London, Bangkok, Paris and Singapore, in terms of visitor spending. Looking ahead, the government of Dubai plans to receive about 20 million visitors in 2020.

2.4.3 Private Investment and the UAE Economy

The private sector plays an important role in the economic growth of the UAE from several angles, perhaps the most important of which is to assist in the eradication of poverty through the provision of jobs and to contribute to the provision of goods and services. The private sector has witnessed expansion of its economic role within the UAE economy, together with greater participation in non-oil sectors. The UAE government has given the private sector a greater role in the country's development and economic growth through its privatization policies, as it has transferred the management of some services from the public sector to the private sector. These services include the management and operation of the airports and international ports, such as Zaid Port, which were designed to curtail the role of the public sector in the economic field (UAE Ministry of the Economy and Planning, 2012). As a result, in 2007, the private sector accounted for a large part of the country's total economic investments (about 71.1% of the total investment was from the private sector, as shown in Figure 2.10).

Figure 2.10: Private and Public investment at current prices 1980 – 2011



PG and PI are public and private investment in non-oil sector respectively.
Source: Ministry of Planning (1985); National Bureau of Statistics (2012).

Figure 2.10 shows the contribution of private and public investment. The figure confirms that the private sector in the UAE has seen a considerable increase through the period of study (1980 – 2011), particularly after 2005. It rose slightly from 17701 million dirhams (US$ 4771 Million) in 1980 to around 47216 million dirhams (US$ 12865 Million) in 2005 and climbed dramatically from 87132 million dirhams (US$ 23741 Million) in 2006 to over 183872 million dirhams (US$ 18448 Million) in 2011. As for the public investment result, this was totally different. It increased slightly from 7022 million dirhams (US$ 1892 Million) in 2008 to around 67706 million dirhams (US$ 33976 Million) in 2011.

The remarkable rise of the private sector since 2006 indicates that the government has clearly begun to give it a greater role in the economic growth process. This was confirmed by a report issued by the Department of Economic and Social Developments in 2012, which stated that the UAE government's policy between 2005 and 2010 had been to increase the share of the private sector in the economic growth process. The report also stressed the importance of creating an appropriate investment climate for the private sector through regulatory legislation, including not imposing any kind of tax on profits and exports, as well as not placing restrictions on remittances, all of which has

led to a rise in the contribution of the private sector in terms of economic growth and development.

2.5 Summary

The member states of the GCC, particularly Saudi Arabia and the United Arab Emirates, are famous for being oil-producing countries due to their huge stocks of natural resources (oil and gas). This chapter has focused on providing a brief overview of two of the most important and powerful economies in the GCC as well as the Arab world and the pressing need for their economic diversification as a political priority (Hvidt, 2013). This chapter has also provided a brief summary of the performance of the main sectors, especially the non-oil sectors, in terms of their impact on and potential for economic growth.

As far as the Saudi economy is concerned, economic growth before the discovery of oil wholly depended on the non-oil sectors, especially religious tourism. After the discovery of oil, the situation changed dramatically and the government became alarmingly dependent upon oil for economic growth. This has made the Saudi Arabia economy vulnerable to the vicissitudes of the global economy and to future oil-related risks similar to those it has suffered historically. In the case of Saudi Arabia, instability of world oil prices and the Saudi economy's reliance on this single product calls for the enhancement of other revenue-generating sectors as part of the country's achievement of a greater level of growth and sustainable development. Saudi Arabia has to unleash the potential of non-oil sectors if it is to reduce its dependence on oil.

With regard to the United Arab Emirates' economy, it is clear that this is a more diversified economy. As with Saudi Arabia, before the discovery of oil the UAE economy was basically dependent upon its non-oil sectors – fishing and trade (particularly the pearl trade) were responsible for its economic growth at the time. The situation was transformed dramatically after the discovery of oil, at which point an all-

out economic dependence on oil ensued. However, the UAE's economy has become more diverse in recent years, particularly in terms of tourism. This underwent an unprecedented boom, defying all its adverse circumstances such as its desert-based setting and its nomadic environment.

Both Saudi Arabia and the United Arab Emirates need to focus on their non-oil sectors, especially tourism, both religious and international, as well as private investment and support of non-oil exports. Although both governments are keen to enhance these sectors, their attempts to do so have carried considerable shortcomings. Both countries are fertile ground for any study on the economic effects that the specific non-oil sectors mentioned. The next chapter proceeds to focus on the methodology that will be used to test the hypotheses of this study.

3

THEORETICAL ISSUES IN ECONOMIC GROWTH

CHAPTER THREE: THEORETICAL ISSUES IN ECONOMIC GROWTH

3.1 Introduction

This chapter attempts to critically assess the relevant and existing literature on economic growth (theoretical and empirical in the next chapter) both in the context of developed and less developed nations and focuses on the key determinants.

An analysis of growth in oil-exporting countries such as Saudi Arabia and the UAE needs to be considered in the context of appropriate theories of growth. Given that this study focuses on growth and the factors that affect it, it would be beneficial to discuss key economic schools of thought and how they explain and model economic growth. To this end the 3.3 section focuses on a brief survey of the most important aspects of the evolution of these theories; more detailed information can be found in Matthews (1964) and Johnson (1966) and, more recently, Salvadori and Elgar (2003), Barro and Sala-i-Martin (2004), Harley (2004) and Aghion and Howitt (2009).

The chapter is organised into five main sections: Introduction, Economic Growth and Development, Economic Schools of Thought and Economic Growth, whereas the final section contains a conclusion.

3.2 Economic Growth and Development

Economic growth is one of the key macroeconomic indicators that any country aims to achieve, together with full employment, low inflation and a better balance of payment accounts. It is defined as a "sustained increase in a country`s real output, influenced by increases in the quantity and quality of resources" (both natural, man-made and human capital) and improvements in technology. It can be measured by an increase in the gross domestic product (GDP) or income per capita (Montiel, 2011).

On the other hand, economic development is a more comprehensive concept of growth. It is a "process of forwarding a purposeful and comprehensive management of all aspects of economic and social life in a particular community for the transfer of that community to an optimum situation economically, socially and politically" (Contreras, 2008).

Generally, one can distinguish between economic growth and economic development in the following way: for economic development to be considered as such there must have been a comprehensive and continuous economic change, accompanied by an improvement in the quality of life. A wide-ranging and difficult investigation is necessary before economic development can be confirmed as having taken place. The process of economic growth, which is a subset of development by contrast, is narrower and arguably easier to investigate.

There are two main approaches for measuring economic development: the income-index (economic growth) and the human-development index (Anand and Ravallion, 1993). However, according to the World Bank and several studies (Cypher and Dietz, 2004; Willis, 2008), economic development can be assessed by mainly using economic measures. Conversely, Tietenberg and Lewis (2010) argued that an appropriate measure of development is the change in welfare and questioned whether conventional measures of economic growth, such as GDP and per capita income, are appropriate measures of welfare changes. In response, several authors (Anand and Ravallion, 1993; Anan and Sen, 2000; Ranis et al., 2000; Kaushik et al., 2008) have shown that economic growth can be used to illustrate development, as increase in income provides the necessary resources that can be appropriately re-distributed to improve education and health services, thus promote human development.

It can therefore be argued that economic growth is a key indicator for economic development. So the focus in this review and the whole thesis is economic growth rather

than economic development in general. In this part of the study the key theories of economic growth are considered. It is taken into account that today one cannot directly apply these theories to developing countries as well as oil-rich countries, yet a degree of application is nevertheless required to accommodate such theories, which have been adapted to different categories of countries.

Despite the absence of a comprehensive theory, there are a significant number of theories that address the role of different factors in determining economic performance and growth (Arvanitidis et al., 2009). These theories examine economic growth and the factors that affect it; several have focused on external factors while others have tried to explain the different mechanisms on the basis of internal variables. In addition, applied studies have included a variety of variables to expand the production functions and have used these to help improve the theoretical framework for economic growth models; such models are based on the nature of the economy and the specific factors that control economic performance (Barro and Sala-i-Martin, 2004).

Economists, over the centuries, have expressed their thoughts relating to economic growth, starting with the works of the Mercantilists and the Physiocrats. These ideas then began to develop into economic growth theories in the writings of Smith (1776), Ricardo (1817), Malthus (1809), Joseph Schumpeter and others (see Table 3.1 for a brief summary). There had been a clear change in human thought in relation to growth, observable through well-defined economic models. These models included Keynes (1936), Harrod (1939), Domar (1946) and Solow (1956), followed by the theory of endogenous growth of Romer (1986) and Lucas (1988).

The economic growth literature, in its early stages, considered capital accumulation as the key driver of growth. Following this, the effects of additional variables on such growth were tested. Therefore, within the context of economic growth theories, the next two sections of the chapter begin with the Mercantilists' ideas of economic growth and

end with a discussion of the endogenous growth models, all within the context of economic growth theories.

3.3 Economic Schools of Thought and Economic Growth

3.3.1 Mercantilists and Physiocrats

The modern concept of growth began with the Mercantilists such as James Steuart (Samuels et al., 2008), who believes that the possession of gold and silver can determine the state's economic power together with an increase in the number of its inhabitants, the promotion of its foreign trade, the reduction of tariffs on exports, lower wages for the working class (poor) and the assumption of a constant size of the wealth in the world; it follows that the earnings of any country are the loss of another, the argument of a zero-sum game (Harley, 2004). This school of thought has been heavily criticized, chiefly due to:

- Its definition of the concept of wealth: critics feel that the wealth of a nation should be represented in terms of its production capacity and not by the accumulation of gold and silver.

- The possibility of a continuous positive surplus in the trade balance: this has subjected the philosophy to stinging criticism from economic historians such as David Hume and Adam Smith, who argued that the free flow of money (rather than possession of money) leads to equilibrium in the trade balance, whereas the hoarding of money leads to higher domestic prices compared to foreign "deficit countries", thus making other countries more competitive.

Nonetheless, it is noted that Mercantilist ideas still have some relevance in the current world economy. International transactions illustrate that the political power of the state stems from the strength of its economic power. The political control of great powers

comes from economic control and from their ability to achieve a continuous surplus in their trade balances. For example, China with its huge trade surplus has been accused of employing Mercantilists ideas. Europe has also been accused of employing neo-mercantilist's ideas to deal with its current economic problems following the recent global economic crisis which started in 2008 (Geeraerts, 2011).

On the other hand, Physiocrats, among them Quesna and Robert-Jacques Turgot (Muller, 1978) believed that the agricultural sector was the only source of economic surplus and advocated an absence of state intervention in economic activity (Johnson, 1966). This policy contrasts with the Mercantilist policy, which targets the accumulation of wealth by encouraging exports and restricting imports. Moreover, economic growth in the industrial sector and the commercial sector in the eyes of the Physiocrats must be the result of growth in the agricultural sector. It can be argued that this perception stems from the economic conditions that prevailed in Europe in that period or it might be a reaction to the views of Mercantilists who attach great importance to the industrial sector whilst giving the agricultural sector secondary importance (Mercantilist consider the agricultural sector to be subservient to the industrial sector). The Physiocratic school of thought is not without its weaknesses. It has been criticised by many economists, chiefly over its overemphasis on production through agriculture and its neglect of industry and trade (see for example, Neill, 1948; Formaini, 2001).

In recent times, developing countries including oil-rich countries such as Saudi Arabia and the UAE tend to be interested in the industrial sector as a tool for development and tend to neglect the agricultural sector. This approach often leads to the presence of large bottlenecks in the development process as a result of the failure to meet the needs of the community in terms of food commodities.

3.3.2 Classical Theory

Classical Economists such as Adam Smith, David Ricardo, Thomas Robert Malthus and Joseph Schumpeter postulated the basic constituents of the modern theories of economic growth (Barro and Sala-i-Martin, 2004). It is worth noting that these Classical theories were also heavily influenced by the prevailing circumstances at the time they were developed, i.e., at the dawn of the industrial revolution. At that time, Classical analyses focused on capital accumulation from the profits of the capitalist class as the main engine of economic growth.

Smith (1776) focused on the specialisation and division of labour, on the basis that this led to increased productivity in the industrial sector, stressing at the same time that labour was the main source of an economy's wealth. Smith also asserted that national wealth was determined by the balance accumulated in society from savings made from the profits of the capitalist class, which determined economic growth (Rosenberg, 1965). Moreover, Smith believed that the industrial sector was the foremost sector capable of increasing the rate of economic growth in the community – resulting from this sector's ability to apply the principle of specialization and division of labour, in addition to possessing the ability to make profits (Gwartney and Stroup, 1993). Smith suggested that economic growth would not continue if there was a slow rate of technical progress, with the latter dependent on the accumulation of capital and that declining profits were due to increasing wages and limited resources.

Ricardo (1817) divided society into three layers: landowners, the working class and the capitalist class. Ricardo felt that the capitalist class were the productive class and were essential to the process of economic growth. This assertion stemmed from the fact that savings was the basis for the accumulation of capital; savings was thus the key driver of economic growth, as also argued by Adam Smith (Bagchi, 1982). Ricardo also noted that the industrial sector was the source of profits. He focused on the openness to trade

and the possibility of applying the principle of specialization and division of labour, which in turn increased total output and hence economic growth.

Ricardo however was of the view that the agricultural sector was subject to dwindling revenues, due to 'diminishing returns[4]'. Therefore, he focused on the importance of the maintaining low population growth (Barro and Sala-i-Martin, 2004).

Malthus (1798), like Ricardo, was concerned with high population growth and was known for his suspicious views about the inevitability of economic stagnation due to a lack of proportionality between the rate of population growth and available natural resources. Increasing population growth, he argued, generated pressure on these resources and exposed them to the law of diminishing returns. Malthus thus advocated the reduction of population growth through restrictions on procreation, delays on the age of marriage and tighter birth control. It seems that this policy by Ricardo and Malthus has been applied in China in response to fears of a lack of proportionality between the available natural resources and the population. The one-child-per-family policy in China is intended to avoid the catastrophic consequences of overpopulation. Given the aging population, which is not very conducive for sustainable economic growth, the country is making some efforts to relax this policy.

The accumulation of capital is a key factor in attaining technical progress, which in turn raises the productivity of workers and delays entry into the law of diminishing returns. However, if the rate of population growth overtakes technical progress, this leads to a state of economic recession (Aghion and Howitt, 2009). Malthus' principles concur with those of Adam Smith and David Ricardo as far as the role of capital accumulation as an engine for economic growth is concerned.

[4] The law of diminishing returns in this context suggests that population growth will lead to the exploitation of lands that are less fertile.

Finally, Schumpeter (1912) explored the role of the entrepreneur and innovations in the process of economic growth. The entrepreneur is the one who offers something new and who introduces new ways and means of blending elements of production and synthesis of them (Chou and Chin, 2004). S/he may also be the inventor of a commodity or a specific production method. Entrepreneurs are the leaders who develop innovations that make a difference in the production function, which leads to an increase in production and thereby increases economic growth (Schumpeter, 1947).

According to Schumpeter, the concept of "saving" is consumption in the future. Both the working and capitalist classes share the action of saving. Schumpeter's view on this differs from other classical viewpoints such as Adam Smith, in that Schumpeter considered population growth to be an independent factor – one affected by elements other than purely economic influences.

In short, Classical economists considered capital accumulation to be the main engine of economic growth. Their analyses concentrated on freedom of trade between nations, as this promoted the success of the application of specialization and division of labour. They also called for a policy of non-interference from the state in the activity of the market, encouraging governments to focus on organizational matters. These Classical approaches have served to highlight that economic growth depends on the population, capital, technological advances, trade and natural resources.

Table 3.1 presents a brief summary of the most important factors affecting economic growth, stretching from the Mercantilist era, through the Physiocrats period and ending ultimately with Classical theory.

Table 3.1: A summary of early and classical theories of economic growth

Theories	Date	Conclusions
Mercantilists	1700-1800	Growth results from the accumulation of precious metal (gold, silver), trade, industry, exports and increases in population.
Physiocrats	1800	Growth results from agriculture and free-market.
Classical::	1700-1900	Economic growth depends on the population, capital, technological advances and natural resources.
Smith	1723-1790	Growth results from the profits of the capitalist class, industrial sector, labour and economic resources.
Ricardo	1772-1823	Growth results from the capitalist class, the industrial sector, free trade, low population growth.
Malthus	1766-1834	Growth results from capital accumulation, low population growth.
Schumpeter	1934	The role of the entrepreneur and innovations in the process of economic growth.

3.4 Models of Economic Growth

There has been a clear change in human thought in relation to economic growth, thanks to technological advances. The availability of databases, for example, made it possible for economists to carry out quantitative analyses using different methodologies (Ayres, 1997). According to several studies (e.g., Stern, 1991; Patrick, 2009) the most notable models of economic growth include: (1) the Keynesian Growth Model; (2) the Harrod-Domar Growth Model; (3) the Solow's Neoclassical Growth Model and (4) the Endogenous Growth Model.

3.4.1 Keynesian Growth Model[5]

Keynes (1936) explained that investment and consumption are the main drivers of economic growth, whereas savings lead to unemployment and low economic progression (Ayres, 1997). Therefore, for this school of thought, most crucially consumption is the main engine of growth, not savings, contrary to the traditional beliefs of classical theories. Keynes believed that government spending was a key element in keeping the economy moving and that low aggregate demand would sustain

[5] This model was the result of prevailing conditions in the Great Depression of 1929-1933.

low growth (or possibly recession and depression) if the government did not step in to resolve the problem (Lee, 2012). However, Keynes' theory, which called for increasing the role of government in economic activity, suffered criticism from a group of economists led by Friedman (1968), whose beliefs were based on the principle of self-balance and the need for reduced state intervention in economic activity.

The Keynesian model is a popular model due to the fact that it is simple to use and easy to understand. This model can be used to assess the effects of different policy scenarios, e.g. reducing taxes, changes in the behaviour of producers and consumers in the economy and increases in government spending (Bhattarai, 2005). The following equation describes Keynes' point of view:

$$Y = C + I + G + (X - IM) \qquad (3.1)$$

where:

Y is economic growth (GDP), C is consumption, I is investment and G, X, IM are government spending, exports and import respectively.

The key underpinning of Keynes argument is the multiplier effect on economic growth resulting from injections into the economy such as increased government spending and investment (Cogan et al., 2010). Keynes believed that any rise in investment would have a multiplier impact on income, hence, the possibility of achieving a higher level of employment. This multiplier effect can be identified algebraically with the assumption of a closed economy without income taxes as follows (Gnos and Rochon, 2008):

$$Y = C + I + G + X \qquad (3.2)$$

Assuming an increased investment with no change in G and X, the equation becomes:

$$\Delta Y = \Delta C + \Delta I + \overline{\Delta G} + \overline{\Delta X} \qquad (3.3)$$

Dividing both sides of the equation by (ΔY), results in the following equation:

$$\frac{\Delta Y}{\Delta Y} = \frac{\Delta C}{\Delta Y} + \frac{\Delta I}{\Delta Y} \qquad (3.4)$$

Equation (3.4) then becomes:

$$I = \frac{\Delta C}{\Delta Y} + \frac{\Delta I}{\Delta Y} \; and\ then\ I - \frac{\Delta C}{\Delta Y} = \frac{\Delta I}{\Delta Y} \qquad (3.5)$$

Thus, the investment multiplier is:

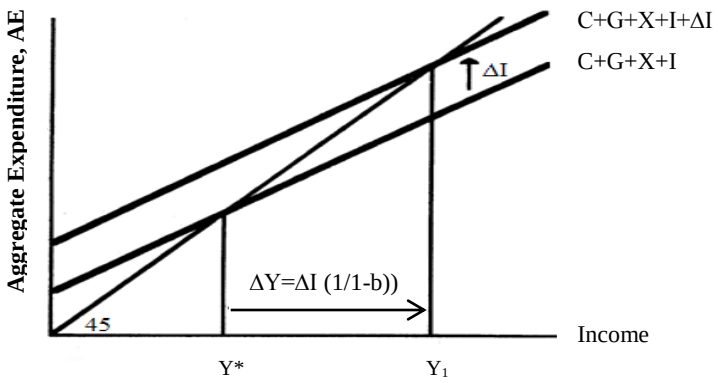
$$\Delta Y = (\frac{1}{1-b})\ \Delta I \qquad (3.6)$$

Where:

b refers to the Marginal Propensity to Consume (mpc) = $\frac{\Delta C}{\Delta Y}$, with the multiplier $= \frac{1}{1-mpc}$.

As for illustrating the multiplier graphically, the study assumes that a 1% increase in investment will lead to a larger increase in income. This impact can be illustrated in the chart below:

Figure 3.1 The Multiplier Effect of Investment



Source: Author

The diagram shows that a small increase in investment (ΔI) lead to a multiplier effect on the income, wherein the equilibrium level (Y_1) to (Y^*) has shifted, thus creating a change in national income.

In addition, Keynes called for the re-distribution of income, stressing the rights of the poor class to their fair share. This ran contrary to classical thought, which advocated that the distribution of wealth should be for the benefit of rich capitalist classes only. Keynes argued that the capitalist approach led to capitalists saving a large part of their income, which then stimulated lower aggregate demand, thereby limiting economic growth. He pointed out that the poor spend a greater proportion of their income on consumption, thus the increased incomes for this layer increases the size of the total consumption, which increases the aggregate demand that drives the wheel of production. This in turn generates new jobs, eliminates unemployment and increases economic growth (Keynes, 1936).

Keynes' theory has received both criticism and support from several economists (see for example, McKenna, 1977[6]; Ahiakpor, 2001; Simpson, 2010). Schumpeter (1951: p.275) pointed out: "Practical Keynesianism is a seedling which cannot be transplanted into foreign soil, it dies there and becomes poisonous before it dies...."

The writings of Keynes mainly focused on treating the problems of developed countries. Nevertheless, the policies and economic instruments he presented find great acceptance amongst the implementers of advancement in developing countries. This is particularly true of his recommendations on funding through a budget deficit and his advice on government spending to compensate for the shortage of effective demand.

Additionally, the policy of financing public investments by means of a budget deficit (borrowing) or by increasing the quantity of internal money (funding through inflation), when applied to developed capitalist countries, tends to shift any idle production

[6]This book is by a neo-Keynesian economist and includes expositions of many of Keynes's thoughts.

capacities and thus raises the level of employment and national income. The implementation of such policies in developing countries and oil producing countries, however, may merely leads to higher rates of inflation. It could therefore be argued that application of the Keynesian model is confined to the economies of advanced capitalist countries and that it could not be applied to developing countries and oil-rich countries such as Saudi Arabia with any degree of accuracy.

3.4.2 Harrod-Domar Model

In the Harrod-Domar model the most important element in economic growth is the dual role played by investment, where increased investment leads to both effective demand and productive capacity of the national economy and the supply of goods and services.

The model of Harrod-Domar is one of the oldest models of economic growth and can be easily applied, which has inspired many developing countries to employ it as part of their economic plans (Gillis et al., 1992). The development of the model follow these assumptions: a closed economy and consumption in the long-term represents a fixed percentage of the national income (i.e., the marginal propensity to consume is a constant in the long-term). The model also assumes stability in the general level of prices and stability of the coefficient of capital, which is the ratio between capital and income. Based on these assumptions, the investment function and the savings function in the Harrod-Domar model are defined as follows:

Savings represents a certain percentage of the national income:

$$S = s * Y \qquad (3.7)$$

Investment is represented by a change in the capital stock (ΔK):

$$I = \Delta K \qquad (3.8)$$

Capital stock is linked to national product by a factor of the capital (k):

$$\Delta K = k * \Delta Y \qquad (3.9)$$

In equilibrium, saving must equal investment:

$$S = I \qquad (3.10)$$

From equations (3.7, 3.8 and 3.9) we get:

$$I = \Delta K = k * \Delta Y \qquad (3.11)$$

or

$$s * Y = k * \Delta Y \qquad (3.12)$$

Dividing both sides of equation (3.11) and (3.12) by *Y* and rearranging we get the following:

$$g = \frac{S}{k} = \frac{\Delta Y}{Y} \qquad (3.13)$$

where *g* represents the rate of GDP growth, *s* saving rate or marginal propensity to save and *k* capital coefficient. The left hand side of equation represents the GDP growth rate *g*, which is determined directly by a savings rate *s* and inversely by a capital coefficient *k*. Therefore, the Harrod-Domar model shows that the process of development requires increased savings and thus investment, to increase the speed of growth. This relationship represents the Harrod-Domar model of economic growth. The basic premise of the model is that the output of any economic unit depends on the amount of capital invested in it. Economic growth depends mainly on the capital invested in plants and equipment. The model confirms that savings through individuals and companies is the main source of capital accumulation.

Despite the fact that the Harrod-Domar model introduces new interesting insights into growth, it has become clear from subsequent attempts and contributions to the literature of economic growth that this theory has a significant number of drawbacks (see for example, Dwivedi, 2005; Hagemann, 2009).

The Harrod-Domar model was applied in Europe after the Second World War in the form of the U.S. Marshall Plan, with acceptable results. This model erroneously assumes, however, a similarity of conditions between developed and developing countries. Developing countries are not able to bridge the savings gap, except through foreign loans or by allowing foreign investment. The savings factor is not, however, the only problem for the evolutionary process in developing countries and oil-rich countries; other more important problems such as political instability and social backwardness also enter heavily into the equation. In addition, the model emphasis only one factor (capital) while overlooking other factors such as natural resources and human resources as well as other non-economic aspects such as social and political variables. If this model was adopted, for example, by communities with available capital such as Saudi Arabia, Iran and the UAE, one might assume that the problem of development would not occur. Such an assumption would be a fallacy, however, as there are other factors that interact with capital, all of which are integral to achieving comprehensive development. Modern theories as well as empirical studies have illustrated the importance of these additional influences on the process of economic growth, be they in developed, developing or oil-based nations. Moreover, the model assumes a closed economy; such an assumption would be inapplicable in the case of oil-rich countries, which depend on the global economy.

Finally, the Harrod-Domar model's general methodological framework does not give the possibility of assessing the impact of technological advances, nor indeed the other important aspects upon which the advance of oil states rely (Hagemann, 2009). Added to this there is the problem of the unavailability and inaccuracy of statistics and data essential to the formulation of successful developmental plans (particularly capital-related information) in developing and oil-rich countries. All of these factors hamper the

successful application of the Harrod model even in developed countries, let alone in developing and oil-rich countries like Saudi Arabia.

3.4.3 Solow's Neoclassical Growth Model

The neo-classical model, also known as the exogenous growth model or Solow-Swan model of economic growth, developed by Solow-Swan (1956) represents an important step towards transforming the Harrod-Domar model into a more efficient economic growth model, by including the labour variable as a factor of output. It also takes into account the impact of technological progress on economic growth (Barro and Sala-i-Martin, 2004).

The Solow model has been one of the most important models in the modern theory of economic growth. The goal of this model has been to measure the basic factors that cause economic growth. The model starts with a neo-classical production function, linking inputs with the quantity produced. It assumed constant returns to scale, substitution between inputs and diminishing returns. Solow[7] began with a normal production function, which showed the relationship between production inputs (labour, capital) on the one hand and the quantity produced on the other, resulting in the following functional form:

$$Y = Af(K, L) \qquad (3.14)$$

where:

Y = Output

K = capital

L = labour

A = technology

The Solow model was later expanded to include other variables such as savings, population growth, investment and technical progress in increasing living standards and

[7] Solow won the Nobel Prize for Economics in 1987.

economic growth. It went on to demonstrate that investment and technological advances lead to increased economic growth, while population growth leads to a decrease in economic growth rates.

The model also illustrated how capital accumulation alone is not enough to explain economic growth; high savings rates lead to high growth, but this is achieved on a temporary and non-continuous basis. The model furnished an improved interpretation of how population growth relates to sustained economic growth and offered an explanation for the differing levels of living standards between different countries. It indicated that a higher rate of population growth leads to a reduction in the level of capital stock, a fall in the per capita income and a deterioration in living standards.

Furthermore, the Solow model focused on the importance of technical progress in increasing living standards and then economic growth. It explored how the production process was affected by technological developments and by improvements in technical know-how, concluding that technical development was one of the essential determinants of any increase in economic growth. Technical progress leads to continual increases in output and thus to improvements in the welfare of society. It therefore behoves on governments to focus on technical evolution and to adopt appropriate policies in order to affect a positive influence on productivity through infrastructural economic improvements such as transportation, communications and others.

There are also a substantial number of means through which technological development can assist in addressing difficulties associated with the exhaustion of resource. Solow (1974) argued that resource-saving inventions have the ability to decrease natural resource requirements per unit of real output. New technology can also have a substitutive effect of shifting demand onto alternative resources; a modern example of this is the move from coal to oil in the late Twentieth Century. Ultimately, improved

technology can reduce extraction costs and facilitate exploration, hence increasing the availability of a given resource (World Trade Organization, 2010).

Overall, the Solow model is the most commonly used model in recent studies of economic growth, as well as in studies relating to developing countries, including oil-rich countries (Thampapillai and Hanf, 2000; Anaman, 2004; Asseery and Al-Sheikh, 2004; Gylfason and Zoega, 2006; Awokuse, 2007). Chapter Five, which relates to the model's specification, clarifies why this particular theory was selected as the basis of the theoretical framework designed to achieve the goals of the research.

3.4.4 Endogenous Growth Model (New Growth Theory)

Many economists are not convinced by economic growth models that rely on external sources of technical progress in the interpretation of productivity in the long-term, as in the Solow model (Barro and Sala-i-Martin, 2004). Therefore, Romer (1986) and Lucas (1988) developed an endogenous growth theory, which concentrated on two factors: the stock of human capital and technological changes.

The essential characteristic of this model is that it links technical progress directly to productivity and economic growth, rather than to labour and capital as suggested by Solow-Swan model. The endogenous growth model can be expressed by the following equation:

$$Y = F(K, L, A) \quad (3.15)$$

where:

K = human and physical capital.

L= Labour.

A = technology.

Endogenous growth theory focused on the role of technical progress in raising living standards. This encompasses technical progress of inventions, any discovery of new

products or new production processes, as well as innovation. In addition, this theory confirms that investment and spending on research and development (R & D) are the main sources of technical progress (Romer, 1994). Rapid technical development is the result of continuous investment in research and development, which of course requires increased spending from countries, as well as encouraging the private sector to invest in research and development. Hence technical progress requires investment expenses as well as a reduction in current consumption.

The theory of endogenous economic growth highlights the government policies that lead to a sustainable increase in economic growth. This theory proposes that direct spending and aid and the provision of tax exemptions, tax incentives for research and development (R and D), intellectual property rights and their protection, infrastructure development, human capital investment support and foreign trade regulation all play their part as economic prosperity determinants (Barro and Sala-i-Martin, 2004).

Romer and Lucas's theory also focused on the role of human capital and its impact on growth as one of the basic components in the process of economic growth, with increased investment in human capital through education, workforce training, rehabilitation, improved competitiveness in global markets and, in turn, improved living standards. Thus, Romer and Lucas's model focuses mainly on (i) technological change, (ii) trade policy, (iii) the role of the government and (iv) human capital (Piazolo, 1995).

Exogenous and endogenous growth models, like other models, carry their own set of design faults. They are, nonetheless, the most famous economic models for a number of reasons, the most important of which is that they are open to the possibility of being tailored to different economies. Based on his research on the determinants of economic growth in Canada, Asheghian, (2011) argued that the strength of Romer and Lucas's models lies in their assumption that long-term growth is not impacted by technological

changes only, it is also affected by other factors such as institutional and country-specific elements.

On the other hand, there are also two other important theories, which are very important to discuss; namely, Rostow and Lewis theories. Rostow (1960) posits that economic problems for any nations depend on several challenging factors, which are difficult to determine. This theory assumes that these problems depend on the history of economy for countries. However, the most important idea is that economic growth is based on unbalanced growth. Rostow (1960) in his book “The stages of economic growth"; argues that economic growth is based on unbalanced growth and the existence of a so-called “leader sector", which plays the leading role in the development of the rest of the other sectors, particularly the start-up phase. Rostow has, however, suffered severe criticism from economists such as Baran and Hobsbawm (1961). For example, Rostow’s opinions for growth stages are not very clear, as he did not specify the changes that will happen in the economy at every stage and that must occur before moving on to the next phase.

Lewis’ theory (1954) is a famous economic theory as it is easy to understand. It transforms economies of countries, especially the poor ones, to the industrial side instead of the agricultural side in relation to the labour force. The theory assumes that the conversion process from the agricultural sector to the industrial depends on increasing production in the industrial sector. It also proposes that the industrial sector maintains a steady level of wages that is higher than the agricultural sector in order to encourage workers to move.

Despite the fact that the idea is useful in general for less developed countries, it has been severely criticised particularly with regard to the transformation between the two sectors. This idea suggests that there is an increase in manpower in the agricultural

sector, which perhaps enhances the transfer of workers to industrial sectors. In fact, in less developed nations, there is a high level of unemployment in major cities, which explains why Lewis' theory is difficult to apply in both developed and developing countries.

Furthermore, the neoclassical growth model has been modified to include many factors such as the depreciation of natural capital and environmental degradation (Thampapillai and Hanf, 2000) and natural resources (such as oil) and government spending (Anman, 2004). Most modern experimental studies follow the extended version of the neoclassical growth model (Solow model) and also include other factors, such as exports, imports, tourism and human capital (Khan, 2006; Awokuse, 2007; Tiwari, 2011). There is little doubt that this theory would be suitable for economies based on oil, like those of Saudi Arabia and the UAE. Hence, in Chapter Five, the importance of this theory and its relevance to the many oil-based economies that can be found amongst Arabian Gulf Countries will be reflected in the methodologies the chapter employs.

3.5 Summary

There are a significant number of theories and models relating to economic growth, but only the most notable are included in this work's literature review. Nevertheless, one can observe that different theories and models serve different goals and there is no single unique model or approach, even if one narrows the scope down to addressing the same problem in the same economy (Zarmouh, 1998).

This Chapter has addressed the theoretical side of economic growth and has explored different economic schools that have at one time or another tackled the subject of economic growth. The Chapter opened by clarifying the difference between economic growth and economic development and demonstrated that economic growth can be used

to reflect national development. A summary of economic growth sources according to the thoughts of Mercantilists and Physiocrats were also provided. This pointed out that the Mercantilist theory proposes that an increased economic growth is based on trade and more importantly on expansion in exports and government intervention in trade, whereas Physiocrats theory postulates that agriculture is the key to economic growth.

This review went on to discuss the main proponents of the classic economic theory, as represented by the ideas of Adam Smith, David Ricardo, Robert Malthus and Joseph Schumpeter. These theorists called for limitations on state intervention in the market and viewed economic growth as a function of capital, technological development and natural resources. They considered capital accumulation as the main driver of economic growth.

The role of investment and consumption in the process of economic growth according to Keynes was also discussed, as was the Harrod-Domar model, which concentrated on the dual effect of investment in economic growth. The contribution of the Solow model, which was later augmented to include additional factors such as saving, population growth and innovation, was then delineated. An investigation was also undertaken into the theory of internal growth, as presented by Romer and Lucas. Conversely, the Solow model was found to focus on variables determined exogenously and not endogenously and Romer and Lucas were found to place particular emphasis on the role of R and D in increasing the level of technological development and economic growth.

It is important to highlight that the economic theories that inspired such policies as freedom of economic activity and the lack of state intervention, as advocated by Adam Smith and the Classic economists succeeding him, were the result of the contemporary conditions experienced by Classical economists. As Keynes explained, state intervention in market activity was an expression of the economic conditions in that period.

Oil economies, including Saudi Arabia's, echo the prevailing economic conditions in Europe and the West during the Mercantilist era, in that they are heavily dependent on exports. Governmental spending also tends to determine their economic fate. The overall conclusion of the review of previous economic models is that the Solow-Swan growth model is the closest and best suited to oil-dependent countries, such as those in the GCC.

Having thus presented a brief review of the most significant theories and economic models, the next chapter will proceed to discuss the most prominent empirical studies on the determinants of economic growth.

4

A REVIEW OF SELECTED EMPIRICAL STUDIES ON ECONOMIC GROWTH

CHAPTER FOUR: A REVIEW OF SELECTED EMPIRICAL STUDIES ON ECONOMIC GROWTH

4.1 Introduction

The previous chapter introduced and highlighted the most prominent theories of economic growth, both old (such as Mercantilist) and modern (such as Endogenous Growth Theory by Romer and Lucas) and the most important factors that affect economic growth. This chapter will focus on the most prominent empirical studies that have tested these theories in the developed, developing and oil-rich countries. The aim is to clearly identify relevant empirical variables useful for examining the current study's research objectives outlined in chapter 1.

As observed in chapter 3, economic growth is a top priority among both industrialized and less developed countries and it carries a positive influence on society by enabling a higher standard of living and improved social welfare systems (Asseery and Al-Sheikh, 2004). Economic growth has attracted considerable academic attention over many years and, as a result, different approaches have been developed that attempt to classify and interpret its most important determinants. Such studies have concentrated on a group of determinants that are considered to be the most important as suggested by the theories, specifically: labour, capital, exports, government expenditure, human capital, innovation, private investment and tourism.

There are a significant number of studies about growth and development in applied research. The discussions that follow will focus mainly on studies on economic growth. Over recent decades studies have examined the determinants of economic growth and the main factors that affect it, given that some countries have experienced more rapid growth than others. The empirical studies reviewed are classified into two groups: (1) determinants of economic growth and (2) key variables influencing economic growth in oil-rich countries.

Thus, the present study will address the most important variables that affect the growth of the Saudi and UAE economies, both in terms of the oil and the non-oil sectors, but with particular emphasis on the variables in non-oil sectors. Hence, it is worth understanding the variables affecting economic growth in different societies and in both developed and less developed countries, as well as in oil-rich countries and discovering whether these variables are similar or different. In other words, what are the variables that are relevant to oil-based countries? To achieve this, in the next section, a selected number of empirical studies are reviewed; these are classified into three groups: (1) developed countries; (2) developing and emerging countries; (3) oil-rich countries. The section that follows then clearly identifies and critically examines variables that would help our understanding of economic growth in oil-based countries such as Saudi Arabia and the UAE.

4.2 Determinants of Economic Growth

4.2.1 Developed Countries

Most studies on developed countries have shown that the Solow-Swan as well as the Romer and Lucas models and not the Keynesian approach explain the trend of economic growth, as is evident from the variables used in these studies. A good illustration of this is human capital, which is the key source of economic growth in endogenous growth theory and in the neoclassical model (Petrakos and Arvanitidis, 2008).

Several studies in these countries (e.g. Barro, 1996; Teixeira and Fortuna, 2003; Asheghian, 2004; Asheghian, 2011) have examined the determinants of economic growth. Asheghian (2011) investigated the determinants of growth and foreign direct investment in Canada by utilising time series data over the period 1976-2008 and applying unit root properties and the new Granger non-causality tests. It concluded that

the major determinants of economic growth in Canada were factor productivity and domestic investment growth; it also found that there was no time-series support for FDI-led growth hypothesis in that country.

Barro (1996) used data over 1960-1990 for about 100 countries (developed and developing) to also examine the determinants of economic growth. The author used Ordinary Least Squares (OLS) in his analysis; the results showed that growth rates are enhanced through a low level of childbearing, reduced government consumption and higher levels of human capital relating to increased levels of schooling. Similarly, the impact of the rule of law and reduced inflation led to growth. Barro also concluded that the influence of political freedom on economic growth is not particularly strong.

The results of Barro (1996) relating to the effect of political freedoms on economic growth seem to be contrary to the views of most economists like Adam Smith and Friedman. Smith's book "The Wealth of Nations" argues that free markets, protection of property rights and lack of government intervention in the economy leads to increased satisfaction and economic growth. Friedman subscribes to this philosophy, stating that political and economic freedom enhance economic growth. However, contemporary reality demonstrates that authoritarian regimes do not hinder economic growth, as can be observed in China for example, which boasts faster economic growth rates than less authoritarian countries. Adding to this diverse discourse, Bueno and Downs (2005) suggests that economic growth can happen in the short-term in the presence of dictatorial regimes, but growth in the long-term requires the development and protection of political freedoms and civil liberties.

Teixeira and Fortuna (2003) examined the interaction between innovation capability, human capital and economic growth in the Portuguese business community over the period 1960 to 2001. They employed vector autoregressive (VAR) and co-integration analyses and the estimated results confirmed that innovation and human capital were

enormously important to the development of Portuguese economic growth during that period.

Asheghian (2004) applied an extended Solow model in an empirical investigation of the determinants of economic growth in the U.S from the period 1960 to 2000. The study's other goal was to test if there was any time-series support for the FDI-led growth hypothesis in the country. The results showed that the key determinants of economic growth in the U.S were: total factor productivity growth, domestic investment and FDI, the last of which was found to have a particularly significant impact on the U.S.' economic growth. Additionally, FDI had a significant influence on total factor productivity, further contributing to the United States' economic growth. The author suggested that U.S policy makers should work to devise policies that would increase the volume of FDI.

With regards to FDI, these findings are in contrast to the results of Asheghian's (2011) study on Canada. The differences in the results are a bit surprising given that both Canada and the USA are advanced countries and are economically similar. Canada is the largest trading partner of the United States, due largely to a free trade agreement in North America known as The North American Free Trade Agreement (NAFTA). These differences between Canada and the U.S.A could be due to the volume of investments. A recent study by Jackson (2012) showed that the investment expenditure by advanced economies accounts for 95% of all FDI in the USA. The United Nations Conference on Trade and Development (UNCTAD) also indicated that the U.S.A remained the largest recipient of FDI flows in the world, despite a fall in FDI in 2012.

In summary, an analysis of the results of previous studies in developed countries shows that growth is based mostly on three variables: human capital, innovation and investment. Thus, these studies support the views of the new growth theories of Romer-Lucas as well as Solow-Swan. The result here is identical with the study of Arvanitidis

et al (2009), whose research drew on a survey of key experts all over the world to identify factors that support economic growth. Results confirmed that human capital and innovation are the most important determinants of economic growth in developed countries, whereas FDI and rich natural resources are at the bottom of the list.

As also noted, there are two important variables in the process of economic growth per Keynesian economics: the role of government spending and exports. However, studies have avoided inclusion of these two variables in the process of economic growth, perhaps due to lack of assigned importance to these variables for developed nations. There is strong evidence to support this opinion, including a study by Mitchell (2005), who explored the impact of government spending on economic growth in the United States. He argued that over a period of two years the American government's spending had grown excessively, resulting in a negative impact. His study suggested that the government ought to cut its spending, particularly on projects and programmes that generated the least benefits or imposed the highest costs. This viewpoint supports the beliefs of Mercantilists, as well as the classical doctrine led by Adam Smith and his call for non-interference in the market by the government. This role will differ completely when the conditions of natural resource-rich oil-producing countries (rentier states) are assessed, whose economies are heavily dependent on oil exports and government spending.

4.2.2 Developing and Emerging Countries

Despite the fact that studies in developing countries have relied heavily on the neoclassical growth model, the variables examined are somewhat different from developed countries. Rao and Cooray (2012), in their study on the model best suited to developing countries, confirm that the expanded Solow model is the most appropriate.

Iqbal and Mustafa (1998) undertook considerable research into what they described as the 'Macroeconomic Determinants of Economic Growth in Pakistan'. The main objective of their study was to examine the effects of some key variables on Pakistan's economic growth using a time-series approach over the period 1959-1960 and 1996-1997. The quantitative results showed primary education to be an important catalyst of growth and that raising the stock of physical capital would help to contribute to growth. The empirical results also suggested that the openness of Pakistan's economy promoted economic growth, while the budget deficit and external debt were negatively related to economic growth. These results differ somewhat from the study carried out by Khan (2006), who used foreign direct investment, macroeconomic stability, financial sector development and expenditure on education as independent variables, with particular emphasis on education. This later variable, unlike the others, did not have any positive impact on Pakistan's economic growth. The study applied an-OLS method during the period 1960-2003.

In a recent study of the same country for the period 1971 to 2006, Rahma and Salahuddin (2010) employed an autoregressive distribution lag (ARDL) approach for co-integration to study the relationship between the long-term variables, while the error correction model (ECM) was utilised to cover the short-term ones. The results show that there is a positive relationship between efficient stock markets and economic growth, long and short-term. They also show that inflation and financial instability have negative effects whereas foreign direct investment, human capital and stock market liquidity have a more positive impact on growth. These results are compatible with theoretical and empirical predictions, particularly, with regard to the element of human capital (as indicated in the new growth theory and the Solow model) and its importance in promoting economic growth.

With regard to foreign direct investment (FDI), both supporters and opponents have conducted recent studies over its importance to economic growth. Several such studies in developing countries show FDI to have a positive impact on economic growth (for example, Rahman and Salahuddin, 2010; Prochniak, 2011; Abdullah et al., 2015), whereas its impact in developed countries is not so clear (Asheghian, 2004; Asheghian, 2011). This was confirmed in a study conducted by Nunnenkamp (2003), who concluded that in developing nations FDI plays a more significant role than in developed nations. These findings are consistent with the results of UNCTAD (2012), which showed that developing economies absorbed $130 billion more than developed countries. However, this does not prove the effectiveness of FDI in developing countries. In fact, studies on oil rich-countries – which are the focus of this thesis - found that there was a weak relationship between FDI and economic growth (see, for example, Hussein, 2009; Alkhathlan, 2013; Udeaja and Onyebuchi, 2015). In fact, the UAE has recently started to focus on foreign investment, but its influence, be it positive or negative, will appear in the future.

Piazolo (1995) found that disparities between growth rates of different countries were only partially explained by the basic factors of production. Their study used a time series analysis to examine growth factors in the economy of South Korea over the period 1955-1990. The results showed that human capital, gross investment and exports enhanced economic development. It was also discovered that inflation and government consumption influenced economic growth in a negative manner.

Awokuse (2007) examined the impact of trade expansion, both imports and exports, on economic growth in three transition economies in Bulgaria, Poland and the Czech Republic between 1993 and 2004. The study employed a neoclassical growth model and VAR approach for the empirical analysis. The results indicated the importance of the above variables to economic growth and showed that imports play as large a role as

exports in stimulating economic growth within these nations. In Palestine, Hamdan (2015) examines the impact of several variables in the Palestinian economy on economic growth from the first quarter of 1996 to the fourth quarter of 2012, using Johansen approach. The results refer that all variables (labour force, capital, trade openness, FDI and foreign aid) had positive effects on the GDP.

Prochniak (2011) explored the key factors that have affected long-term economic growth in the 10 Central and Eastern European (CEE) nations: Czech Republic, Lithuania, Estonia, Hungary, Bulgaria, Latvia, Slovenia, Romania, Slovakia and Poland, for the period 1971-2001. The study showed that the most important economic growth determinants in these nations were: the investment rate (including FDI), human capital, good fiscal stance (low budget deficit and low public debt), financial sector development, low interest rates and low inflation, a high share of services in GDP, high proportion of working-age population, a high proportion of private sector in GDP, the development of information technology and communications, economic freedom and structural reforms.

In Chen and Feng's (2000) study on China over the period 1978-1989 growth was reflected by increases in per capita GDP, which was used as a dependent variable, with the explanatory variables of: private enterprise, education and openness to trade. The estimated results suggested that all these variables lead to an increase in economic growth in China. The authors also discovered that a higher fertility rate, the presence of state-owned enterprises and high inflation all reduced growth rates among the provinces. These results (especially those concerning education and openness to trade) are compatible with the studies by Iqbal and Mustafa (1998) and Awokuse (2007).

Dobronogov and Iqbal (2005) examined some growth factors in Egypt during the period 1986 to 2003. They found that government consumption and credit to the private sector were important factors in the growth of Egypt. The study also found that the lack of the

financial intermediation was an important constraint on both growth and economic development.

There have been debates on the determinants of economic growth in countries in Southeast Asia considered to be undergoing rapid growth. A good illustration of this is Kogid et al (2010), who investigated the effect of government expenditure, export, consumption expenditure, foreign direct investment and the exchange rate on economic growth in Malaysia from 1970 to 2007. The study used a co-integration analysis and the causality approach of Johansen (1990) together with an error correction model (ECM) for the empirical analysis. The author discovered that all the determinant factors caused economic growth and that exports played a particularly important role in boosting development.

Malaysia is one of the most rapidly developing nations due to its use of advanced technology as well as its emphasis on human capital. The new growth theory by Romer (1986) and Lucas (1988) focuses on such factors, previously not taken into consideration but which may indirectly affect exports and thus economic growth. However, according to the latest statistics from the WTO (2012), over 24 million tourists visited Malaysia in 2011, making it one of the most popular tourist destinations in the world. Yet tourism has been a neglected variable, despite the fact that its importance has been confirmed by recent studies (Cortés-Jiménez and Pulina, 2006; Tiwari, 2011).

Harvie and Pahlavani (2007) discussed the sources of economic growth in South Korea. The study used quarterly time series data from the period 1980 to 2005. The results showed that physical capital, human capital and export all carried a significant impact on growth in South Korea, whereas imports were not significant to growth. Harvie and Pahlavani (2007) relied on endogenous growth methodologies by Romer and Lucas. This result particularly for human capital is different from a recent study in Egypt by

Ghalwash1 (2015) who found that human capital has an insignificant negative influence on GDP.

Some studies (e.g Trpkova and Tashevska 2011; Tiwari 2011), however, have taken a different approach by using panel-data. In their paper, Trpkova and Tashevska (2011) examined the determinants of economic growth based on panel data for a sample of seven nations: Albania, Bulgaria, Bosnia and Herzegovina, Croatia, Macedonia, Serbia and Romania, from 1995-2007, using the real growth rate (GDP) as a dependent variable. Explanatory variables included: the current account-GDP ratio, the consumer price index (CPI), the exchange rate, foreign direct investment, the external debt-GDP ratio, the general government balance, population, general government expenditure, large scale privatization, price liberalization and overall infrastructure reform. The results revealed that the CPI, which is a proxy for inflation, the current account-GDP ratio, the general government balance, the exchange rate, general government expenditure, large scale privatization, price liberalization and population were some of the key factors which Southeast European countries policy makers should emphasise in order to achieve a substantial increase in economic growth.

With regard to the role played by government spending[8] in developing countries, there are several researchers who have attempted to examine its relationship with economic growth. Ghali (1997), Gani (1998), Abu-Bader and Abu-Qarn (2003), Mitchell (2005), for instance, present a critical view of the relationship, on the notion that when government spending increases, taxes need to be increased, which may prove detrimental to an economy. Abu-Bader and Abu-Qarn (2003), who examined the causal relationship between government spending and economic growth for Syria, Israel and

[8] Whereas the role of government in developing nations is highly controversial, some studies argue in favour of an increase in government spending on economic development and infrastructures. Such studies point out, for instance, that government spending on education and health is beneficial to economic growth (Gupta et al., 1999). On the other hand, some studies and scholars do not support the claim that increasing government spending promotes growth; they argue that such spending is usually accompanied by an increase in taxes, together with a reduction in economic growth (Barro, 1991).

Egypt, found that there was a negative relationship between government spending and economic growth in the long-term and that the military burden had a negative influence on every nation's financial expansion. In the case of both Egypt and Israel, non-military government expenditures had a positive impact on economic growth.

By contrast, there are a significant number of studies that support the results of the study by Trpkova and Tashevska (2011), where there was strong evidence of the existence of a positive relationship between economic growth and government spending. A good example of this is Nurudeen and Usman (2010) who investigated the relationship in Nigeria. The results of their research indicated that government spending has a significantly positive impact on real output and they recommended the government to increase its investment in the transport and communication sectors as well as raise its expenditure in the development of the health sector. Onafowora's (2007) investigation into the same relationship for a group of 30 OECD nations (both developed and developing) over 1970-2005 showed the existence of a long-term relationship between the two variables. In addition, the author observed a unidirectional causality from government spending to growth for 16 of the nations, hence supporting the Keynesian theory. Nonetheless, causality also runs from economic growth to government spending in 10 of the nations. In India, Dash and Sharma (2008) examined the influence of government spending on economic growth from the period 1950 to 2007; they concluded that there was a significant positive influence. They also reported the existence of co-integration among the variables. In a recent study on government spending, Al-Fawwaz (2016) confirms the positive effect on the role of both total government expenditure and current government expenditure for the economic growth in Jordan between 1980 and 2013.

Tiwari (2011) looked at the effect of exports, tourism and foreign direct investment on economic growth based on panel data for four Asian Countries: China, Pakistan, India

and Russia during the period 1995-2008. The results of the study indicated that: tourism has a positive influence, FDI has a negative influence, whereas the influence of exports on economic growth is inconclusive. It was acknowledged that such results could also be due to differences in the economic structures of these countries. The study proceeded to isolate the fact that physical capital and human capital had positive impacts on growth. In terms of the FDI, however, these results differ from the study carried out by Hsiao and Hsiao (2006) who examined the Granger causality relations between GDP, FDI and exports in a sample of 8 countries: Korea, Taiwan, China, Hong Kong, Malaysia, Philippines, Singapore and Thailand from 1986 to 2004. The results found that FDI has a direct one-way impact on economic growth as well as an indirect effect through export. There was also found to be a bilateral causal relationship between economic growth and exports. These results, in turn, are not strongly supported by the FDI-related results found for emerging Asian countries in the study conducted by Nunnenkamp (2003), who identified the fact that FDI was of greater importance to developing countries than to developed nations. Thus the influence of foreign investment on economic growth it seems varies from one country to another, depending on whether the country is a developed or developing nation and whether or not it is an oil-producing region.

Similarly, there are considerable debates among the studies on the relationship between domestic investment and growth. A significant number of researchers concluded that private investment had a positive influence on economic growth (see for example, Sinha, 1997; Podrecca and Carmeci, 2001). A study by Sinha (1997) explored the effect of investment on economic growth in several Asian countries for different periods of time, using co-integration methodology; the results provided a positive contribution from investment in GDP growth in Asian countries. A Study by Elena and Gaetano (2001) sought to test the causal relationship between investment and economic growth

for 104 countries for the period 1960 to 1990. The results showed the existence of a bilateral causality between the growth rate of GDP and investment; they also highlighted that investment was the key to long-term growth.

With regard to the outcome of tourism, as indicated by Tiwari (2011), the result corresponds to a previous study conducted by Cortés-Jiménez and Pulina (2006) who examined the influences of foreign exchange, particularly through tourism, on growth. They discovered that tourism was the largest foreign exchange earner for both low-income and developed nations and that many less developed countries were leaning towards economic policies that promote tourism as a potential contributing factor to a nation's economic growth.

In conclusion, exports, FDI and tourism are not necessarily the only factors that affect economic growth. There are a significant number of other factors influencing this, such as innovations, the private sector, etc. However, according to the empirical studies reviewed, exports, human capital and FDI are the most important factors affecting growth, particularly in less developed countries. In this context, theories that discuss growth do not mention the most important variables affecting less developed countries. They are based on developed nations only, with recent studies using factors applicable exclusively to such nations.

4.2.3 Oil-rich Countries

In oil-rich countries studies are fundamentally different from those in developed countries, given that the focus on variables varies to a large extent with more advanced countries. In addition, these studies focus mostly on the economy as a whole, without an attempt to separate it into 'oil' and 'non-oil' sectors.

Dizaji (2012) for example, analysed the influence of exports and government size on economic growth in Iran. He employed the autoregressive distribution lag (ARDL)

approach for co-integration to study the relationship between the variables in the long-term and the error correction model (ECM) in the short-term. This study used time-series data during the period, 1973-2008 and concluded that the oil exports affect economic growth positively and significantly both in the long and short-term and in the long term, non-oil exports do not have a significant impact on growth. Based on these findings, Dizaji suggested that the Iranian government ought to use the oil revenues to improve the economic structure of Iran and invest in some non-oil sectors to diversify its non-oil exports. This would generate new sources for government revenues and would reduce the economy's dependence on oil exports. As regards the size of government, Dizaji found that its effects on Iranian economic growth in the long-term were stronger than in the short-term. The study also concluded that labour and capital had a positive effect on growth.

However, Dizaji's analysis of Iran failed to recognize the presence of the Dutch disease[9]. Economic theories[10] and empirical studies[11] have proven that there is a positive relationship between exports and growth. Nonetheless, recent studies have shown that oil-rich countries, which rely on oil-exports, suffer from inflation and rising prices. Gelb (1988) found that Iran was among the victims of the Dutch disease, following a decline in its agricultural industry during the first and second oil booms of 1972 and 1981.

In another Iranian study with different results, Safdari et al. (2011) examined the relationship between economic growth and seven main variables: labour, capital, imports of fuel, government size, total exports, exports of fuel and imports to GDP,

[9] There are several definition of Dutch disease. Temple (2010) defined it as: "The deindustrialization of a nation's economy that occurs when the discovery of a natural resource raises the value of that nation's currency, making manufactured goods less competitive with other nations, increasing imports and decreasing exports."
[10] For example, Mercantilist, classical and Keynes theories.
[11] See for example, Ismail, (2010); Sala-i-Martin and Subramanian, (2013).

using Johansen's approach for the period 1973 to 2008. The results showed that all variables have a positive effect on economic growth, except fuel exports.

Although the periods for the above two studies were similar, the results were different, in particularly with regard to exports of oil, perhaps due to the different methodologies used or the nature of the variables employed. In these two studies, the results revealed the need for additional work on the nature of the relationship between the main variables and economic growth in oil-rich states, although there is another recent study also for the Iranian economy by Mehrara and Rezaei (2015) which confirms Dizaji's results showing that oil revenue is the most important factor that affects the Iranian economy positively.

In Brunei Darussalam, Anaman (2004) conducted a similar study of the vital factors determining long-term economic growth for the period 1971–2001. The author employed the autoregressive distribution lag (ARDL) approach for co-integration to study the relationship between the long-term variables, utilising time series data. The study used several independent variables, including: government size, annual growth of total exports, investment-GDP ratio, annual growth of labour and a dummy variable that represented the influence of the 1997/1998 Asian financial crisis. As expected, the study's results showed that the growth of exports (mainly oil) influenced long-term economic growth rates significantly. Government size was found to be the second most influential factor; but it was concluded that a large-sized government impeded economic growth, whilst a moderately-sized government enhanced it. The impact of labour and investment on economic growth was positive, whereas the Asian financial crisis proved to be highly detrimental.

Interestingly, this study focused on oil-exports, government spending and investment, which are particularly relevant to oil countries, yet Anaman (2004) neglected a number of non-oil variables including non-oil exports, tourism and agricultural production.

However, variables vary in their actual impact Brunei, for example, is characterized by its agricultural production, yet the role of agriculture in achieving sustainable economic growth for the country is debatable (see for example, Mankiw et al., 1992; Awokuse, 2009). Despite this fact, the Physiocratic theory supports the concept that agriculture is the most important factor in the generation of positive effects upon economic growth, as highlighted by the Dutch disease backlash by which some oil-producing countries like Iran were hit.

In Saudi Arabia, Asseery and Al-Sheikh (2004) examined the determinants of economic growth between 1964 and 2001. They used military spending, financial development, exports, government spending, labour and investments as their independent variables and found that all variables except investment were important determinants of economic growth in the country. The study further noted that oil exports seemed to have the strongest correlation to this growth – above all the other factors combined.

Nonetheless, their exploration into growth in Saudi Arabia suffered from some fundamental shortcomings. For instance, they ignored important variables in non-oil sectors such as non-oil exports, private investment and religious tourism. The last of these, religious tourism, is a non-depleting resource that the governments of such countries could invest enormous amounts of oil-revenues into. Statistics from the United Nations World Tourism Organisation (UNWTO) suggest that the SA had the highest number of tourists in the Middle East, amounting to over 17 million in 2011 (WTO, 2012); by contrast, ten million tourists visited Egypt and eight million travelled to Dubai in the same year.

In a recent study by Altaee et al (2016) in Saudi Arabia, the authors used several variables namely, capital, export, financial development and import, using ARDL approach and ECM for the short and long-term. The study found that there was a positive relationship between capital, export and financial development and economic

growth both in the short and long-term except financial development in the short-term, where there was a negative effect on economic growth. The study also found a negative impact for the import variable on economic growth in the short and long-term. Nonetheless, like most studies in oil-rich countries this study ignored the key important variables in non-oil sectors such as private investment, religious tourism and non-oil export.

Studies in rentier states focused on two variables (exports and government spending) - a different focus to the variables targeted for developed countries. Such studies ignored variables such as innovation, which has been mentioned in neoclassical economic theories as being important to developed counties. Studies in oil-producing countries have focused on the variables that are mentioned in both classical studies and by mercantilists, who were interested in natural resources and exports. More modern theories focus on other variables such as human capital and technology. This may be due to the fact that theories of modern economic growth emerged at a time when natural resources such as oil and gas were freely available and they therefore did not express any concern for the depletion of these resources; the proof of this is the low oil prices during that period.

Based on the discussion above, the next part of this chapter explores the most influential factors affecting the economic growth of all nations – developed, developing and, most importantly, those related to oil-rich countries (see Table 4.1). It is clear that the most important factors affecting economic growth in general include exports, government spending, investment (FDI/ private), tourism, innovation and human capital. With regard to oil-rich countries, oil exports and government spending are the main engines of economic growth. There are, however, other important variables in the non-oil sector that have proven their importance in empirical and theoretical studies; these could play a pivotal role in the process of economic growth and in the future strategies of countries

that are dependent on a single product such as oil, as is the case for most of the Arabian Gulf States. These variables include tourism, non-oil exports and private investment.

Table 4.1 Summary: Comparison of the Empirical Results for Economic Determinants.

Authors (year)	Empirical method employed	Country group	Period of study	Variable and findings
Asheghian (2011)	time-series	Canada	1976-2008	Factor productivity (+), investment (+), FDI (-).
Barro (1996)	time-series	100 countries	1960-1990	Lower fertility (+), higher initial schooling (+), life expectancy (+), lower government consumption (+), lower inflation (+), better maintenance of the rule of law (+), improvements in the terms of trade (+), political freedom (-).
Teixeira and Fortuna (2003)	time-series	Portuguese	1960-2001	Human capital (+), innovation capability (+).
Hammona nd Thompson (2006)	time-series	U.S.A	1969-1999	Public investment (-), manufacturing investment (+), human capital (+), lower tax rate (+).
Asheghian (2004)	time-series	U.S.A	1960-2000	Total factor productivity growth (+), domestic investment (+), FDI (+).
Iqbal and Mustafa (1998)	time-series	Pakistan	1959-60 to 1996-97	Primary education (+), physical capital (+), openness (+), budget deficit (-), external debt(-).
Khan (2006)	time-series	Pakistan	1960-2003	Foreign direct investment (+), macroeconomic stability (+), financial sector development (+), education (-).
Rahma and Salahuddn (2010)	time-series	Pakistan	1971-2006	Efficient stock markets (+), financial instability (-), inflation (-), human capital (+), FDI (+), market liquidity (+).
Piazolo (1995)	time-series	Korea	1955-1990	Human capital (+), gross investment (+), exports (+), inflation and government consumption (-).
Awokuse (2007)	time-series	Bulgaria Czech Poland	1993-2004	Exports (+), imports (+).
Trpkova and Tashevska (2011)	Panel-data	Albania Bulgaria Bosnia Herzegovia Croatia Serbia Macedonia Romania	1995-2007	CPI (+), current account-GDP (+), exchange rate (+), general government expenditure (+), general government balance (+), privatization (+), price liberalization (+), population (+).
Prochniak (2011)	time-series	Bulgaria Estonia Czech Republic Hungary Lithuania Latvia	1971-2001	Investment(+), FDI (+), human capital (+), financial sector development (+), good fiscal stance (+), high services share in GDP (+), low inflation (+), high proportion of the working-age population (+), low interest rates (+), development of information technology and communications (+), private sector (+),

		Poland Romania Slovenia Slovakia		economic freedom (+), structural reforms (+).
Pahlavani (2005)	time-series	South Korea	1980Q1-2005Q3	Physical capital (+), human capital (+), export (+), imports (-).
Tiwari (2011)	Panel-data	India, China Pakistan Russia	1995-2008	Tourism (+), FDI (-), exports (+) (-), human capital (+), physical capital (+).
Dobronov and Iqbal (2005)	time-series	Egypt	1986-2003	Government consumption (+), private sector credit (+), inefficiency of the financial intermediation (-).
Chen and Feng (2000)	time-series	China	1978-1989	Private enterprise (+), education (+), openness to trade (+), higher fertility rate (+), high inflation (+), state-owned enterprises (-).
Hsiao and Hsiao (2006)	Panel-data	Malaysia China, Korea Hong Kong Singapore Philippines Thailand Taiwan	1986-2004	FDI (+), FDI an indirect effect through export (+), exports (+).
Kogid (2010)	time-series	Malaysia	1970-2007	Consumption expenditure (+), government expenditure (+), exports (+), exchange rate (+), FDI (+).
Dizaji (2012)	time-series	Iran	1973-2008	Total exports (+), oil exports (+), non-oil exports (-), labour (+), capital (+), government size (+): long-term are stronger than short-term.
Anaman, (2004)	time-series	Brunei Darussalam	1971-2001	Oil exports (+), the relative size of government: large government sizes (-), moderate government sizes (+), labour (+), investment (+), the Asian financial crisis (-).
Asseery and Al-Sheikh (2004)	time-series	Saudi Arabia	1964-2001	Military spending (+), financial development (+), exports (+), government spending (+), labour (+), investments (-).
Safdari et al., (2011)	time-series	Iran	1973-2008	Labour (+), capital (+), imports of fuel (+), government size (+), total exports (+), exports of fuel (-) and imports to GDP (+).
Altaee et al., (2016)	time-series	Saudi Arabia	1980-2014	Capital (+), export (+), financial development (+/-) and import (+).
Hamdan 2015	time-series	Palestine	1996Q1-2012Q4	Labour force (+), capital (+), trade openness (+), FDI (+) and foreign aid (+).

4.3 Key Variables Influencing Economic Growth

Historically, as mentioned in Chapter Three, there are two key economic theories, the Solow-Swan and the New Growth Theory of Romer and Lucas, which have formed the basis for most studies on economic growth. The Solow model is one of the most important contributors to modern economic theory; its goal is to identify and evaluate basic factors influencing economic growth. The Solow model began with a normal production function, which depends on labour, capital and technical advances (Solow, 1962) and was later expanded to: (a) incorporate other variables such as, savings, population growth, investment and technical progress and; (b) examine how this in turn impacted on living standards and economic growth. Romer (1986) and Lucas (1988) also developed a theory of endogenous growth, which concentrated on the stock of human capital, technological advances, trade and government policies. The essential characteristic of this model is that it links technical progress directly to productivity and economic growth, rather than to labour and capital. However, most studies in both developed and developing countries rely on the expanded Solow model (Anaman, 2004). As noted earlier, Rao and Cooray (2012) identified the expanded Solow model as the most suitable one for examining economic growth in developing countries.

With regard to empirical studies, there is an extensive amount of research in the field of economic growth. These studies have been conducted in order to test the theoretical predictions and to identify the factors that contribute to economic expansion. Nonetheless, these analyses have two main problems: (1) there are a large number of different variables which impact on economic growth and; (2) each country has its own specific conditions (Piazolo, 1995). Keeping in mind the discussions thus far on economic growth, the theoretical models of economic growth and the empirical reviews, the present study concludes that the major determinants of economic growth are: exports, investment (private/foreign direct investment), human capital, natural

resources, governmental spending, tourism and innovation. However, only some of these variables are relevant for oil-rich countries' analyses, whereas some of these (and other) variables are only suitable for advanced industrial or non-oil nations.

Following these empirical studies and taking into consideration these problems, the factors which impact economic growth in Saudi Arabia and the UAE were selected by focusing mainly on the key determinants of economic growth in non-oil sectors. These factors include: exports, tourism and private investment. It is important to note that tourism, private investment and exports are not necessarily the only factors affecting economic growth in SA, the UAE and similar countries, but they are the most important in previous empirical studies (as will be discussed later). Additional variables considered to be important determinants of economic growth in oil-rich countries include: government spending (Anaman 2004; Asseery and Al-Sheikh 2004; Safdari et al., 2011), labour and capital (following the neoclassical production function).

The next section of the chapter begins by examining exports, as this is the main factor that affects oil-rich countries, given their dependence on the export of oil and its derivatives. The section concludes with a discussion of the economic impact of tourism, which was recently used as a determinant for economic growth (Sequeira and Maçãs Nunes, 2008).

4.3.1 Exports

Exports, has been found to be one of the primary determinants of growth in both oil and non-oil sectors by many empirical studies (see for instance, Tyler, 1981; Chow, 1987; Barro, 1996; Asseery and Al-Sheikh, 2004; Harvie and Pahlavani, 2007; Kogid et al., 2010; Tiwari, 2011; Altaee et al., 2016) and by several growth theories (including the Mercantilists, Classical and Keynesians), all of which argued that trade plays a vital role in economic growth.

Several analysts argue that the relationship between exports and economic growth depends mainly on the export-led growth (ELG) hypothesis (for example, Al-Yousif, 1997; Awokuse, 2007) and they utilise this hypothesis to assess the effect of exports on economic growth. The empirical studies also argue that exports contribute positively to growth on several fronts, including through the provision of foreign exchange, technology transfer and diffusion of knowledge, as well as enhanced efficiency by means of improvements in the skills of workers. The current analysis tests the validity of this hypothesis for the Saudi economy and the UAE economy, which is based mostly on oil and its derivatives.

According to the classical ideas, natural resources are one of the main sources of economic growth. They include oil, gas, water and others and can be measured in several ways. Sachs et al. (1995) gauge them by the amount of exports of primary products in GDP; Lederman and Maloney (2003) calculate them by a nation's share of primary product exports in the total volume of exports and total labour force; Sala-i-Martin and Subramanian (2013) determine them by the share of fuel exports in merchandise exports and GDP. Studies in this aspect are numerous and their findings have been rather mixed. Sachs et al. (1995), Lederman and Melony (2003), Papyrakis and Gerlagh (2007) argue that natural resources have negative effects on economic growth through certain channels – countries with natural resources are often exposed to Dutch disease, for example. They also tend to have unusually high poverty rates and a low level of health and education (See Rodriguez and Sachs, 1999; Rodrik, 2002; Karl, 2007).

Some countries have tended to grow slowly despite having plentiful natural resources (Nigeria and Venezuela, for example) in comparison to countries with poor levels of natural resources, such as Japan and China. By contrast, some studies have shown that in some resource-rich countries like Norway, growth rates are high (Karl, 2007). It

seems that government policy also has a significant effect on the growth of these countries, not merely the availability of these resources. Norway became an advanced democratic country long before its oil resources were discovered and its advanced social institutions and sophisticated financial system assisted Norwegian citizens to circumvent the effects of Dutch disease, which had afflicted so many other oil-rich countries.

In this framework, studies addressing the determinants of economic growth in oil-producing countries have tended to focus on the exports variable (see for instance, Anaman, 2004; Asseery and Al-Sheikh, 2004; Konya, 2004; Mehrara and Rezaei, 2015). This variable has almost been ignored in developed countries, which rely significantly on tax rather than revenue from exports for spending. Tuwaijri (2001) examined the causal relationship between economic growth and exports in the Kingdom of Saudi Arabia for the period 1969 to 1996. Government spending was also incorporated in the analysis; evidence showed that the Kingdom's oil exports led to increased government spending, which positively and significantly impact on economic growth. The study found the presence of bilateral causality between economic growth and exports, although the impact of exports on growth was stronger than the impact of growth on exports. Furthermore, the inclusion of the government spending variable increased considerably the strength of the causal relationship between growth and exports. Thus, this study supports other studies conducted in oil-producing countries, in terms of the importance of exports in the process of economic growth. It also provides concrete evidence of the importance of the role of government spending on economic growth. In the UAE, Kalaitzi (2013) studied the relationship between exports and economic growth between 1980 and 2010 using several methods, including the Engle-Granger approach, the Johansen approach and the Granger causality test. In general, the

results confirmed the positive role of exports on economic growth in the UAE. Kalaitzi also emphasized the importance of export diversification.

For Saudi Arabia, the instability of world oil prices as well as the economy's heavy reliance on oil necessitates the strengthening and development of non-oil exports if the country is to achieve a more sustainable level of growth and development. This was highlighted in the Ninth Development Plan (2010-2014) by the Ministry of Economy and Planning in Saudi Arabia (2012). Empirical studies also emphasise the positive effects non-oil exports have on economic development in the Kingdom, in that they visibly stimulate both investment and production within the country (Aljarrah, 2008). However, some studies have illustrated that the impact on economic growth and performance is weak and less than expected (for example, Mahdavi, 2007; Adenugba and Dipo, 2013). Other studies (see for example, Tabari and Nasrollahi, 2010; Abogan et al., 2014) have shown a negative relationship with economic growth. In fact, evidence from Iran, an oil-rich country, confirmed the negative impact of non-oil exports (Tabari and Nasrollahi, 2010). The assertion that the relationship between non-oil exports and economic growth is negative however runs contrary to other studies in oil-rich countries. For example, Aljarrah's (2008) research into Saudi Arabia and Olayiwola and Okodua's (2013) work on Nigeria both identified a positive relationship between non-oil exports and economic growth. Therefore, the following hypothesis is proposed:

H_1 – exports have a positive effect on economic growth.

Within this framework, a blind eye has been turned to the imports variable. Mercantilists stress the importance of restricting the proportion of imports and raising the level of exports so as to increase the surplus in the trade balance. Similarly, in modern times, countries have striven to reduce imports. This is exemplified in the

economic war between China and the U.S. wherein the U.S. placed political and economic pressure on China to float its currency and dismantle the dollar peg in a bid to reduce the Chinese influence on the U.S. and global markets. The World Trade Organization (WTO) decisions have also tended to be made in the interests of exporting countries rather than catering for those nations relying heavily on imports.

4.3.2 Tourism (International/ Religious)

More recently, researchers have shown a great interest in the relationship between tourism and economic growth. Several studies (see Belisle and Hoy, 1980; Davis and Consenza, 1988; Sequeira and Maçãs Nunes, 2008; Tiwari, 2011) show that tourism has a positive effect on long-term economic growth. Tourism is argued to be a good source of foreign exchange for both developing and developed economies; and also leads to employment creation, which contributes further to income generation in addition to tax revenue.

Most studies that address this tourism-led growth hypothesis (TLG) are underpinned by the export-led growth hypothesis (ELG) (see Balaguer and Cantavella-Jordà, 2001; Cortes-Jimenez and Pulina, 2010; Jayathilake, 2013). This hypothesis is based on the premise of the movement of consumers rather goods and thus considers international tourism to be a genuine strategy for economic growth. Currently, many low-income countries and developed countries adopt a set of economic policies encouraging international tourism, which is asserted to be a potential source of economic expansion.

Several empirical studies have examined the role of tourism: Heng and Low (1990) for Singapore; Katircioglu, (2009) for Turkey; Chen and Chiou-Wei (2009) for Taiwan and Korea; Schubert et al., (2011) for a small island; and Chatziantoniou et al. (2013) for France, Italy, Spain and Greece. However, not all of these studies have found evidence of the long-term positive effects from this sector. As far as oil-rich countries are concerned, Brau et al. (2007) consider tourism to be very important. Following the

results of an empirical analysis of data from 143 countries between 1980 and 2003, they concluded that countries that depend on tourism tend to grow faster than oil-producing countries. However, most studies carried out in oil-rich countries have ignored the importance of this variable. Saudi Arabia, for example, is the largest oil exporter in the world and is home to the largest oil reserve on the planet. However, the Kingdom is not just an oil exporter; it has a promising tourism market, being the home of the holy mosques of Makkah and Madinah (QTA, 2011). Sadi and Henderson (2005) examined tourism in Saudi and its future development. The author reviewed some of the views of the experts and officials about the future of tourism and its impact on development in the country. The most important points were that: (1) the percentage of Saudi employees in tourism in Makkah and Madinah amounted to only 10%; (2) tourism is the third largest industry in Saudi after oil and manufacturing and has recently emerged as the second most important sector in terms of job creation.

The above study into tourism in the Kingdom and its future development provides some important dimensions. For instance, Saudi Arabia, like most oil-rich countries, is dependent on oil revenues, yet oil and its derivatives are attained from exhaustible resources. This does not support the promotion of long-term economic stability as it means there is a reliance on foreign markets. By contrast, tourism in the Kingdom of Saudi Arabia is a resource that is inexhaustible as it is based on pilgrimages into the country's holy regions. In addition, oil revenues stimulate booms in the natural resource sector of an economy; this leads to higher prices and thus inflation (Centre for Policy Analysis, 2010). The tourism sector, by contrast, works to attract more sustainable investments and foreign currencies (McKinnon, 1964; Schubert et al., 2011).

In addition to this, oil revenues can be a catalyst for conflict. According to Karl (2007) the French oil company Elf-Aquitaine supplied $150 million to support a political opposition group in the Democratic Republic of Congo in an attempt to depose the

current regime and replace it with one offering more favourable company contracts in the future. Another good illustration of this modern trend is western intervention in Iraq and Libya as well as Iraq's invasion of Kuwait in 1991. Further examples of this can be seen in the civil wars in Algeria in 1991 and Sudan in 1983.

Finally, the number of workers in the oil sectors does not exceed 2% of the total employment in the Kingdom (SA Department of Statistics, 2012), while tourism is expected to provide more than 1.5 million jobs for Saudis in 2015and 2.2 million jobs in 2020, according to the Council of Saudi Chambers (2010). Skilled and trained personnel are required in the oil-sector, whereas the tourism sector is far more flexible and easy to deal with and a better control.

Henderson (2006) demonstrated that a city such as Dubai, in a small country like the UAE, which lacks the natural attractions of countries such as France, Turkey and Malaysia, could nevertheless become an internationally recognised tourist destination. He showed how the UAE overcame climatic geographical barriers and turned weaknesses such as hot weather and desert-based areas into powerful global tourism contenders. He concluded with a discussion on the importance of oil wealth in supporting the expansion of tourism through the development of infrastructure and the strengthening of air transport systems.

As a result, the SA and the UAE, as well as being oil exporters, also have promising tourism markets, particularly because of the two holy mosques of Makkah and Madinah in Saudi Arabia and because of the huge investment in the tourist market in recent years in the UAE. Thus, the next hypothesis to be examined is:

H_2 – tourism (international/ religious) has a positive effect on economic growth.

4.3.3 Investment

According to the endogenous growth theory and neoclassical theory, investment is the primary determinant of economic growth. These theories point out that investment in technology and human capital could increase the productive capacity of the economy. Investment itself is measured as the ratio of investment to GDP.

There are a significant number of empirical studies that have examined the relationship between economic growth and investment and have identified investment as a main determinant of economic growth (see Serven and Solitnano, 1992; Khan and Kumar, 1997; Sinha, 1997; Podrecca and Carmeci, 2001; Hamdan, 2016). However, the results are not conclusive. It is worth noting that a high investment ratio does not necessarily lead to an increase in growth, as some studies have shown (Artadi and Sala-i-Martin (2003), for example).

Similarly, there have been considerable debates among researchers on the relationship between private investment and growth. A significant number of researchers have concluded that private investment has had a positive influence on economic growth (see for example, Serven and Solitnano, 1992; Khan and Kumar, 1997; Al-Jundi and Hijazi, 2013; Alshahrani and Alsadiq, 2014). These empirical studies indicate that there is a positive relationship between private investment and economic growth working through several channels, the most important of which is to provide employment for citizens and stimulate productivity. A study by Khan and Kumar (1997) explored the impact of private and public sector investment on growth in developing countries using a co-integration approach. The results reflected the fact that private investment has a much larger impact than public investment.

In oil-rich countries, private investment plays a prominent role in stimulating economic growth. Unfortunately, the influence of private investment on this growth has not received the attention that it deserves. In Saudi Arabia, for example, the contribution of

the private sector to the GDP for the year 2012, at constant prices, reached 58.2%, according to the Central Department of Statistics and Information. Sadly, due to the global expansion of FDI in the 19th century (see, Salmon, 2000), the studies that are available only focused on the weak relationship between economic growth and foreign direct investment (FDI) (see for example, Alkhathlan, 2013; Udeaja and Onyebuchi, 2015). Another study by Hussein (2009), who examines the relationship between FDI and economic growth for all Arabian Gulf Countries, confirmed that there is a weak relationship between FDI and economic growth. However, a recent study by Alshahrani and Alsadiq (2014) examined the effect of several factors on economic growth, including private and public investment. The authors discovered that there was a positive impact from both private and public investment on the Saudi economy. Consequently, empirical studies support the concept that private investment has a positive effect on economic growth.

Public investments also play an important role in boosting economic growth (Gwartney et al., 1998; Vu Le and Suruga, 2005; Hammond and Thompson, 2006; Aregbeyen and Kolawole, 2015). This argument is contrary to some studies, which view public investment as having a negative effect on growth due to their tendency to crowd out private investment (Aschauer, 1989; Devarajan et al., 1996; Everhart and Sumlinski, 2001; Swaby, 2007; Cavallo and Daude, 2011). Pritcbett (1996) confirms, for instance, that in developing countries directed public investments with non-productive purposes weakens the significance of private investment. From this perspective, this analysis tests the validity of this hypothesis for the Saudi economy. Hence, the hypothesis proposed is:

H_3 – investment has a positive effect on economic growth.

4.3.4 Government spending

Although exports, tourism and private investment play an important role in boosting growth, they are not the sole contributing factors. Studies in oil-rich countries (see for example, Anaman, 2004; Asseery and Al-Sheikh, 2004; Safdari et al., 2011) have found that a number of other determinants influence growth. For example, the relationship between government spending and economic growth has continued to generate a series of debates among researchers.

According to the ideas of Keynes and the new growth theory, government spending is one of the main factors that affect economic growth. In contrast, Classical thought, led by Adam Smith, opposes government intervention proposing that the "invisible hand" of the market would more efficiently guides the market in allocating resources efficiently.

Ghali (1997), Abu-Bader and Abu-Qarn (2003), Mitchell (2005) and Gani (2010) found the government spending/economic growth relationship to be a negative one, given that when government spending increases, taxes need to be increased, which could prove detrimental to an economy.

On the other hand, several studies (see for example, Onafowora, 2007; Dash and Sharma, 2008; Nurudeen and Usman, 2010; Al-Fawwaz, 2016) cast doubt on previous research in the field. They highlight the relationship between government spending and economic growth in different countries. The results of their research indicate that government spending has a significant positive effect on real output and that the government should increase its investment in different sectors (such as the transport and communication sectors) and increase its expenditure in the development of the health and other sectors. Other researchers have also argued that a government could improve a nation’s growth through the provision of rule of law, regulation and planning (Weil, 2005; Hsiao and Hsiao, 2006).

As far as oil-producing countries are concerned, studies show that government spending is the most important factor affecting economic growth after exports (see, for example, Tuwaijri, 2001; Asseery and Al-Sheikh, 2004; Anaman, 2004; Dizaji, 2012). In Saudi Arabia for example, the relationship between government spending and economic growth undergoes some ambiguity. Empirical investigation conducted by Ghali (1997) is one of such examples. Ghali found no consistent evidence that government spending could increase Saudi Arabia's per capita output growth. He concluded therefore that, a fiscal policy aiming to control the country's budget deficit had to consider reducing the government's size and limiting its role in the economy; this conclusion supports the classical theory. In contrast, Albatel, (2000), who analysed the relationship between government spending and economic growth for the period 1964-1998 showed that the government plays an important role in the growth and development of the economy in the Kingdom. Albatel also found that the role of the government had increased considerably; he advised the authorities to increase their spending on infrastructure as well as economic activities and urged them to encourage the private sector to take an active role in the economic development of the Kingdom.

The main weaknesses, however, of these studies are: (1) they ignore the implications of this spending in terms of rising prices and taxes, as identified by a significant number of studies (see for example, Landau, 1986; Barro, 1991; Engen, 1992; Allen et al., 2005); and (2) government spending in the Kingdom is based on a natural resource (oil). Recent studies have proven that Dutch disease in oil-producing countries like Saudi Arabia is both very real and very detrimental. As a result, the role of government spending in the country is far from clear. Hence, the hypothesis proposed is:

H_4 – Government spending has a mixed effect (positive and negative) on economic growth.

4.3.5 Labour force

The labour force has been found to be one of the primary determinants of growth in most economic growth theories (including Adam Smith, the new growth theory for Solow Swan (1956) and Romer (1986) and Lucas (1988)) and by several empirical studies in both developed and developing countries (see for instance, Tyler, 1981; Chow, 1987; Barro, 1996; Asseery and Al-Sheikh, 2004; Harvie and Pahlavani, 2007; Kogid et al., 2010; Tiwari, 2011; Hamdan, 2016), which all emphasize the positive impact of the labour force on economic growth. Piazolo (1995) confirms that the positive impact of the labour force on the economy takes place in the long-term rather than the short-term. According to the Solow-Swan neoclassical growth theory, this variable should be included in any growth model.

In oil rich-countries, however, the situation is totally different, where the majority of the labour force is in the non-oil sectors and not in the oil sector. Despite the importance of the oil sector, there are no studies confirming the relationship between employment in the oil sector and economic growth. Most of the studies in oil-rich countries (see for example, Anaman, 2004; Asseery and Al-Sheikh, 2004; Dizaji, 2012) confirm the positive relationship between the total labour force on economic growth without the separation of the economy into oil and non-oil sectors. It seems that the oil-rich states need specific theories dealing with their own characteristics. Thus, the last hypothesis proposed is:

H_5 – labour force has a positive effect on economic growth.

Consequently, this research aims to examine a specific subset of these variables in Saudi Arabia and the UAE, with a particular focus on the main non-oil sectors. However, there are a lot of other economic variables that were not included due to the lack of data, together with the weakness of such variables' relationship with the economic growth of the oil states. A good example of this is innovations and human

capital. According to the endogenous growth model, innovations are a key force in growth, given their ability to raise technological knowledge and introduce new and superior products and processes. This can be measured through the share of expenditure on research and development in the national GDP. Several studies (Coe and Helpman, 1995; Teixeira and Fortuna, 2004; Dieppe and Mutl, 2013, for example) have examined the relationship between innovation and economic growth and have found there to be a positive relationship between these two variables. Despite the importance of the innovation variable to advanced industrial countries, it cannot be relied upon. This is particularly true of oil-producing countries for a number of reasons: most importantly, there is a lack of available data regarding the innovation variable; further, research and development in developed countries depends in both private and public sectors, while oil-producing countries depend on the public sector (due to their emphasis on the oil aspect); finally, oil-producing countries are dependent on the west for the exploration, extraction and development of their oil resources.

Human capital is another key source of economic growth in the endogenous growth model (Lucas, 1988). It is measured in several ways: gross school enrolment rates, index of educational attainment, illiteracy rate, the percentage of "secondary school attainment" in the total population and other such yardsticks.

A significant number of researchers have found that human capital is a major determinant of economic growth (see for example, Barro, 1996; Teixeira and Fortuna, 2003; Asheghian, 2004; Pahlavani, 2005; Hammond and Thompson, 2006; Piazolo, 1995; Prochniak, 2011; Tiwari, 2011). However, these results are completely different in the case of oil-producing countries, where the resource curse in oil-exporting countries poses a constant threat, particularly in terms of education and health. According to Karl (2007), developing countries that have oil, gas or any natural resources, neglect the development of their human resources. For example, OPEC

countries spent less than 4% of the GNP on education in 1997 compared to a 5% international figure.

4.4 Summary

Several researchers have examined the determinants of economic growth in both developed and less developed nations. However, there are limited studies in oil-rich countries like Saudi Arabia and the UAE.

Economic growth depends on many factors, joint and integrated. Economic theories have focused on the role of labour, physical capital, investments, government spending, human capital and technical progress during the process of economic growth. While various studies have addressed these, they have also taken into account the impact of numerous additional factors, such as: financial developments, military spending (Asseery and Al-Sheikh, 2004), oil-exports and non-oil exports (Anaman, 2004; Piazolo, 1995), openness to trade (Chen and Feng, 2000), foreign direct investment (FDI) (Hsiao, 2006; Asheghian, 2011; Tiwari, 2011), tourism (Tiwari, 2011) and human capital and innovation (Teixeira and Fortuna, 2003).

An array of methodologies has been applied in the study of the determinants of economic growth. Some studies (e.g. Anman, 2004; Safdari et al., 2011; Dizaji, 2012) are time-series based, while others are based on panel data (e.g. Hsiao and Hsiao, 2006; Tiwari, 2011; Trpkova and Tashevska, 2011).

The studies mentioned above have focused on the economy as a whole; the analyses have not been separated into the two sectors, in particular for those countries rich in oil. Therefore, there is no specific model for oil-rich countries; hence the need to develop new empirical models to help identify the key factors for economic growth in both sectors. Variables in non-oil sectors have thus been neglected, with studies confined

solely to oil-related factors. This in effect has left some gaps in the economic growth-determinants literature[12].

In light of this, this study attempts to address and fill some of these research gaps, not only by incorporating some of the important variables but also by using the latest available time-series data on Saudi's economy for the period 1970-2011, applying the Johansen method of co-integration, in addition to an error correction model (ECM). In addition, it examines the importance of non-oil sectors in the future of the Saudi economy and applies similar models to the economy of the UAE. Given the difficulty of examining all the variables in economic theories and empirical studies as delimiters for economic growth and given the specificity of the Saudi and the UAE economies as representatives oil-rich economies, the following variables are assessed: (1) the dependent variable which is economic growth (GDP) and; (2) the independent variables, which include exports, government spending, tourism, in addition to labour and capital. These variables were chosen because of their relevance in empirical literature on economic growth; some have been used in both developed and developing countries, yet their effect on economic growth in oil-rich countries remains unknown. With regard to the tourism variable, a recent study by Sequeira and Maçãs Nunes (2008) demonstrates that tourism is a key determinant of economic growth. Their study explored the relationship between tourism and the traditional determinants of economic growth; they proposed that there was a significant scope of evolution in constructing models of economic growth that incorporated the positive impact of tourism.

[12] Gylfason and Zoega (2006) found that experience has proven that natural riches are neither necessary nor sufficient for economic prosperity and progress. The proof of this is that the world's richest nations include Japan, Switzerland, Hong Kong and Singapore as well as the U.S.A and the U.K. and yet many of these nations lack abundant natural resources. In less developed nations such as Nigeria, by contrast, natural resources are more prevalent, yet these countries have not been able to sustain economic growth.

The next chapter explores the economic structure of the SA and the UAE in informing and supporting the choice of the explanatory variables for assessing the determinants of economic growth in oil-rich countries.

5

MODEL SPECIFICATION AND METHODS OF STUDY

CHAPTER FIVE: MODEL SPECIFICATION AND METHODS OF STUDY

5.1 Introduction

As stated in Chapter one, the main objective of this research is to investigate the determinants of economic growth in both the oil and non-oil sectors, with particular emphasis on the key economic variables in the non-oil sectors in two oil-producing countries, Saudi Arabia and the United Arab Emirates. The oil sectors are defined as those which are concerned with petroleum and petroleum-related products in terms of manufacturing and exportation, whereas the non-oil sectors involve all other sectors such as private investment, tourism and non-oil exports.

In this chapter, the methodologies used are presented. *Methodology* is that section of any discipline, such as economics, that requires a plan of action involving the selection and use of specialised methods. *Methods* are the techniques used to collect and analyse data, whether qualitative or quantitative (Crotty, 1989). There are two types of methodology: deductive and inductive (building-theory). This study will use the deductive approach (testing-theory), adopting a quantitative rather than qualitative approach.

The methods applied to examine economic growth include econometric techniques such as stationarity tests based on the Augmented Dickey-Fuller (ADF) and the Phillips-Peron (PP) tests (the most important tests widely used in several studies such as Piazolo (1995), Kogid et al. (2010), Hsiao (2006))and co-integration tests that depend on time-series properties and the level of stationarity. Model specifications and descriptions of the selected variables are also provided. Finally, the study employs a multi-group analysis to compare the outcomes of the two countries analyses.

The chapter is organised into four main sections: *Model specification, a Description of the variables, method of the study* and *econometric Techniques*. The final section contains a conclusion and a plan delineating the stages of research work.

5.2 Model Specification

In Chapter Three, several theoretical models regarding growth were analysed and discussed; it was concluded that the most promising model, considering the objectives of this study, is the Solow model. The Solow model remains the most widely used method for examining factors affecting the economic growth of nations (Anaman, 2004). This neoclassical growth model has been modified to include many factors such as the depreciation of natural capital and environmental degradation (Thampapillai and Hanf, 2000), natural resources (such as oil) and government spending (Anaman, 2004). Most modern experimental studies follow the extended version of this model; they also include other factors (see for example, Khan, 2006; Awokuse, 2007; Tiwari, 2011). According to Rao and Cooray (2012), an extended version of the Solow model is more in line with less developed nations.

Oil-rich countries like Saudi Arabia and the UAE adopt fiscal policy based on the world market, in which oil prices are determined. In light of the above, this study will be based on an expanded neoclassical growth model. There is little doubt that this theory is suitable for an economy like Saudi Arabia and the UAE; numerous studies have observed the relevance of the theory to economies based on natural resources such as oil (e.g. Anaman, 2004; Asseery and Al-Sheikh, 2004; Gylfason and Zoega, 2006). Natural resource revenues in oil-producing countries are usually pumped into education and cognitive and technological progress, particularly in Saudi Arabia. These are engines of growth in the exogenous growth theory.

Another important point is that one of the objectives of this study is to undertake an economic comparison between two oil-rich countries and to this end, the Solow model is able to detect differences in growth rates between nations, as confirmed by several studies. A good illustration of this is a study by Ding and Knight (2009), who applied the Solow model to analyse the growth of the Chinese economy. Results showed that the model appropriately explained China's economic growth. The Solow Model was also an important medium for understanding aspects of the significant and sustained differences in growth rates between the Chinese economy and those of other nations.

Empirical and theoretical studies have also identified various factors that affect the economic growth of a nation. These factors include natural resources (oil, gas), investment, human capital, innovation, technology, economic policies, governmental factors, trade openness, foreign direct investment, political factors, socio-cultural factors and others. In order to study experimental evidence of the determinants of economic growth in an oil-rich country like Saudi Arabia and the UAE, this research considers most of these factors. Nonetheless, the existence of the oil-sector in oil-rich economies, with its dominance in the economy (which is greatly different in nature to the non-oil sector) made it necessary to separate the economy into two major sectors: oil and non-oil.

Most studies conducted in less developed countries have used Solow's model to examine the determinants of economic growth (see, for example, Anaman, 2004; Asseery and Al-Sheikh, 2004). Similarly, in studying the effect of selected variables on growth, the analysis utilizes the widely used expanded neoclassical production function (see, for example, Barro, 1991; Mankiw et al., 1992; Yanikkaya, 2003), which includes several variables such as human capital and government spending. Thus, the extended Solow model which underpins the time series approach to the study analyses is based on

the neoclassical production function (Odedokun, 1997) and studies by Kourtellos (2002) and Yanikkaya (2003).

Following the discussion in chapter two and Odedokun (1997), the neoclassical production function can be written as:

$$Y = Af(K, L; Z) \qquad (5.1)$$

where: Y = economic growth (GDP); A = state of technology; K = capital; L = labour force; and Z = a vector of other relevant variables.

Yanikkaya (2003) suggests that, for a time series analysis, the growth model in equation (5.1) can be formulated as (for the purposes of this study, human capital is excluded in the model):

$$Y_t = f(K_t, L_t; Z_t) \qquad (5.2)$$

where t represents the time series nature of the model and Y_t refers to the Solow original model incorporating the key variables, which according to Kourtellos (2002) could explicitly be formulated in an estimable form as equation (5.3):

$$Y_{t1} = \beta_m Mt \qquad (5.3)$$

where, M is a vector of variables suggested by the Solow growth model as in equation (5.2) and β_m is a vector of coefficients for these variables (Kourtellos, 2002).

As observed in the discussion in chapter 3, Kourtellos (2002) also suggested that other factors, which could be country-specific, may also influence growth as shown in equation (5.4):

$$Y_{t2} = \beta_w W_t \qquad (5.4)$$

where, W is a vector of variables that augments the Solow growth model and may include variables that a researcher thinks are important (Kourtellos, 2002). The combination of equations (5.3) and (5.4) implies an extended Solow growth model for the time series analysis for this study, similar to the model by Kourtellos (2002). Including a constant term (α) and an error term (ε) implies the following model:

$$Y_t = \alpha + \beta_m M_t + \beta_w W_t + \varepsilon \qquad (5.5)$$

Given equation (5.1) and for the purpose of this study, the appropriate form of equation (5.5) will be as follows:

$$Y_t = \alpha + \beta_{mk} K_t + \beta_{mL} L_t + \beta_w W_t + \varepsilon \qquad (5.6)$$

Saudi Arabia, the UAE and other economies are oil-export based and thus rely on the world market in industrial countries to determine prices. They then inject oil revenues into the economy via government spending. Hence, in order to access the determinants of economic growth in the context of an economy based on the extraction of a natural resource such as oil, the econometric models will be based on the extended neoclassical growth model in equation (5.6). Given the difficulty in assessing all relevant variables in empirical studies and given the specificity of the Saudi and UAE economies as representative cases of oil-based economies, the following variables were selected for the analyses: economic growth as a dependent variable; exports, government spending and tourism (in addition to labour and capital) as independent variables. These were chosen because of their authenticity in empirical literature on economic growth; some have been used in both developed and developing countries, yet their effect on the economic growth in oil-rich countries remains unknown. Government spending is included in the extended growth model due to its association with revenues from oil exports (see for example, Anaman, 2004; Safdari et al., 2011).

Overall, the existence of the oil sector in oil-rich economies, with its domination of the economy (which is greatly different in nature to the non-oil sector), made it necessary to separate the economy into two major sectors: oil and non-oil. In order to achieve the objectives of the study, some of the variables in equation (5.6) were revised as follows (see also Alodadi and Benhin, 2015):

- Three main types of exports (X): total exports (X_T), oil exports (X_O) and non-oil exports (X_N).

- Separation of the labour variable (L) into: total labour (L_T), labour in the oil-sector (L_O) and labour in the non-oil-sector (L_N).
- Capital (K) is replaced with total investment or gross fixed capital formation due to the lack of data on capital.
- Following Khan and Reinhart, (1990) as well as Odedokun, (1997), capital is divided into public (PG_N) and private (PI_N) in the non-oil sector model.

To address the research objectives, three different growth models are estimated: 1) the main model, which reflects the whole economy, 2) the oil sector and 3) the non-oil sector. Thus, the empirical formulations of the extended production function (6) are as follows:

MAIN MODEL:

$$\ln Y_1 = \alpha + \beta_1 \ln L_T + \beta_2 \ln K + \beta_3 \ln X_T + \beta_4 \ln G + \beta_5 \ln T + \varepsilon \qquad (5.7)$$

OIL SECTOR MODEL:

$$\ln Y_2 = \alpha + \beta_1 \ln L_O + \beta_2 \ln K_O + \beta_3 \ln X_O + \beta_4 \ln G + \varepsilon \qquad (5.8)$$

NON-OIL SECTOR MODEL:

$$\ln Y_3 = \alpha + \beta_1 \ln L_N + \beta_2 \ln PG_N + \beta_3 \ln PI_N + \beta_4 \ln X_N + \beta_5 \ln T + \varepsilon \qquad (5.9)$$

where Y_1 is real GDP for the whole economy, Y_2 is real GDP in the oil sector, Y_3 is real GDP in the non-oil sector; X_T, X_N and X_O are exports variables (total, oil-exports and non-oil exports, measured in real values); T is tourism (measured by the total number of tourist arrivals including Hajj and Umrah in Saudi Arabia and total number of tourist arrivals in the UAE); G is government spending (measured by real government consumption expenditures), PI_N and PG_N are respectively private and public investments in non-oil sectors, measured by gross private fixed capital formation in non-oil sector (in real terms) and gross public fixed capital formation in the non-oil sector (in real terms); K and K_O are capital and oil-investment, measured by total gross fixed capital formation (in real terms) as proxy of capital and gross public fixed capital

formation in the oil sector (in real terms); whereas L_T, L_O and L_N are labour force variables (measured as total employees in the economy, employees in the oil sector and employees in the non-oil sector respectively).

It is important to mention the reasons for the inclusion of government spending in equations (5.7) and (5.8) and its exclusion from the non-oil sector model in equation (5.9) and why investment is divided into private investment and public investment in equation (5.9) only, not equations (5.7) and (5.8).

The government spending variable is used in the oil sector owing to the fact that oil revenues comprise the main part of the budget in both countries. In Saudi Arabia, especially it often accounts for more than 90% of the national income.

The government of Saudi Arabia, like most oil-rich countries, owns all of the country's natural resources (oil and gas) and uses these natural resources as the main source of income. It particularly relies upon oil to finance its expenditure. As a result, if a change in oil prices leads to an increase or decrease in the demand for oil, the entire economy is affected. Therefore, government spending is included in two equations (the Main Model and Oil Sector model) because it is influenced significantly by revenues from oil exports (Tuwaijri, 2001; Anaman, 2004; Safdari, 2011). However, it is not included in the non-oil sector, as the aim of the study is isolating the effects of the oil sector.

Equation (5.9) pertains to private and public investments in non-oil sectors (there is only public investment in the oil sector). As noted above, in most oil-producing countries in the Middle East, including Saudi Arabia and the UAE, the government owns the oil resources and related production activities and is the main investor in the sector. Investment in the oil sector is therefore used only in the second model (5.8). In the first equation (5.7), the economy as a whole (oil and non-oil) is examined without trying to unplug the relative importance of public and private investment. Moreover, the

study focuses on equation (5.9) – the role of the non-oil sector in growth – and on how private investment and other relevant variables could help enhance the contributions of the sector.

In general, it is better to have three models: 1) the whole economy, 2) oil and 3) non-oil, for the following reasons:

I. Equation (5.7) illustrates the impact of the main variables on economic growth in the presence of the oil sector without trying to separate the main model into oil and non-oil sectors. It cannot include the private (PI_N) and public (PG_N) investments in non-oil sectors for two reasons: 1) the effect will be on the GDP of the economy as a whole (as opposed to solely the GDP_N in the non-oil sector) and therefore does not paint a true picture of their impact and 2) including these two variables in the main model will create an autocorrelation problem, where private and public investments in non-oil sectors are part of the total investment (K), as in the case of oil investment (K_O) in the second model. However, this study has tested the main model (including PI_N and PG_N) and probably the autocorrelation problem has made the results far from encouraging.

II. The non-oil sector economic growth model in equation (5.9) illustrates the impact of key variables such as religious tourism, private and public investment and non-oil exports when isolating the effects of oil on the economy. The importance of these variables becomes clearly evident in this case.

III. A single model cannot see the difference in the overall effects clearly unless the three sectors are separated. A good example of this is the labour force in the oil and non-oil sectors, the effects of which cannot clearly be seen in the first model (single model). This is true of all of the variables. In the tourism variable, for example, the impact in the two models are entirely different in the case of the

Saudi economy (see Chapter Six) and it has been shown that the utilization of three models is important in identifying the real factors affecting the economic growth in oil-producing countries.

IV. A natural resource such as oil is exhaustible. However, non-oil sectors like tourism (religious tourism in this case) and private investment are inexhaustible suppliers of prosperity. For this reason, countries like Saudi Arabia and the UAE may have to deal with non-oil sector models to secure future growth.

Going back to the three models, in the first model (equation (5.7)), the study uses total exports (X_T) and government spending (G), tourism (T) as well as total labour force (L_T) and capital (K) in examining economic growth in both countries.

In the second model (equation (5.8)), the study uses oil exports (X_O), government spending (G), labour employed in the oil sector (L_O) and investment in the oil sector (K_O) to examine oil-related economic growth in the Saudi economy and the UAE. The third model (equation (5.9)) uses non-oil exports (X_N), tourism (T), labour employed in the non-oil sector (L_N), private investment in the non-oil sector (PI_N) and public investment in the non-oil sector (PG_N) to examine non-oil related economic growth in the economy of Saudi Arabia and the UAE. In light of this, these three models will be able to address the key research question and answer the questions posed for this study.

This research focuses on the economic growth of Saudi Arabia and the United Arab Emirates during two different time periods (1970 – 2011 (41 years)) and 1980 – 2011 (31 years) are used respectively for Saudi Arabia and the UAE and this period of study was chosen because of the availability of the data for the variables.

5.3 Description of Variables

5.3.1 Gross domestic product (GDP) (*Y*)

The Gross domestic product (GDP) in the Kingdom of Saudi Arabia and the United Arab Emirates represents the dependent variable and is denoted by (*Y*). It is considered one of the most important variables in terms of economic growth and represents the sum of the monetary values of final goods and services produced by the country over a specific period of time (Monakhisi, 2009).

5.3.2 Labour (*L*)

This variable plays a vital role in economic growth according to many theories, as discussed previously. However, the labour force in oil-rich countries (such as SA and the UAE) is concentrated in non-oil sectors, according to the SA Ministry of Planning, the Central Bank and the UAE National Bureau of Statistics. As per the neoclassical growth theorists and empirical studies, it is expected that labour will have a positive relationship with economic growth (see for example, Harvie and Pahlavani, 2007; Kogid et al., 2010; Tiwari, 2011).

Labour can be measured in different ways, depending on data availability: the size of the labour force, number of hours worked and the population size. In this study the size of the labour force is used for our analysis, given that this information is readily available and following previous studies (see for example, Anaman, 2004; Teixeira and Fortuna, 2004; Awokuse, 2007).

The World Bank (2015) defines labour force participation rate as “the proportion of the population ages 15 and older that is economically active: all people who supply labour for the production of goods and services during a specified period".

5.3.3 Exports (*X*)

Exports are external demand for locally produced goods and services. Petroleum exports play a major role in determining economic growth in oil-rich countries, particularly in Saudi Arabia and the United Arab Emirates, but the fluctuation of oil income together with the lack of diversity of income sources may have a negative long-term impact on the rate of economic growth. In Saudi Arabia, for example, the contribution of exports to total GDP has increased, as the greatest percentage of the country's exports are oil-related, constituting about 90 per cent of the total export earnings; non-oil exports account for the remaining percentage. Such a situation makes GDP and Saudi economic performance more sensitive to any changes in international economies. Based on the hypothesis that exports play a leading role in growth, it is expected that exports, both oil and non-oil, will have a positive impact in all three economic growth models.

5.3.4 Government spending (*G*)

Government spending is strongly influenced by fiscal policy in oil-rich countries. If it is competently managed it is capable of strengthening economic growth and its sustainability, improving social welfare and raising standards of living. Government spending in Saudi Arabia and the UAE includes the procurement of goods and different services such as security and defence, health, education, public sector staff salaries and others. Government spending is expected to have a positive impact on economic growth (Dash and Sharma, 2008; Kogid et al., 2010; Nurudeen and Usman, 2010).

5.3.5 Private investment (*PI*)

Private investment is an important pillar of Saudi Arabia's economic growth and of the UAE’s economy. It is an important component of the total demand and GDP. The government of Saudi Arabia and the UAE have taken a number of actions to enhance the role of private investment, through low-cost loans and direct and indirect subsidies. It is expected that the impact of private investment on the Kingdom's and the UAE’s

economic growth will be positive, especially in the non-oil sector (Serven and Solitnano, 1992; Khan and Kumar, 1997; Alshahrani and Alsadiq, 2014).

5.3.6 Public investment (*PG*)

Public investment in the Saudi and the UAE economies is very important. It can improve levels of development, promote business growth and increase productivity. Like private investment, it can lead to an increase in the accumulation of physical capital and thus stimulate economic growth. That said, the overall effect of public investment on economic growth in Saudi Arabia and the UAE could be positive or negative (Khan and Kumar, 1997; Tanzi and Davoodi, 1997; Aregbeyen and Kolawole, 2015), as investment in the public sector of the GCC is not necessarily motivated by profit. Investment in the public sector, such as in transport, infrastructure (like ports and airports), electricity and communication, though often expensive, might lead to a rise in the productivity of private capital, thereby stimulating economic growth (see Khan and Kumar, 1997; Kandenge, 2010).

5.3.7 Tourism (*T*)

Considerable attention has been given to the influence of tourism on economic growth (Griliches and Ringstad, 1992; Weiermair and Fuchs, 2007). Saudi Arabia and the UAE are attempting to diversify their sources of income and reduce their almost complete dependence on oil through direct investment in the tourism industry, be it international tourism in general or religious tourism in particular. The latter is a kind of tourism wherein people travel for religious reasons to Umrah on a pilgrimage or as missionaries (Shinde, 2008). The largest type and most important form of religious tourism in the world is the Hajj pilgrimage in Makkah (Aziz, 2001). Tourism is expected to carry a positive impact on economic growth in Saudi Arabia and the UAE. There are numerous indicators to measure this, including tourist arrivals, tourist receipts and the number of

nights spent by tourists in the country. This study uses tourist arrivals, as these have already been successfully and extensively utilised in previous works (Jayathilake, 2013). Table 5.1 contains a summary of the hypothesis of the variables.

Table 5.1: The Study's Hypotheses

Variables	*Hypothesis and Expected sign*		*Previous studies*
K, K_O	Gross fixed capital formation and investment in the oil sector positively affect economic growth.	+	Anaman, 2004 Podrecca and Carmeci, 2001
L_T, L_O, L_N	The labour force in three models positively affects economic growth.	+	Tiwari, 2011 Safdari et al., 2011
X_T, X_O, X_N	Exports in the three models positively affect economic growth.	+	Awokuse, 2007 Piazolo, 1995
PI_N	Private investment in the non-oil sector positively affects economic growth.	+	Alshahrani and Alsadiq, 2014 Asheghian, 2004
PG_N	Public investment in the non-oil sector has a mixed effect (positive and negative) on economic growth.	+/-	Hammon and Thompson, 2006 Aregbyen and Kolawole, 2015
G	Government spending has a mixed effect (positive and negative) on economic growth.	+/-	Nurudeen and Usman, 2010 Al-Fawwaz, 2016
T	Tourism positively affects economic growth.	+	Tiwari, 2011 Schubert et al., 2011

5.4 Modelling Techniques and Data Sources

This part of the chapter explains the approaches applied for the empirical implementation of the models. In summary, econometric techniques are used to determine the most important variables affecting economic growth in both the short and long-term. A co-integration methodology to determine the nature of the relationship between economic growth and its key determinants in the long-term; an error correction model is also applied to test the relationship between the variables in the short-term.

In the case of Saudi Arabia, time series data used were from several sources, namely: the International Monetary Fund (IMF) database, the Saudi Arabian Monetary Agency "Central Bank" (SAMA), the Saudi Commission for Tourism and Antiquities (SCTA), the United Nations World Tourism Organisation (UNWTO) and the Ministry of Hajj

(HAJ). For the UAE, the time series data used were from: the Ministry of Planning (Planning Department), the National Bureau of Statistics, OPEC, the United Nations World Tourism Organisation (UNWTO) and UN publications (see Table 5.2). All the data was transformed into natural logarithms and variables have been calculated in real terms (US dollars), using the GDP-deflator (1999 = 100). According to Koop (2005), use of a natural logarithm is common, especially if the time series data is non-stationary. Gujarati (2014) states that time series data usually suffer from several problems, the most important of which is autocorrelation, in addition to the nature of the data, which may not be stationary. However, there are many solutions to these problems, the most recognised of which is transfer of time series data into a natural logarithm or taking square roots (Chatfield, 2013). The nature of the data, in addition to the results, identifies which analysis is suitable.

As mentioned above, a GDP deflator will be used to transform the data from nominal to real values, the aim of which is to remove or avoid the influence of inflation (Koop, 2005). Moreover, for the purpose of comparison between the two countries, the base year (1999 = 100) will be applied and currencies have been converted into US dollars in order to facilitate comparisons between Saudi Arabia and the United Arab Emirates.

Table 5.2 shows the source of data for both Saudi Arabia and the UAE. For the purposes of reliability, the study data is limited to official sources of accredited international bodies. Similar data sources have been used by other studies which also attest to the reliability of the data (see for example, Albatel, 2000; Tuwaijri, 2001; Asseery and Al-Sheikh, 2004; Al-Jundi and Hijazi, 2013; Kalaitzi, 2013; Alshahrani and Alsadiq, 2014; Shayah, 2015).

Table 5.2: Data and data sources

Variable	*Variable description*	*Source of Data*	
		SA	*UAE*
GDP	Gross Domestic Product	IMF + SAMBA	IMF + NBS+ MP
K, K_O	Capital and oil investment	IMF + SAMBA	Undata + NBS+ MP
X_T, X_N	Exports (Total and non-oil sector)	IMF + SAMBA	IMF + Undata + MP
X_O	Oil exports	IMF + SAMBA + OPEC	IMF + OPEC+ MP
L_T, L_N	Labour force (Total and non-oil sector)	IMF + SAMBA+ UNCTADstat	UNCTADstat+ NBS+ MP
L_O	Labour force in oil sector	IMF + MEP	NBS+ MP
G	Government spending	IMF + SAMBA	Undata + NBS+ MP
PI_N	Private investment	IMF + SAMBA	Undata + NBS+ MP
PG_N	Public investment	IMF + SAMBA	Undata + NBS+ MP
T	Tourism	SCTA + HAJ + WTO	NBS + WTO

SAMBA: The Saudi Arabian Monetary Agency "Central Bank".
IMF: The International Monetary Fund.
UNWTO: The United Nations World Tourism Organisation.
SCTA: The Saudi Commission for Tourism and Antiquities.
MEP: The Ministry of Economy and Planning.
HAJ: The Ministry of Hajj.
Undata: The Un statistical databases.
NBS: The National Bureau of Statistics (UAE).
MP: The Ministry of Planning (UAE).
UNCTADstat: The United Nations Conference on Trade and Development.

5.5 Econometric Techniques

A time-series econometric approach has been employed to determine the short and long-term relationship between economic growth and the various determinants under study. Data analysis methods are based on those used by Awokuse (2007), Piazolo (1995) and Katircioglu (2009). The study starts with the concept of time series stationarity, followed by main stationary tests, as represented in the Augmented Dickey-Fuller (ADF) (David and Fuller, 1981) and Phillips and Perron (PP) (Phillips and Perron, 1988) test for unit roots. These are followed by co-integration tests based on the Johansen test (Johansen and Juselius, 1990) to discover the relationship between the variables and economic growth in the long-term, as well as the Error Correction Model (ECM) (Engle and Granger, 1987), to assess the relationship between selected variables and economic growth in the short-term. The next section proceeds with some detailed discussion of these tests.

5.5.1 Time Series Analysis

Most economic time series data are non-stationary (Kogid et al., 2010), which exposes them to the risk of falling into the trap of spurious regression, despite the fact that the coefficient of determination (R^2) may be high. The problem, when applied to the analysis of non-stationary data, is located in the end outcomes. For example, applying the method of Ordinary Least Squares (OLS) to this data leads to incorrect results; R^2 and the t-statistic have high values, but the variables used in the analysis do not have any relationship (Brooks, 2008). Therefore, the stationarity condition is essential for the study and analysis of a time series and any variables in a regression model cannot be included if they are non-stationary (Koop, 2005). A time series is considered stationary if the following characteristics exist (Brooks, 2008):

- Constant Mean (μ) for all time $E(Y_t) = \mu$
- Constant Variance (σ) for all time $Var(Y_t) = E(Y_t - \mu)^2 = \sigma^2$
- Stable autocovariance function $Cov(Y_t, Y_{t-k}) = E(Y_t - \mu)(Y_t + k - \mu) = \gamma_k$

  That is, the autocovariance function between any two values of the same variable (i.e., y_t and y_{t-k}) is dependent on the time gap between the values.

Where: μ= the arithmetic mean. σ^2 = variance and γ_k = covariance.

5.5.2 Tests of Stationarity

A unit root test is imperative in identifying whether time-series data is stationary or not. The procedure is important in order to avoid the problem of spurious regression (Brooks, 2008; Gujarati, 2014) and is necessary for the conversion of the data into a form that satisfies the stationary condition before starting the analysis. There are a number of methods used to test the stationarity of time series as represented by: Dickey

Fuller (DF), Augmented Dickey-Fuller (ADF), Philips-Perron (PP), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Ng-Perron (NP) (Kogid et al., 2010).

However, only the ADF and PP unit root tests will be presented. These have been extensively used in numerous studies (see for example, Piazolo, 1995; Kogid et al., 2010). Piazolo (1995) confirmed that there are three important tests of integration to apply, ADF and PP being the most important.

5.5.2.1 Augmented Dickey-Fuller (ADF) Unit Root Test

The analysis begins with the test for stationarity of the selected variables within the framework of the Augmented-Dickey-Fuller (ADF) test. This measure is important for the avoidance of spurious regression, a common problem when estimating time series data. It is possible to solve this problem by using the first difference of each variable, which usually leads to stationarity for the variables (Piazolo, 1995; Koop, 2005; Gujarati, 2014).

The Dickey-Fuller simplified test involves the null hypothesis H_0: $\lambda = 0$, which proposes that the time series of the variables under study is not stationary and contains a unit root. The alternative hypothesis H_1: $\lambda \neq 0$ argues that the time series is stationary. If it is unable to reject the null hypothesis, the series contains a unit root, whereas if it rejects the null hypothesis, it does not contain a unit root.

A simple Dickey Fuller (DF) test can be undertaken using a number of regression formulas: 1) with an intercept, 2) with an intercept and trend and 3) without an intercept and trend (Brooks, 2008). The aim of the unit root test is to check for the presence of a co-integration relationship between these variables. Most studies have focused on the ADF test due to the fact that it is simple and there is no better alternative (Sj, 2008). Moreover, the ADF test is best when a small sample is being used, as in the case of this study (Davidson and MacKinnon, 2004).

5.5.2.2 Phillips-Perron Test (PP)

The second important test for stationarity is the Phillips and Peron test (1988), which works on the autocorrelation of the residuals formula of the unit root test through the use of non-parametric adjustment for the variation of the model. It takes into account the presence of autocorrelation, reflecting the dynamic nature of the series. The Phelps Perron (PP) test uses the same distribution as the ADF test and the same critical values for both the tests. This study, however, utilises the results of the ADF test as the basis of a co-integration test, given that the PP test performs better with samples larger than those found in this particular study (Davidson and MacKinnon, 2004).

With regard to the lag length necessary for the removal of the serial correlation in the residuals in the two tests of stationarity (ADF and PP), in the Augmented Dickey Fuller (ADF) test, the gap was determined by the Akaike Information Criterion (AIC), while the Newey-West standard was utilised in the Phillips-Perron (PP) tests (Sosvilla and Garcia, 2003).

5.5.3 Co-integration Tests

After the unit root test and the attainment of certainty from the presence of a co-integration relationship between these variables, a long-term balance between variables will be tested through co-integration testing. If the time series is non-stationary at levels but integrated into the same order, there is co-integration, assuming there is a linear combination of integrated time series of order I (1) in the first or second differences. There are several ways of testing for co-integration, the most important of which are Engle-Granger, Autoregressive Distributed Lag (ARDL) and Johansen approaches (Mostafvi, 2012):

- The co-integration test using the methodology of Engle-Granger's two-step approach, which is applied when just two variables are present. This test has the

advantage of being easy to perform. However, there are some drawbacks to this test, such as not knowing the right number of relationships between variables (Koop, 2005; Mostafavi, 2012). In his book on econometrics, Brooks (2008) confirms that the Johansen approach is more appropriate for co-integration than that of Engle-Granger, particularly when there is more than one variable.

- ARDL approach for co-integration was also used for some studies such as, Rahman and Salahuddin (2010), Dizaji (2012). However, a study in oil-rich countries conducted by Mostafavi (2012) compared the two approaches (ARDL and Johansen) and argued that Johansen was more effective. In fact, the author found that using the Johansen approach was more relevant to theory in comparison to ARDL procedure. As a result, this study relies on the Johansen approach to assess the co-integration.
- The test developed by Johansen and Juselius has great potential and is preferable to the Engel-Granger test if the number of variables is more than two. According to several studies (e.g. Sj, 2008; Mostafavi, 2012), this is the most fundamental test. Therefore, after the unit root tests for ADF and PP have been conducted, it is necessary to ensure that time-series variables are integrated of order one I (1). The co-integration test of the Johansen approach will, therefore, be conducted between GDP and the independent variables to verify the existence of a long-term relationship between the GDP and the most important determinants. Two criteria in Johnson's approach are λ-trace and λ-max. The Johansen test relies on the estimation of the Vector Autoregressive Model (VAR) that assumes the existence (p) of economic variables in the vector of regression of K-class, using the following equation (see, Kogid, 2010; Alodadi and Benhin, 2015):

$$\Delta X_t = \mu + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \ldots \Gamma_{k+1} \Delta X_{t-p+1} + \pi X_{t-1} + \varepsilon_t$$

where: $X_t = (k \text{ x } 1)$ stochastic variable vector, $u_t = (k \text{ x } 1)$ constant vector, π and Γ_1, $\Gamma_{2,}\ldots\Gamma_{k+1} = (k \text{ x } k)$ parameter matrix and $\varepsilon_t = (k \text{ x } 1)$ random vector.

The methodology of Johansen describes the coefficient matrix π according to the following results: 1) $\pi = 0$ means that the first difference should be used, 2) $\pi = k$ means the existence of stationary at the level (all variables have no unit root) and 3) $0 \leq \pi \leq k$) means there is a π linear combination towards X_t which is stationary (Kogid et al., 2010).

With regards to the short-term relationship, if the variables are co-integrated, following the Johansen test, the study employs the vector error correction model (VECM) derived from the VAR to examine the short-term relationship between the economic growth (GDP) and the selected variables in all three models. The VECM functional forms of equations (5.10) – (5.12) thus become (Kandenge, 2010).

MAIN MODEL:

$$\Delta Y_1 = \alpha_0 + \sum_{j=1}^{n} b_j \Delta Y_{t-j} + \sum_{j=0}^{n} c_j \Delta Lt_{t-j} + \sum_{j=0}^{n} d_j \Delta K_{t-j} + \sum_{j=o}^{n} e_j \Delta Xt_{t-j} + \sum_{j=0}^{n} f_j \Delta G_{t-j} + \sum_{j=o}^{n} g_j \Delta T_{t-j} + e_{t-1} + u_t \ldots (5.10)$$

OIL SECTOR MODEL:

$$\Delta Y_2 = \alpha_0 + \sum_{j=1}^{n} b_j \Delta Y_{t-j} + \sum_{j=0}^{n} c_j \Delta Lo_{t-j} + \sum_{j=0}^{n} d_j \Delta Ko_{t-j} + \sum_{j=o}^{n} e_j \Delta Xo_{t-j} + \sum_{j=0}^{n} f_j \Delta G_{t-j} + e_{t-1} + u_t \ldots (5.11)$$

NON-OIL SECTOR MODEL:

$$\Delta Y_3 = \alpha_0 + \sum_{j=1}^{n} b_j \Delta Y_{t-1} + \sum_{j=0}^{n} c_j \Delta Ln_{t-j} + \sum_{j=0}^{n} d_j \Delta Xn_{t-j} + \sum_{j=0}^{n} e_j \Delta PGn_{t-j} + \sum_{j=0}^{n} f_j \Delta PIn_{t-j} + \sum_{j=0}^{n} g_j \Delta T_{t-j} + e_{t-1} + u_t \ldots (5.12)$$

where, e_{t-1} is the error correction, Δ is the first difference and *bj, cj, dj, ej, fj, gj* are the short-term coefficients of the underlying Johansen model. For the empirical estimation of the models, the E-Views statistical/econometric software was utilized. It has been identified as one of the most powerful software for time series analyses.

5.5.4 The Multi-group Analysis.

The study employs a multi-group analysis to confirm the differences in impact of the variables between the Saudi and UAE economies. It is based on different samples of

similar models, the purpose of which is to compare pairs of path coefficients for the two countries (Kock, 2014). This is achieved by calculating the standard error for each of variables in both models (Keil et al., 2000) according to equation (5.13) or (5.14):

$$S_{12} = \left(\sqrt{\frac{(N_1-1)^2}{(N_1+N_2)}.S_1^2} + \frac{(N2-1)^2}{(N_1+N_{2-2})}.S_2^2\right).\left(\sqrt{\frac{1}{N_1}+\frac{1}{N_2}}\right) \qquad (5.13)$$

$$S_{12} = \sqrt{S_1^2 + S_2^2} \qquad (5.14)$$

where:

N_1 and N_2 are the data sizes for the estimated models of the two countries respectively. S_1 and S_2 are the standard errors for the path coefficient in the respective estimated models of the two countries (S_1 for Saudi Arabia and S_2 for UAE).

Equation (5.13) is used when the standard errors for both models are not significantly different, whereas equation (5.14), referred to as the Satterthwaite method, is applied when the standard errors are different, as in the case of the current study (Keil et al., 2000; Kock, 2014).

Thus, equation (5.14) will be used for a robust comparison between the two countries (Saudi Arabia and UAE), by estimating the value of $\mathcal{S}_{12}$. A critical ratio (T_{12}) is then calculated using equation (5.15), which is then used to estimate the P-value to help assess the significance of the differences between the estimated coefficients.

$$T_{12} = (\beta_1 - \beta_2)/S_{12} \qquad (5.15)$$

where:

$(\beta_1 - \beta_2)$ refers to the difference between path coefficients. Relatively high values of T_{12} and low P-values imply a significant difference between the estimated coefficients in the two countries and the low T_{12} values and high P-values imply no significant difference between the estimated coefficients (Kock, 2014).

5.6 Summary

The key objective of this research is to study the most important determinants of the growth of the Saudi and the UAE economy, both oil and non-oil sectors, focusing more on the variables in the non-oil sectors. This requires the development and testing of a model that can successfully predict economic growth in Saudi Arabia, the UAE and other oil-rich countries.

This chapter has addressed many topics. It opened with a general introduction and showed the selected model's specifications. The Solow Model was found to be the most appropriate choice due to its relevance to countries dependent on natural resources like oil and gas and the Solow Model is also an important medium for understanding aspects of the significant and sustained differences in growth rates between countries (comparisons between countries).

The discussion then proceeded to examine the selected econometric model. The main variables in this model include GDP as the dependent variable, exports, government spending, both private and public investment, tourism (international and religious), labour and capital as independent variables. Labour and exports were separated, in alignment with the aims of the study and capital was replaced by investment due to the lack of data for this variable.

The chapter developed three main models: (I) the main model, (II) the oil sector model and (III) the non-oil sector model, in a bid to answer the principal questions of the study. The economy was divided into oil and non-oil sectors. Equations were then developed for each sector – a necessary approach, given that the nature of the economies of oil-rich countries vary greatly between oil and non-oil sectors.

There was also a description of the main variables in the empirical model, starting with exports and ending with tourism and a discussion of the main econometric methods

applied in the study. The latter started with the concept of time series stationary, then main stationary tests as represented by the Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF) in addition to the Phillips-Peron (PP) unit roots tests. Arguments were also presented as to why the ADF was more appropriate for this study than the PP test (the PP-test performs much better with large samples than the small ones found in this study, for example). The evaluation of the long-term empirical relationship between economic growth and its explanatory variables using the Johansen co-integration test were also discussed, so was the error correction model (ECM), which helps to test the relationship in the short-term. Finally, the chapter demonstrated how the variables of interest were measured, the sources of each of the data used and presented the key hypotheses to be tested, in particular the case for non-oil sector economic growth variables.

6

EMPIRICAL ANALYSIS AND DISCUSSION: SAUDI ARABIA

CHAPTER SIX: EMPIRICAL ANALYSIS AND DISCUSSION - SAUDI ARABIA

6.1 Introduction

This chapter is concerned with the results that have been obtained from Saudi's Arabia economy. The chapter commences with an examination of stationarity, using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root test, so as to ensure the stationarity of all variables. The Johansen test of co-integration is then applied to uncover the most important variables affecting growth in Saudi Arabia in the long-term. Finally, short-term outcomes based on the Vector Error Correction Models (VECM) are analysed. Therefore, the chapter is divided into three main sections, beginning with an analysis of stationarity, followed by co-integration texts and long-term estimates and ending with short-term relationships. The same analysis and discussion is conducted in the next chapter for the economy of the United Arab Emirates, whereas Chapter Eight is devoted to discussing and comparing the results for these two economies.

6.2 Tests of Stationarity

6.2.1 Augmented Dickey Fuller (ADF) and Phillips-Perron Test (PP): Saudi Arabian Models

Prior to commencing the analysis, it is necessary to turn to the unit root tests (see Chapter 5), where data for the time series is usually non-stationary and where it is often necessary to convert these data to stationary before starting the analysis (Fernandez, 1981). Hence, the stationarity tests based on the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) have been conducted, as illustrated in Tables 6.1 and 6.2. The first table shows the results intercept and trend functional form, while the second table shows the findings with intercept only. The unit root tests have been applied according to ADF and PP for all variables in real terms (i.e. before they are converted to the logarithm) – and the results were not encouraging.

Table 6.1: Saudi Arabia – ADF and PP unit root tests at the level and first difference (intercept and linear trend)

Variable	*ADF-Stat*				*P.P-Stat*			
	Levels	*Lags*	*First Difference*	*lags*	*Levels*	*lags*	*First Difference*	*lags*
ln GDP	-4.506**	1	- 4.518**	8	- 3.880**	4	-2.431	3
ln GDPo	- 3.141	2	-3.649**	8	- 2.878	3	-4.857**	1
ln GDP_N	-1.180	7	-7.037**	4	-4.509**	0	-2.400	5
ln L_T	- 1.581	1	-9.023**	0	- 1.905	2	-9.023**	0
ln Lo	- 1.804	0	-4.490**	3	- 1.887	1	-5.790**	4
ln L_N	- 1.762	1	- 4.139**	0	- 1.609	3	-4.112**	1
ln K	- 1.932	1	-4.875**	1	- 2.965	5	-6.847**	6
ln K_O	- 2.198	2	-7.437**	1	- 3.462	0	-7.624**	12
ln PI_N	- 3.409	0	- 4.055**	1	- 3.434	7	-4.116**	5
ln PG_N	- 1.966	0	- 3.766**	0	- 2.273	4	-3.851**	3
ln X_T	-2.164	1	-3.696**	1	- 2.268	3	-3.935**	2
ln X_N	-2.089	1	-4.306**	4	-2.620	2	-11.079**	15
ln Xo	-2.316	0	-5.370**	0	-2.516	2	-5.376**	1
ln G	-2.600	0	-8.122**	0	-2.669	2	-8.141**	2
ln T	-1.336	0	-4.827**	1	-1.319	2	-5.154**	8

*Source: E-views version 7. Note: *,** and *** indicates statistically significant at, 5% and 10% respectively. Critical values (with linear trend): at the 5% and 10% are 3.54 and 3.20, respectively.*

Table 6.2: Saudi Arabia – ADF and PP unit root tests at the levels and first difference (Intercept without linear trend)

Variable	*ADF-Stat*				*P.P-Stat*			
	Levels	*lags*	*First Difference*	*lags*	*Levels*	*lags*	*First Difference*	*lags*
ln GDP	-0.733	9	-4.391**	8	- 3.655**	4	- 2.512	4
ln GDPo	- 2.874	2	-3.561**	8	- 2.959	3	-4.946**	0
ln GDP_N	-1.291	8	-3.385**	2	-4.374	2	-2.074	8
ln L_T	- 1.518	1	-8.962**	0	- 1.458	3	-9.013**	1
ln Lo	- 1.483	0	-5.752**	0	- 1.560	4	-5.754**	2
ln L_N	- 1.456	1	-3.960**	0	- 1.629	3	- 3.955**	2
ln K	- 2.379	0	-6.959**	0	- 2.371	4	-6.944**	6
ln K_O	- 2.050	2	-7.547**	1	- 3.426**	0	-8.298**	13
ln PI_N	- 3.236	2	-3.879**	1	- 3.292**	4	- 3.857**	6
ln PG_N	-2.753	3	-3.804**	0	- 2.339	4	- 3.868**	3
ln X_T	-1.861	1	-4.137**	0	- 2.043	3	-4.052**	2
ln X_N	-1.248	1	-6.111**	0	-2.337	2	-6.726**	8
ln Xo	-2.432	0	-5.321**	0	-2.546	2	-5.232**	1
ln G	-3.003**	0	-7.381**	0	-3.322**	1	-7.289**	4
ln T	-0.452	0	-5.291**	0	- 0.552	5	-5.206**	5

*Source: E-views version 7. Note: *,** and *** indicates statistically significant at 5% and 10% respectively. Critical values (without linear trend) at 5% and 10% are 2.94 and 2.60 respectively.*

A comparison of the results in Tables 6.1 and 6.2 reveals that all selected variables are integrated of order I (1) according to the Augmented Dickey Fuller (ADF) approach. Contrary to expectations, the PP test indicates that two dependent variables are integrated I (0). Therefore, this study utilises the results of the ADF test as the basis for a co-integration test, as the PP-test performs better with large samples than the smaller sample of this study (Davidson and MacKinnon, 2004).

In the Augmented Dickey Fuller (ADF) test, the lag length was determined by the Akaike Information Criterion (AIC), while the Newey-West standard was utilised in the Phillips-Perron (PP) tests.

These results move us forward in studying the relationship between the selected variables and economic growth in the long and short-term; the next section tests the first model for the economy as a whole.

6.3 Co-integration Tests

6.3.1 Saudi Arabia: Economic Growth in the Whole Economy (Model I)[13]

As explained earlier, the whole economy illustrates the impact of the main variables on economic growth in both sectors, namely oil and non-oil. As indicated for the main model (I), the research uses: total exports (X_T), government spending (G), tourism (T), total labour force (L_T) and capital (K) as independent variables, whereas the dependent variable is economic growth (GDP). This section will be divided into two parts; the first is a co-integration test based on the Johansen approach and a review of the long-term relationship between the variables of the study, while the second section focuses on the short-term relationship based on the (ECM).

Main Model (Whole economy growth model):

$$lnY = \alpha + \beta_1 \, lnL_T + \beta_2 \, lnK + \beta_3 \, lnX_T + \beta_4 \, lnG + \beta_5 \, lnT + \varepsilon$$

6.3.1.1 Saudi Arabia: Johansen Co-integration Tests Results (Whole economy)

As pointed out in the tests of stationarity, which show the results of the unit root test for Augmented Dickey-Fuller (ADF), time-series variables were integrated into the first difference I (1). The co-integration test of the Johansen approach will, therefore, be conducted between GDP and the independent variables used to verify the existence of a long-term relationship between the GDP and the most important determinants. Two criteria in Johanson's approach are λ-trace and λ-max, where the following table

[13] With regard of lag length, there are several criteria for lag intervals such as, Schwarz information criterion (SIC), Akaike information criterion (AIC), Final prediction error (FPE) and LR test statistic (LR) and Hannan-Quinn information criterion (HQ). The study was based on results of the AIC.

presents the results for the Johansen co-integration tests, which proved the existence of a complementary relationship between all the variables under study.

Table 6.3: Saudi Arabia - Johansen Co-integration Test Results for the whole economy

Hypothesized No. of CE(s)	*Eigen value*	*Trace Statistic: λ_{trace}*	*0.05 Critical value*	*Prob.*
Non*	0.752240	117.0971	95.75366	0.0008
At most 1*	0.489772	65.47119	69.81889	0.1058
At most 2*	0.363653	40.57395	47.85613	0.2026
At most 3*	0.283695	23.84954	29.79707	0.2069
At most 4*	0.267201	11.50454	15.49471	0.1823
At most 5*	0.000498	0.001841	3.841466	0.9628
Hypothesized No. of CE(s)	*Eigen value*	*Max-eigen Statistic: λ_{max}*	*0.05 Critical value*	*Prob.*
Non*	0.752240	51.62596	40.07757	0.0017
At most 1*	0.489772	24.89724	33.87687	0.3920
At most 2*	0.363653	16.72441	27.58434	0.6037
At most 3*	0.283695	12.34500	21.13162	0.5140
At most 4*	0.267201	11.50270	14.26460	0.1308
At most 5*	0.000498	0.001841	3.841466	0.9628

*The trace test indicates one co-integration eqn(s) at the 0.05 level. The Max-eigenvalue test shows that there is one co-integrating eqn(s) at the 0.05 level. *: Rejection of the null hypothesis of no co-integration at 0.05 level.*

According to Table 6.3, the estimated Johansen approach, based on the Trace Statistic, is 117.0971, which is greater than the critical value at the 0.05 level (95.75366). Similarly, the Max-eigen Statistic is 51.62596, which is greater than the critical value at the 0.05 level (40.07757). Therefore, the results suggest that there is one co-integrating vector between the economic growth (GDP) and other variables, using the lag length determined by the AIC. The Johansen approach is sensitive to lag length; hence, optimal lag-length must be selected. Consequently, the existence of a long-term relationship between the economic variables becomes apparent. The equation for co-integration between economic growth and the independent variables in the first model can be seen in Table 6.4, which reveals the dominance of total exports on economic growth. It also

shows the failure of the religious tourism variable to enhance economic growth in the main model.

Table 6.4: Saudi Arabia - Determinants of Economic Growth in the Whole Economy (Main Model)

Variable Definition	*Symbols*	*Coefficient*	*Standard Error*	*t-Statistics*
Total labour force	L_T	0.209583	0.04224	4.96
Capital	K	0.274168	0.03555	7.71
Total exports	X_T	0.218725	0.02834	7.72
Government spending	G	0.116647	0.03717	3.14
Tourist arrivals	T	0.004250	0.02033	0.21

Table 6.4 shows that all the variables (labour force, capital, government spending, total exports and tourism) have a positive impact on general economic growth in Saudi Arabia. Furthermore, aside from tourism (T), all the estimated coefficients are statistically significant, at a level of 5%. The results of the co-integration test indicating the long-term relationship are also consistent with economic theory as discussed in chapters 2 and 3 and also as indicated in Table 5.1.

According to Table 6.4, there is a positive and strong impact from total exports and government spending on GDP. The estimated coefficients are interpreted as long term multipliers (Koop, 2005; Gujarati, 2014) and show that a 1% increase in total exports and government spending will lead to a long-term respective increase in GDP of 0.21% and 0.11%. Tourism has a positive impact on economic growth but the impact is not significant, as indicated by the very low t-statistics.

With regard to the total labour force and capital, which were added based on economic theory (see Chapters 2 and 3), the results show that these two variables have a strong impact on the Saudi economy. Hence, a 1% increase in both L_T and K will lead to a rise in the GDP by 0.20% and 0.27% respectively.

The results in this section indicate the influence of the oil sector on the economic growth of the Saudi economy, as the total exports in the basic equation are heavily dependent on oil exports, which explains its impact on economic growth. To prove this, the oil and non-oil sectors will be explored in the next stage of this chapter to determine how important this variable is. Furthermore, the study will consider the effect of government spending on economic growth in the oil sector. With regard to tourism, which showed its limited importance in the model, the study will discuss its effects on the non-oil economy and ascertain as to whether there are any differences in effect.

6.3.1.2 Saudi Arabia - Error Correction Model (ECM) for the whole economy

The above results from the co-integration of the Johansen approach find a long-term relationship between economic growth (GDP) and its determinants. Consequently, the next step is to examine the relationship between these variables in the short-term. The results are shown in Table 6.5.

Table 6.5: Saudi Arabia - Vector Error Correction for the whole economy

Variable	*Coefficients*	*Std. Error*	*t-Statistics*
EC_{t-1}	-0.49	0.13	-3.74
D (LGDP (-1))	0.39	0.21	1.84
D (LK (-1))	-0.08	0.03	-2.3
D (LL_T (-1))	0.01	0.07	0.18
D (LX_T (-1))	0.13	0.06	2.00
D (LG (-1))	0.06	0.05	1.29
D (LT (-1))	-0.02	0.05	-0.49
C	0.01	0.01	1.83
R-squared	0.69		
F-statistic	9.35		

Note: D refers to the first differences and EC_{t-1} is the error correction term.

Table 6.5 presents the estimated VECM, which reflects the short-term relationship between economic growth and its explanatory variables for the whole economy.

In this model, only a single factor (total exports) was found to cause positive economic growth in the short-term, which means that a 1% increase in the X_T will lead to an

increase in the GDP by 0.13%. Another important finding was that both tourism and capital had a negative relationship and were non-significant to economic growth in the short-term. Regarding total labour force (L_T) and government spending (G), this study found that both had a positive impact on economic growth. Nonetheless, they were statistically non-significant, with t-statistics of 0.18 and 1.29 respectively.

Overall, the results in Table 6.5 indicate that total exports (X_T) are the main determinant of economic growth in the first model, both in the short and the long-term, whereas other variables are found to differ in their short- and long-term impacts. Although government spending (G), capital (K) and total labour force (L_T) are positive and statistically significant in the long-term estimated equations (Table 6.4), they were not significant in the short-term.

With regards to the estimated coefficient for the error correction term (EC_{t-1}), in the first model the short-term relationship between the dependent and the independent variables is negative and statistically significant (Coefficient is - 0.49 and t-statistic is 3.74), consistent with the method of error correction (see Table 6.5). It was also shown that the value of the F-statistic is 9.35 and that of R-squared is 0.69; hence the ECM explains 69% of the systemic variation in the dependent variable. In the section that follows, the role of the oil industry in the Saudi Arabian economy will be analysed.

6.3.2 Saudi Arabia: Economic Growth in the Oil Sector (Model II)

The study aims to contribute to the area of economic research about economic growth by exploring the role of oil sectors in this field. Although extensive research has been carried out on economic growth no single study exists which focuses specifically on the role of the oil sector on economic growth in oil-rich countries. More accurately, to the researcher's knowledge, this is the first study that developed a new model which separates the direct effects of the oil sector from the whole economy.

In Model II, the research uses oil exports (Xo) and government spending (G) in addition to labour in the oil-sector (Lo) and oil investment (K_O) as independent variables, whereas the dependent variable is economic growth in the oil sector (GDP_O). Again, the Johansen co-integration approach was used to examine the long-term relationship between the variables and the VECM to assess the short-term relationship. This equation will focus only on the role of the oil industry in the overall growth of the Saudi economy.

Economic Growth in the Oil-sector:

$$lnY_1 = \alpha + \beta_1 lnL_O + \beta_2 lnK_O + \beta_3 lnX_O + \beta_4 lnG + \varepsilon$$

6.3.2.1 Saudi Arabia: Johansen Co-integration Results (Oil sector)

Returning briefly to the unit root tests for both Augmented Dickey-Fuller (ADF) and Phillips-Paron (PP) in tables 6.1 and 6.2, it was suggested that all selected variables in the oil sectors are integrated of order I (1) and can thus be analysed by means of the co-integration test using the Johansen approach. Tests were therefore conducted on the relationship between GDP and the independent variables used to verify the existence of a long-term relationship between the GDP and the most important determinants. Therefore, only variables in the oil sector will be utilized in assessing the impact of these variables on economic growth. To this end, the following table presents the results for the Johansen co-integration tests. They show the existence of a complementary relationship between all variables in the oil sector.

Table 6.6: Saudi Arabia - Johansen Co-integration Test Results for the oil sector

Hypothesized No. of CE(s)	*Eigen value*	*Trace Statistic: λ_{trace}*	*0.05 Critical value*	*Prob.*
Non*	0.616204	80.52109	60.06141	0.0004
At most 1*	0.477435	42.21529	40.17493	0.0307
At most 2*	0.221501	16.25504	24.27596	0.3614
At most 3*	0.144430	6.239517	12.32090	0.4074
At most 4*	4.96E-07	1.98E-05	4.129906	0.9970
Hypothesized No. of CE(s)	*Eigen value*	*Max-eigen Statistic: λ_{max}*	*0.05 Critical value*	*Prob.*
Non*	0.616204	38.30579	30.43961	0.0043
At most 1*	0.477435	25.96025	24.15921	0.0283
At most 2*	0.221501	10.01552	17.79730	0.4836
At most 3*	0.144430	6.239498	11.22480	0.3232
At most 4*	4.96E-07	1.98E-05	4.129906	0.9970

*The trace test indicates 2 co-integration eqn(s) at the 0.05 level. The Max-eigenvalue test refers to 2 co-integrating eqn(s) at the 0.05 level. *: Rejection of the null hypothesis of no co-integration at 0.05 level.*

Table 6.6 suggests that there are not one but two co-integrating vectors between economic growth (GDP) and other variables in the Trace-test, as well as two co-integrating vectors according to the Max-test, hence the existence of a long-term relationship among economic variables (Awokuse, 2007). Therefore, the equation for co-integration of the long-term relationship between the dependent variable and the independent variables are clarified in the following table:

Table 6.7: Saudi Arabia – Determinants of Economic Growth in the Oil-sector

Variable Definition	*Symbols*	*Coefficient*	*Standard Error*	*t-Ratio*
Labour force in the oil sector	Lo	-0.004755	0.07379	0.06
Investment in oil-sector	K_O	0.225699	0.05642	4.00
Government spending	G	0.197766	0.07289	2.71
Oil-exports	X_O	0.642599	0.07287	8.81

Table 6.7 shows that the effects of the variables of government spending and oil exports on economic growth are both positive and statistically significant, which means that an increase in total exports and government spending by 1% leads to an increase in the

gross domestic product (GDP) in the oil sector by 0.64% and 0.19% respectively. The results also show the positive impact of investment in the oil sector on economic growth, which is consistent with economic theories and empirical studies.

For the labour force variable, the relationship was negative and statistically non-significant, where the value of the t-statistic appears low (0.06). An increase in the labour force in the oil sector by 1% will therefore lead to a decrease in economic growth by around 0.004%. It is important to ask about the reason for this negative relationship, but this will be done when the result of this relationship in the United Arab Emirates is obtained in the next chapter. This will then be discussed in Chapter Eight.

Together these results provide important insights into the impact of the oil sector on the economic growth in the Saudi economy and have corroborated the fact that oil exports have the strongest impact on its economic growth. Additionally, the results of the co-integration test of the long-term relationship are consistent with economic theory for all the independent variables (except the labour force) in the oil sector. The next section discusses the short-term relationship based on the VECM.

6.3.2.2 Saudi Arabia: Error Correction Model (ECM) for the oil sector

The empirical findings in this section provide a new understanding of the short-term relationship between GDP in the oil- sector and several independent variables related to the oil industry based on the Vector Error Correction Model (VECM). The results are shown in Table 6.8.

Table 6.8: Saudi Arabia - Vector Error Correction for the oil sector model

Variables	*Coefficient*	*Standard. Error*	*t-Statistics*
EC_{t-1}	-0.39	0.17	-2.15
D (LGDPo (-1))	0.49	0.31	1.53
D (LKo (-1))	0.08	0.05	1.30
D (LLo (-1))	-0.53	0.28	-1.81
D (LXo (-1))	-0.41	0.28	-1.45
D (LG (-1))	0.05	0.14	0.35
C	0.35	0.02	1.31
R-squared	0.27		
F-statistic	1.71		

Note: D refers to the first differences and EC_{t-1} is the error correction term.

In the case of VECM in the Saudi economy, it is interesting to note that all four selected variables of this model were statistically non-significant in the short term. However, the results of this study indicate that there were two factors which had a positive impact on economic growth, namely investment in the oil sector (K_O) and government spending (G). Further, from this data, it can be seen that the labour force in the oil sector (L_O) and oil exports (X_O) were non-significant in terms of economic growth.

Overall, the results in Table 6.8 indicate that government spending (G) and oil investment (K_O) are the main determinants of economic growth in the second model, both in the short and the long-term, whereas other variables are found to differ in their short and long-term impacts.

The results, according to Table 6.8, show that the estimated coefficient for the error correction term (EC_{t-1}) (in terms of the short-term relationship between the dependent and the independent variables) is negative and statistically significant (the coefficient is - 0.39 and the t-statistic is 2.15). This is consistent with the method of error correction. The value of the F-statistic is 1.71and is 0.27 in the R-squared, which means that the ECM explains 27% of the systemic variation in the dependent variable. Although the value of R^2 is relatively low, this does not affect the results because the results of the EC_{t-1} are compatible with the requirements of the short-term, as mention above.

6.3.3 Saudi Arabia: Economic Growth in the Non-oil Sector (Model III)

The third set of analyses examine the impact of some selected non-oil sectors such as tourism on economic growth and try to isolate the effects of the oil industry on the economy (see Chapter 5). These variables include: GDP in the non-oil sector (GDP_N), private investment (PI_N), public investment (PG_N), non-oil exports (X_N), tourism (T) and labour in the non-oil sector (L_N).

Economic Growth in the Non-oil-sector:

$$ln\ GDP_N = \alpha + \beta_1 lnL_N + \beta_2 lnPG_N + \beta_3 lnPI_N + \beta_4 lnX_N + \beta_5 lnT + \varepsilon$$

6.3.3.1 Saudi Arabia: Johansen Co-integration Results (Non-oil sector)

Again, Tables 6.1 and 6.2, which provided unit root tests according to the ADF approach, suggested that all selected variables in the non-oil sectors are integrated of order I (1) – hence the possibility of analysing the co-integration tests of the Johansen approach. Therefore, the relationship between the GDP and the independent variables used was tested so as to verify the existence of a long-term relationship between the GDP and the most important determinants.

This section will explore the variables in the non-oil sectors and assess their influence on economic growth. The following table presents the results for the Johansen co-integration tests, which show the existence of a complementary relationship between all variables under study:

Table 6.9: Saudi Arabia - Johansen Co-integration Test Results for the non-oil sector

Hypothesized No. of CE(s)	*Eigen value*	*Trace Statistic*	*0.05 Critical value*	*Prob.*
Non*	0.918780	195.5705	95.75366	0.0000
At most 1*	0.654385	100.1677	69.81889	0.0000
At most 2*	0.593417	59.79529	47.85613	0.0026
At most 3*	0.424595	25.59655	29.79707	0.1412
At most 4*	0.108728	4.594693	15.49471	0.8503
At most 5*	0.005790	0.220659	3.841466	0.6385
Hypothesized No. of CE(s)	*Eigen value*	*Max-eigen Statistic*	*0.05 Critical value*	*Prob.*
Non*	0.918780	95.40278	40.07757	0.0000
At most 1*	0.654385	40.37239	33.87687	0.0073
At most 2*	0.593417	34.19874	27.58434	0.0061
At most 3*	0.424595	21.00186	21.13162	0.0521
At most 4*	0.108728	4.374033	14.26460	0.8179
At most 5*	0.005790	0.220659	3.841466	0.6385

*The trace test indicates 3 co-integrating eqn(s) at the 0.05 level. The Max-eigenvalue test shows that there are 3 co-integrating eqn(s) at the 0.05 level. *: Rejection of the null hypothesis of no co-integration at 0.05 level.*

The results suggest that there are in fact three co-integrating vectors relating to economic growth in the non-oil sector (GDP_N) and the other variables, where the estimated Johansen approach (based on Trace and Max-eigen statistics) are greater than the critical value at the 0.05 level (see Table 6.9). Therefore, the existence of a long-term relationship between economic variables becomes apparent. The equation for co-integration between economic growth and the independent variables in the third model can be seen in Table 6.10, which reveals the dominance of private investment on economic growth. It also shows the strength of the religious tourism variable in enhancing economic growth in the third model.

Thus, these results confirm the existence of a long-term relationship between economic variables; the equation for the joint integration between the dependent variable and the independent variables is clarified in the following table:

Table 6.10: Saudi Arabia - Determinants of Economic Growth in the Non-oil sector

Variable Definition	*Symbols*	*Coefficient*	*Standard Error*	*t-Ratio*
Employees in non-oil sector	L_N	0.165653	0.04928	3.36
Public investment	PG_N	0.080012	0.01571	5.09
Private investment	PI_N	0.179269	0.04578	3.91
Non-oil exports	X_N	0.050321	0.03636	1.38
Tourist arrivals	T	0.145523	0.04908	2.96

Table 6.10 shows that private investment is the primary factor affecting economic growth in the non-oil sectors in terms of the magnitude of the estimated coefficients. Religious tourism and investment in the public sector were second and third respectively in the latter model, while non-oil exports did not have a significant effect.

It is interesting that this result is totally different from the result of the main model (i.e. the first model) in terms of religious tourism, which showed a lack of importance of the tourism variable and also illustrated and confirmed the dominance of the oil sector and its impact on economic growth.

For the total labour force, the results show that this variable has a strong impact on the Saudi economy. Hence, a 1% increase in both L_N will lead to a rise in the GDP by 0.16%.

The most striking result to emerge from the analysis is the weak impact of the non-oil exports on the growth of the Saudi economy compared with the strong and positive effect of oil exports in the second model. Thus, the results of the third model illustrate that private investment may have played a vital role in bringing about economic growth, followed by tourism and public investment, which means that increasing these variables by 1% leads to an increase in the gross domestic product (GDP) of the non-oil sector by 0.17%, 0.14% and 0.08% respectively.

The results also show the positive impact of non-oil exports on economic growth. Nevertheless, the effect of non-oil exports comes last in terms of its effect on Saudi

Arabia's economic growth, where a 1% increase in non-oil exports leads to an increase in general economic growth of around 0.05%. Consequently, the results showed the weakness of its importance in the Saudi economy, where the value of the t-statistic was 1.40, which is seen as low and statistically non-significant.

This section has analysed the factors affecting economic growth in the long term for the non-oil sectors and has argued that private investment and tourism are the most influential of these factors. The focus of the study will now shift to the short-term relationships.

6.3.3.2 Saudi Arabia: Error Correction Model (ECM) for the non-oil sector

This section discusses the short-term relationship between GDP and several selected variables on the short-term and compare it with the long-term relationship. The results are shown in Table 6.11.

Table 6.11: Saudi Arabia - Vector Error Correction for the non-oil sector model

Variables	*Coefficient*	*Standard. Error*	*t-Statistics*
EC_{t-1}	-0.53	0.05	-3.86
D ($LGDP_N$ (-1))	-0.05	0.19	-0.26
D (LL_N (-1))	-0.14	0.18	-0.78
D (LPG_N (-1))	0.01	0.03	1.01
D (LPI_N (-1))	0.09	0.04	1.64
D (LX_N (-1))	-0.01	0.03	-0.38
D (LT (-1))	-0.10	0.04	-2.15
C	0.11	0.02	4.67
R-squared	0.96		
F-statistic	24.17		

where: D refers to the first differences; EC_{t-1} is the error correction term.

From Table 6.11, it can be seen that the results of labour force in non-oil sectors (L_N), non-oil exports (X_N) and tourism had a negative effect on economic growth in the short term. The findings of this analysis also showed that investments, both public and private, had a positive impact on the Saudi economy, but were statistically non-significant.

It is noteworthy that all variables differ in their short and long-term impacts. Although private investment (PI_N) and public investment (PG_N) are positive and statistically significant in the long-term estimated equations (Table 6.10), they are not significant in the short-term. Together these results highlight the need to focus on long-term variables.

Regarding the estimated coefficient for the error correction term (EC_{t-1}), further statistical tests in the above table reveal that in the third model the short-term relationship between the dependent and the independent variables is negative and statistically significant. This aligns with the method of error correction, where the value of the coefficient is -0.53 and the t-statistic is 3.86. The value of the F-test is 24.17, whereas that of the R-squared is 0.96. This is a favourable result in the short-term; hence, the ECM explains 96% of the systemic variation in the dependent variable. Finally, tables 6.12 and 6.13 are summary results of the analysis of the variables' behaviour in all three models in the long and short-term. These will be discussed in detail in the next section.

Table 6.12: Saudi Arabia: Summary of the variables' behaviour in the long-term

Variable Definition	*Symbols*	*Relationship*	*Statistic*		*Order*
		Model I: The whole economy			
Total Exports	X_T	+	*(7.72)*	significant	1
Government Spending	G	+	*(3.14)*	significant	2
Tourism	T	+	*(0.21)*	non-significant	3
Total Labour force	L_T	+	*(4.96)*	significant	n/a*
Capital	K	+	*(7.71)*	significant	n/a
		Model II: Oil sector			
Oil-Exports	X_O	+	*(8.81)*	significant	1
Investment in oil sector	K_O	+	*(4.00)*	significant	2
Government Spending	G	+	*(3.14)*	significant	3
Employees in oil sector	L_O	-	*(0.06)*	non-significant	n/a
		Model III: Non-oil sector			
Private Investment	PI_N	+	*(3.91)*	significant	1
Tourism	T	+	*(2.96)*	significant	2
Public Investment	PG_N	+	*(5.09)*	significant	3
Non-oil exports	X_N	+	*(1.38)*	non-signifiant	4
Employees in non-oil sector	L_N	+	*(3.36)*	significant	n/a

*n/a: Not applicable.

Table 6.13: Saudi Arabia: Summary of the variables' behaviour in the short-term

Variables	*Model 1(The Whole Economy)*		*Variables*	*Model II (Oil Sector)*		*Variables*	*Model III (Non-oil Sector)*	
	Co.	*t-St.*		*Co.*	*t-St.*		*Co.*	*t-St.*
EC_{t-1}	-0.49	-3.74	EC_{t-1}	-0.39	-2.15	EC_{t-1}	-0.53	-3.86
D (LGDP(-1))	0.39	1.84	D ($LGDP_O$ (-1))	0.49	1.53	D ($LGDP_N$ (-1))	-0.05	-0.26
D (LL_T (-1))	0.01	0.18	D (LL_O (-1))	-0.53	-1.81	D (LL_N (-1))	-0.14	-0.78
D (LK (-1))	-0.08	-2.32	D (LK_O (-1))	0.08	1.30	D (LPG_N (-1))	0.01	1.01
D (LG (-1))	0.06	1.29	D (LX_O (-1))	-0.41	-1.45	D (LPI_N (-1))	0.09	1.64
D (LX_T (-1))	0.12	2.00	D (LG (-1))	0.05	0.35	D (LX_N (-1))	-0.01	-0.38
D (LT (-1))	-0.02	-0.49	C	0.35	1.31	D (LT(-1))	-0.10	-2.15
C	0.01	1.83	-	-	-	C	0.11	4.67
R-squared	0. 69		R-squared	0.27		R-squared	0.96	
F-statistic	9.35		F-statistic	1.71		F-statistic	24.17	

where: D refers to the first differences; EC_{t-1} is the error correction term; Co. is coefficient and t-St. is t-statistic.

6.4 Saudi Arabia: Discussion of the Economic Growth Model Results

6.4.1 Introduction

This section will discuss the results of the analysis of the Saudi Arabian economy and therefore answer the first research question which was "What is the role of the oil and non-oil sectors in the Saudi Arabian economy?" However, as an initial step, it would be useful to give a brief overview and reminder of the most important research contributions, along with the research questions. The aim of this study is to determine the factors that influence economic growth in oil-rich countries, knowledge of which would provide a deeper understanding of economic growth in these countries. Accomplishing this requires the development of new models that can successfully predict economic growth in oil-rich countries, with a specific focus on important, neglected variables in the non-oil sectors (Chapter, 4). This study is the first study of its kind to analytically test the effect of religious tourism on economic growth (see Chapter 4 and 9). Moreover, as far as is known, this is the first study that examines both oil and non-oil sectors simultaneously.

Previous results showed that the main determinants of economic growth of the Kingdom of Saudi Arabia are related to the oil-sectors. As a result, the majority of oil-rich countries, including Saudi Arabia are at the mercy of the global economy. Nonetheless, that does not mean that the presence of oil is necessarily a curse for oil-exporting countries, as suggested in some studies or believed by some authors including Gylfason (2001), Di (2010), Boyce and Emery (2011). Rather, it is considered as a blessing if it is used in the right way. Prominent examples include developed countries such as Norway and developing countries such as the United Arab Emirates and Qatar. Qatar was ranked first in the world in per capita income, with $88,000 in 2010 (The International Monetary Fund, 2012). This was possible due to the fact that a diverse range of investments were generated through owning stakes in global financial

institutions as well as in multi-national companies. While on the other hand the UAE achieved sixth place.

Another important issue for the Saudi economy is that experts from Citigroup Bank have warned that the Kingdom is at risk of turning from exporting oil to the importing of oil by the year 2030 (Daya, 2012). This is due to a growing demand for domestic electricity generation, which consumes a quarter of the energy being produced, including the natural gas resources within the country. Another risk concerning oil prices is that these have risen enormously over the past years resulting in a negative impact on the Saudi economy even though it is an oil-rich country. The most significant reason has been a high inflation rates. Therefore, Saudi Arabia can rely on independent, local sources (i.e. non-oil sectors) and be in a better control and avoid the danger of relying on a single source. This study shows that Saudi Arabia's non-oil sectors, such as private investment and tourism, are highly significant in income generation.

The results of this study illustrate the importance of exports to economic growth, as suggested by both the theoretical and existing empirical evidence. In Saudi Arabia, the impact of the oil-sector is highly prominent. This becomes even more evident when the economy is divided into two parts (oil and non-oil), with estimated results showing that oil exports are in fact responsible for this growth, whereas the impact of non-oil exports on economic growth is not significant. Religious tourism performs below expectations in the economy as a whole (main model) because of the prominence of the oil sector. Nonetheless, the findings of this study confirm its importance in the non-oil economy. It has also been found that private investment in the non-oil economy has the highest positive impact on economic growth, followed by religious tourism and public investment. The results thus substantiate prevailing economic theories and support the majority of applied studies, as they show that exports (total and oil exports), government spending and public and private investments have a positive impact on

economic growth (see for example, Tuwaijri, 2001; Anaman, 2004; Asseery and Al-Sheikh, 2004; Dash and Sharma, 2008; Kogid et al., 2010; Nurudeen and Usman, 2010; Safdari et al., 2011; Trpkova and Tashevska, 2011; Kalaitzi, 2013). The following sections focus on these results and compare the empirical evidence that has been obtained with other empirical studies, starting with exports and carefully delineate the contributions the current study makes to the research area.

6.4.2 Exports

As expected, there was found to be a positive relationship between total exports and growth in the Saudi economy. This confirms predictions by the Classical and Keynesian growth models and it is also supported by most of the empirical studies in developed and less developed countries (see for example, Tyler, 1981; Chow, 1987; Barro, 1996; Pahlavani, 2005; Hsiao and Hsiao, 2006; Awokuse, 2007; Kogid, 2010; Tiwari, 2011). The result also concurs with most studies on oil-rich countries (Anaman, 2004; Asseery and Al-Sheikh, 2004; Dizaji, 2012). Interestingly, the economic impact of oil exports in a study focusing on Iran was very different; Safdari et al. (2011), who examined the relationship between economic growth and several variables including exports of fuel, produced results showing the existence of a negative relationship between exports of fuel and economic growth. Perhaps the main reason for this is the fact that Iran was under embargo in terms of oil exports and this may have caused its negative effect.

In fact, oil exports was largely responsible for growth in the Saudi economy rather than non-oil exports, as evident when total exports were separated into two main components (oil and non-oil exports). This poses a challenge to the aims of the government, as stated in the five-year plans (see Chapter 4) designed to diversify sources of income in an attempt to reduce dependence on oil exports.

With regard to non-oil exports, some studies have found that their impact on economic growth and performance is weak and less than expected (see, for example, Mahdavi,

2007; Adenugba and Dipo, 2013). The results of the present study support this. However, other studies suggest that there is a negative relationship between non-oil exports and economic growth. Evidence from Iran, an oil rich country, revealed this negative relationship (Tabari and Nasrollahi, 2010). The assertion that the relationship between non-oil exports and economic growth is negative does, however, run contrary to several studies in oil-rich countries. The empirical studies of Aljarrahs (2008) and Okoduas (2013), as mentioned in Chapter 3, for example, reflect a somewhat more positive relationship between non-oil exports and economic growth in Saudi Arabia and Nigeria respectively. So, although all the above studies were based on oil-exporting countries, the results were different. This was either due to the different methodologies used or because of the unpredictable influence of non-oil exports on economic growth in oil-rich countries. However, the results support selected studies in non-oil developing countries. For example, a study on developing nations by Griffin (1999) confirmed that there is a weak relationship between such exports and economic growth in those countries. Developing nations must avoid becoming dependent on primary exports and rather develop manufacturing industries in order to enhance growth; this requires substantial investment in the economic infrastructure.

These results may also be due to the presence of the `Dutch disease` in Saudi Arabia. A study by Kayed and Kabir (2011) proved that in several oil-rich countries, including Saudi Arabia, the Dutch disease problem was decreasing the country's non-oil exports.

Hence, the study confirms that oil exports play a key role in the Saudi economy and in determining the course of development in the Kingdom in general. Despite the state's attempt to reduce dependence on petroleum resources it still relies mainly on a single export commodity, oil, which represents the bulk of the revenue for the country. Non-oil revenues have not kept pace with the country's economic expansion, consolidating the reliance on oil revenues to cover the overhead investment and operational costs. The

problem is whether this is sustainable in the long-term given the volatility of oil prices and the exhaustive nature of oil resources.

6.4.3 Religious tourism

With regard to religious tourism, the findings provide strong evidence for a positive impact of religious tourism on the Saudi economy. They also support most of the empirical studies (such as Brau et al., 2007; Schubert et al., 2011; Tiwari, 2011), which posit that tourism in general has a positive impact on economic growth. However, these studies did not consider religious tourism specifically, perhaps because of the absence of tourism of this type in the countries investigated. Hence, this study is among the first, if not the first, to examine the impact of religious tourism on economic growth, thereby extending understanding of the relationship between tourism and economic growth, especially in oil-rich countries. A potential area of diversification from oil for the Saudi economy could therefore be religious tourism

6.4.4 Government spending

Turning to the matter of government spending, the majority of applied studies have found that its impact on economic growth is positive and statistically significant (see, for example, Onafowora, 2007; Dash and Sharma, 2008; Kogid et al., 2010; Nurudeen and Usman, 2010; Safdari et al., 2011; Trpkova and Tashevska, 2011; Al-Fawwaz, 2016). Some studies in oil-rich countries (such as Tuwaijri, 2001; Anaman, 2004; Asseery and Al-Sheikh, 2004; Dizaji, 2012) also show that government spending is the most important factor affecting economic growth after exports. The results of the present study support this, where an increase by 1% of government spending leads to an increase in the economic growth in the long-term by 0.11% and 0.19% respectively in the first and second models. This suggests that government spending has a substantial long-term effect on the Saudi economy. This result also concurs with the growth theories by Keynes and the new growth school, which proposes that government

spending is one of the main factors affecting economic growth, resulting from the multiplier effect. It is, however, inconsistent with other empirical studies (such as Ghali, 1997; Abu-Bader and Abu-Qarn, 2003; Mitchell, 2005; Gani, 2010) in addition to the classical thought, led by Adam Smith, which opposes governmental intervention.

Overall, the result confirms that the government of Saudi Arabia's current expenditures in such areas as the provision of clean drinking water through seawater desalination, the provision of health care and the provision of education, as evidenced by the huge budgets spent by the state on these sectors in recent years, strongly encourage economic growth. In 2011, for example, the Saudi government invested about 204 billion Saudi Riyals (US$ 54.4 billion), or about 25% of its total annual expenditure on the education sector alone. These may have both short-term and long-term impacts on the economy. Most of the studies in this field in Saudi Arabia (Albatel, 2000; Asseery and Al-Sheikh, 2004, for example) strongly support the results of this study, which show about the positive relationship between government spending and economic growth.

6.4.5 Labour force

Regarding the labour force, these results confirm that there is a positive economic impact from the labour force, both in terms of total employment and the labour force in the non-oil sectors. It supports economic theories (such as Classical theory; Solow and Swan, 1956; Romer, 1986; Lucas, 1988) and most empirical studies (such as Anaman, 2004; Asseery and Al-Sheikh, 2004; Safdari et al., 2011; Dizaji, 2012), which assume that labour force have a positive impact on economic growth. For the labour force in the oil sector, the result is totally different; there is a negative effect on economic growth. There is apparently no study identifying the relationship between the workers in the oil sector and economic growth. Therefore, regardless of the outcome, the literature review has been extended to expand our understanding and perceptions of the labour force variable.

In research on the abundance of natural resources and economic growth in Algeria, Jedi (2012) found a negative relationship between employment and economic growth in oil rich countries. Such a finding supports the present study's findings. However, the author's study did not consider the role of the labour force in the oil sector specifically; it did so for the economy as a whole. For this reason, the role in oil-rich countries has been neglected. Hence, this research is the first to study the impact of the labour force in the oil sector on economic growth and thus it expands our understanding of the relationship between these two elements, especially in oil-rich countries. The next chapter will evaluate the results from the UAE economy and will provide a clearer vision of the relationship between the labour force in the oil sector and economic growth.

6.4.6 Investment

The positive relationship between investment and economic growth in Saudi Arabia confirms the findings and ideas related to most economic growth theories (such as the endogenous growth theory and neoclassical theory) and a significant number of empirical studies (Serven and Solitnano, 1992; Khan and Kumar, 1997; Sinha, 1997; Podrecca and Carmeci, 2001).

With regard to private and public investment, these results support the view that investment, both private and public, has a positive influence on economic growth in Saudi Arabia. In fact, they support most studies in this field, particularly those relating to private investment (Serven and Solitnano, 1992; Khan and Kumar, 1997; Al-Jundi and Hijazi, 2013; Alshahrani and Alsadiq, 2014) and public investment (Gwartney et al., 1998; Vu Le and Suruga, 2005; Hammond and Thompson, 2006; Aregbeyen and Kolawole, 2015), the latter being of less impact, though, than the former. This study's estimates highlight the significance and importance to Saudi Arabia's economy of the private investment variable in the non-oil sectors; it has the foremost (positive) impact

on economic growth in the Kingdom – a conclusion confirmed by a study by Khan and Kumar (1997). As a result, Saudi Arabia's government has entrusted parts of the public sector to the private sector, with a view to providing job opportunities for its citizens. The above findings also support a recent study conducted by the International Monetary Fund (Alshahrani and Alsadiq, 2014), which reaffirmed the positive effect of private investment on economic growth in Saudi Arabia. Therefore, the Saudi government could support the private sector, which has a bigger role in the economic growth process, through its participation in the management of some public sectors. This might be achieved by giving the private sector the opportunity to manage some public investments, such as those found in the electricity, water and air transport sectors. Nevertheless, the Saudi government should regulator the private sector in terms of these services in order to prevent it from exploiting citizens by raising prices. The European Central Bank (ECN) study for oil-rich countries (2009) confirmed that public investment in the non-oil sector in Saudi Arabia had a positive impact when used to support private investment, thereby stimulating non-oil GDP growth.

As for the short-term results of the error correction model, the summary results in Table 6.13 indicate that total exports (X_T) are the main determinant of economic growth in the first model, both in the short and the long-term, whereas other variables are found to differ in their short and long-term impacts. Although government spending (G), total labour force (L_T), investment in the oil sector (K_O), private investment (PI_N) and public investment (PG_N) are positive and statistically significant in the long-term estimated equations (see the summary on Table 6.12), they were not significant in the short-term. The labour force in the oil sector (L_O) also has a negative but insignificant, influence in the short and long-term.

Finally, following this discussion about the main factors influencing the growth of the Saudi economy and the role of both oil and non-oil sectors in this, the emphasis shifts to

the importance of the variables in the non-oil sectors. The results of this study relate primarily to private investment; its strong influence on economic growth in the non-oil sectors is clearly identified. The impact of private investment is followed by the influence of tourism and the public sector. Unexpectedly, it was found that non-oil exports in the Saudi economy are statistically non-significant, which suggests that the growth in non-oil exports may not lead to a corresponding growth in Saudi's economy. Furthermore, this study has revealed the positive impact of the labour force and capital on economic growth; this discovery is compatible with economic theory. The growth of tourism in Saudi makes this industry a strong contender as the future alternative to petroleum exports and a source of economic growth as well as the private sector, which the results showed to be the largest effect on the Saudi economy. Table 6.14 contains the results of hypothesis testing for the Saudi economy.

Table 6.14: Saudi Arabia: Hypothesis Testing outcomes for Economic Growth

Symbols		***Hypotheses***	***Saudi Arabia***
		The whole economy	
H_1a:	*X_T*	*Total exports have a positive effect on economic growth*	*Yes**
H_1b:	*G*	*Government spending has a positive effect on economic growth*	*Yes*
H_1c:	*T*	*Tourism has a positive effect on economic growth*	*No support*
H_1d:	*L_T*	*Total employees have a positive effect on economic growth*	*Yes*
H_1e:	*K*	*Capital has a positive effect on economic growth*	*Yes*
		Oil sector	
H_2a:	*X_O*	*Oil exports have a positive effect on economic growth*	*Yes*
H_2b:	*G*	*Government spending has a positive effect on economic growth*	*Yes*
H_2c:	*K_O*	*Oil investment has a positive effect on economic growth*	*Yes*
H_2d:	*L_O*	*Employees in the oil sector have a positive effect on economic growth*	*No support*
		Non-oil sector	
H_3a:	*PI_N*	*Private investment has a positive effect on economic growth*	*Yes*
H_3b:	*PG_N*	*Public investment has a positive effect on economic growth*	*Yes*
H_3c:	*L_N*	*Employees in the non-oil sector have a positive effect on economic growth*	*Yes*
H_3d:	*T*	*Tourism has a positive effect on economic growth*	*Yes*
H_3e:	*X_N*	*Non-oil exports have a positive effect on economic growth*	*No support*

*Yes: refers to support of the hypothesis.

6.5 Summary of Saudi Arabia Analysis

The chapter has focused on examining the key determinants of economic growth in Saudi Arabia over the period 1970 – 2011. Further analysis assessed whether the variables influencing economic growth in the oil sector are significantly different from those in the non-oil sector. This was indeed the case where religious tourism was identified as a key variable in economic growth in the non-oil sector, an area which should be a focus of the Saudi Arabia government in its attempt to diversify the economy away from oil and encourage more sustainable economic growth.

The analysis utilised time series approaches using the ADF and PP unit root test to examine the stationarity of the data and the Johansen co-integration approach and the VECM to assess the long-term and short-term relationships between the relevant variables respectively.

The results obtained in this study for the unit root test, based on the ADF approach, proved that all selected variables are integrated in the first difference I (1), which gave the possibility of applying a co-integration approach. Therefore, the study adopted the product of the ADF as a basis for analysis to be used heavily in studies relating to oil countries, as mentioned earlier in this chapter. With regard to the co-integration test according to the Johansen approach, there are, respectively, one, two and three co-integrating vectors between GDP growth and other variables in all three models, using the lag length determined by the AIC. Consequently, the existence of a long-term relationship between economic variables becomes apparent.

These results show the control of the oil-sector over the growth of the Saudi economy. This is particularly evident in the first model, which illustrates the failure of the tourism variable to keep up with oil, given that it proved to be the least influential variable of all. A similar pattern could be observed in the exports variable, where although there was a positive impact on economic growth in general, the impact of the export variable

changed when the economy was separated into two parts (oil and non-oil) and it became evident that oil exports were in fact responsible for this growth.

The results in this study have revealed the positive impact of the labour force (except in the oil sector) as well as capital on economic growth and found this to be compatible with economic theory. Overall, tourism performed below expectations in the main model, while its impact was strong in the third model (non-oil sector).

The results suggest that the Saudi economy should focus on non-oil sectors particularly religious tourism and private investment for many reasons, not least of which is the fact that these sectors are relatively easier to control, given that price rises in oil exports have far less bearing on them. Last but not least, it is very important to motivate private investment and tourism through the provision of financial support and a suitable environment given that these variables have proven their importance in this study. Hence, the enhancement of private investment and tourism are particularly pressing subjects when planning the future economic policies of the Kingdom of Saudi Arabia. The outcomes of this research may therefore be of considerable value to the country's economic planners and their long-term economic strategies.

With regard to the short-term, this research provides tangible evidence that most of the selected variables had a stronger impact in the long-term than the short-term. Perhaps the fact that Saudi Arabia is still a developing country accounts for this, as economic growth typically takes a long time to make its impact felt in such a case. This is due mainly to the result of the continuation of the development gap between the advanced industrial countries and developing countries, as these countries depend on advanced countries in the industry and technology transfer. In addition, the spread of unemployment in less developed countries delays the economic growth process. Thus, the government and policy makers in these countries need to consider the long-term in order to make a positive impact on economy.

7

UAE: EMPIRICAL ANALYSIS AND DISSCUSION

CHAPTER SEVEN: EMPIRICAL ANALYSIS AND DISSCUSION - UAE

7.1 Introduction

Chapter six focused on an analysis and discussion of the Saudi economy, exploring the respective determinants of growth in the whole economy, oil and non-oil sector. This chapter will limit itself to the UAE economy using the same models in equations (5.7), (5.8) and (5.9). Similar to the Saudi analysis, all the economic variables included in the models will be measured in real terms using the GDP deflator.

The rest of the discussion is organized into three main sections. It starts with an introduction to and an analysis of, the United Arab Emirate economy (stationarity tests, co-integration analysis, long and short-term relationships), followed by a discussion of the results. This then leads to a hypotheses test and concluding remarks.

7.2 Tests of Stationarity

7.2.1 Augmented Dickey Fuller (ADF) and Phillips-Perron Test (PP): UAE Models

As observed in chapters 5 and 6, time series data always or often are non-stationary and it is often necessary to convert them into a forms that are stationary before starting the analysis (Fernandez, 1981).

The test of the unit root based on the ADF and the PP, as illustrated in both Tables 7.1 and 7.2, using two functional forms: intercept with linear trend; and intercept without linear trend, suggests that all selected variables are integrated of order I (1) in the ADF test as well as in the PP test. Thus, it is possible to achieve co-integration relationships between economic growth and selected variables, based on the results of ADF as well as PP. Similar to the Saudi Arabia analysis in chapter 6, the ADF and PP tests are considered as a base for co-integration testing, with the lag length determined by the AIC and Newey-West standard respectively. In this investigation, the study has tested

the unit root for all variables in real terms (i.e. before they are converted to the logarithm), nonetheless the results also were not encouraging.

Table 7.1: UAE – ADF and PP unit root tests at the level and first difference (Intercept and linear trend)

Variable	*ADF-Stat*				*P.P-Stat*			
	Levels	*lags*	*First Difference*	*lags*	*Levels*	*lags*	*First Difference*	*lags*
ln GDP	-1.993	0	-5.453**	0	- 2.023	3	- 5.460**	2
ln GDPo	- 2.068	0	- 5.223**	1	- 1.861	6	- 7.964**	12
ln GDP_N	-1.966	0	-3.630**	2	-2.062	3	-5.699**	1
ln L_T	- 0.657	4	- 4.699**	3	- 1.693	4	- 3.982**	9
ln Lo	- 3.502	3	- 6.236**	0	- 1.838	3	- 6.262**	3
ln L_N	- 0.616	4	- 4.621**	3	- 1.714	4	- 3.906**	8
ln K	- 0.890	7	- 4.100**	6	- 1.850	1	- 4.602**	0
ln K_O	- 1.505	2	- 6.712**	1	- 2.663	5	- 4.899**	3
ln PI_N	- 0.060	0	- 4.567**	0	- 1.131	1	- 4.859**	1
ln PG_N	- 0.924	0	- 4.035**	2	-2.747	3	- 5.971**	4
ln X_T	-0.139	0	- 4.997**	0	- 2.794	1	- 5.248**	1
ln X_N	-0.123	0	-5.167**	0	-2.428	3	-5.181**	2
ln Xo	-0.502	0	-4.051**	1	-2.645	9	-5.335**	10
ln G	-3.530	0	-6.102**	0	-3.530	0	-7.110**	8
ln T	-2.108	0	- 5.545**	0	- 2.114	2	- 5.565**	3

*Source: E-views version 7. Note: *,** and *** indicates statistically significant at 5% and 10% respectively. Critical values (with linear trend) at 5% and 10% are 3.54 and 3.20 respectively.*

Table 7.2: UAE – ADF and PP unit root tests at the levels and first difference
(Intercept without linear trend)

Variable	*ADF-Stat*				*P.P-Stat*			
	Levels	*lags*	*First Difference*	*lags*	*Levels*	*lags*	*First Difference*	*lags*
ln GDP	-1.640	0	-3.371**	1	- 1.631	2	- 4.415**	3
ln GDPo	- 0.184	0	- 4.433**	1	- 0.184	0	- 4.904**	2
ln GDP_N	-0.326	0	-5.645**	0	-0.292	2	-5.679**	3
ln L_T	- 1.729	2	- 3.828**	0	- 2.603	7	- 3.777**	2
ln Lo	- 0.036	0	- 6.006**	0	- 0.046	2	- 5.907**	3
ln L_N	- 1.692	2	- 3.846**	0	- 2.574	7	- 3.796**	2
ln K	- 1.918	7	- 4.568**	0	- 0.241	1	- 4.565**	2
ln K_O	- 2.302	0	- 6.867**	1	- 2.142	6	- 5.183**	3
ln PI_N	- 0.060	0	- 4.567**	0	- 0.174	2	- 4.595**	2
ln PG_N	-0.924	0	- 4.035**	2	- 0.810	2	- 6.090**	4
ln X_T	-0.139	0	- 4.997**	0	- 0.105	2	- 4.981**	2
ln X_N	-0.123	0	-5.167**	0	-0.138	2	-5.160**	2
ln Xo	-0.502	0	-4.051**	1	-0.502	0	-4.375**	4
ln G	-3.658**	0	-6.270**	0	-3.713**	1	-7.375**	8
ln T	-1.473	0	- 5.049**	0	- 1.318	3	- 5.123**	3

*Source: E-views version 7. Note: *,** and *** indicates statistically significant at 5% and 10% respectively. Critical values (without linear trend) at 5% and 10% are 2.94 and 2.60 respectively.*

The Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests for the UAE are presented in Table 7.1 and Table 7.2. The results show that all variables are non-stationary in the level, except government spending in the PP test. However, all selected variables are stationary in the first difference in both approaches. Hence, all variables are integrated of order (I) for both approaches (ADF and PP). This implies the possibility of co-integration. Data from these tables can be compared with the data in Chapter Six (Tables 6.1 and 6.2) for Saudi Arabia; as such, two tests can be adopted in studying the UAE economy (ADF and PP), as with the Saudi Arabia economy.

Therefore, the next sections test for co-integration and explore the relationship between selected variables and economic growth in the long and short-terms in all three models, beginning with the first model for the economy as a whole.

7.3 Co-integration Tests

7.3.1 UAE: Economic Growth in the Whole Economy (Model I)

The first model is the main model (I); this will test the economy as a whole. The research uses: the total exports (X_T), government spending (G), tourism (T), total labour (L_T) and capital (K) as independent variables, whereas the dependent variable is economic growth (GDP).

This section will be divided into two parts. The first starts with a co-integration test according to the Johansen approach, followed by an exploration into the long-term relationship between the variables of the study; the second focuses on the short-term relationship, based on the ECM. With regard to lag length, the study was based on results of criteria relating to the AIC (see Chapter 5), wherein the Johansen approach is sensitive to lag length; hence, optimal lag-length must be selected.

Main Model (Whole economy growth model):

$$lnY = \alpha + \beta_1 \, lnL_T + \beta_2 \, lnK + \beta_3 \, lnX_T + \beta_4 \, lnG + \beta_5 \, lnT + \varepsilon$$

7.3.1.1 UAE: Johansen Co-integration Tests Results (Whole economy)

The purpose of this section is to ensure the existence of co-integration that allows the study of the long and short term relationship between economic growth and selected variables. It began with the stationary tests (ADF and PP), where the results presented in Tables 7.1 and 7.2.

The co-integration test of the Johansen approach will, therefore, be conducted between GDP and the independent variables used to verify the existence of a long-term relationship between the GDP and the most important determinants, where two criteria

in Johnson's approach are λ-trace and λ-max. As mentioned before, this section uses both oil and non-oil sectors (the whole economy) to assess the impact of these variables on economic growth. The following table presents the results for the Johansen co-integration tests, which proved the existence of a complementary relationship between all variables under study.

Table 7.3: UAE - Johansen Co-integration Test Results for the whole economy

Hypothesized No. of CE(s)	*Eigenvalue*	*Trace Statistic: λ_{trace}*	*0.05 Critical value*	*Prob.*
Non*	0.889005	183.1814	117.7082	0.0000
At most 1*	0.790353	121.6299	88.80380	0.0000
At most 2*	0.743957	77.88473	63.87610	0.0021
At most 3*	0.517797	39.73720	42.91525	0.1004
At most 4*	0.339158	19.31426	25.87211	0.2626
At most 5*	0.240849	7.715512	12.51798	0.2758
Hypothesized No. of CE(s)	*Eigen value*	*Max-eigen Statistic: λ_{max}*	*0.05 Critical value*	*Prob.*
Non*	0.889005	61.55145	44.49720	0.0003
At most 1*	0.790353	43.74522	38.33101	0.0108
At most 2*	0.743957	38.14753	32.11832	0.0081
At most 3*	0.517797	20.42295	25.82321	0.2198
At most 4*	0.339158	11.59874	19.38704	0.4534
At most 5*	0.240849	7.715512	12.51798	0.2758

*The trace test indicates three co-integration eqn(s) at the 0.05 level. The Max-eigenvalue test shows that there are also three co-integrating eqn(s) at the 0.05 level. *: Rejection of the null hypothesis of no co-integration at 0.05 level.*

The results of Table 7.3 suggest that there are three co-integrating vectors between the economic growth (GDP) and other variables in the two tests (the Trace- test and the Max- test), with lag-length following the Akaike Information Criterion (AIC).

This can be seen clearly in the Table 7.3, where the values of the Trace Statistic are 183.1814, 121.6299 and 77.88473 respectively and are greater than the Critical value at the 0.05 level. Similarly, the values of the Max-eigen Statistic are 61.55145, 43.74522 and 38.14753 respectively, which are greater than the critical value at the 0.05 level – hence the existence of a long-term relationship between the economic variables.

Therefore, the existence of a long-term relationship between the dependent variable and the independent variables is clarified in Table 7.4.

Table 7.4: UEA - Determinants of Economic Growth in the Whole Economy (Main Model)

Variable Definition	*Symbols*	*Coefficient*	*Standard Error*	*t-Statistics*
Total labour force	L_T	0.113702	0.21241	0.54
Capital	K	0.262406	0.09185	2.86
Total exports	X_T	0.607629	0.04973	12.21
Government spending	G	-0.442733	0.06277	7.05
International tourist arrivals	T	0.446693	0.09472	4.72

Table 7.4 shows that all variables (total labour force, capital, total exports and tourism) have a positive effect on economic growth in the UAE. Furthermore, aside from the total labour force (L_T), all the estimated coefficients are highly significant at 5% level. The results of the co-integration test indicating the long-term relationship are also consistent with economic theory, as discussed in chapters 2 and 3 and as indicated in Chapter Five (see Table 5.1). Accordingly, there is a positive and strong impact from total exports and government spending on GDP. Based on Gujarati (2014), the estimated coefficients are interpreted as long-term multipliers and show that a 1% increase in total exports, tourism and capital will lead to a long-term respective increase in GDP by 0.60%, 0.44% and 0.26% respectively. The total labour force has a positive impact on economic growth but the impact is not significant, as indicated by the very low t-statistics.

With regard to government spending, the results showed a negative relationship with economic growth, which means that an increase of 1% leads to a decrease in the GDP by 0.44.

In general, the results have shown that there is a common effect from both oil and non-oil sectors on the economic growth of the United Arab Emirates. The basic equation showed the importance of both total exports and tourism in the process of economic

growth. These results are different from that of Saudi Arabia as presented in Table 6.4 in chapter six, where total exports are of considerable importance in the process of economic growth, whereas the tourism sector's impact is weak, proving its limited importance in the whole Saudi economy. As explained earlier, the oil and non-oil sectors will be explored in the next stages of this chapter to determine how important these variables are. Furthermore, the effect of government spending on the GDP_O in the oil sector will be studied to confirm its role on economic growth. Moreover, the study will discuss the impact of international tourism on the GDP_N in the non-oil sector and ascertain whether there are any differences in the effects they create.

7.3.1.2 UAE - Error Correction Model (ECM) for the whole economy

The test results from the co-integration of the Johansen approach showed that there was a long-term relationship between economic growth (GDP) and its main determinants. The next part is to examine these relationships in the short-term, the results for which are shown in the following table:

Table 7.5: UAE - Vector Error Correction for the whole economy

Variable	*Coefficients*	*Std. Error*	*t-Statistics*
EC_{t-1}	-0.38	0.16	-2.29
D (LGDP (-1))	-0.07	0.34	-0.22
D (LK (-1))	-0.09	0.17	-0.51
D (LL_T (-1))	-0.10	0.36	0.30
D (LX_T (-1))	0.03	0.15	0.25
D (LG (-1))	0.02	0.10	0.21
D (LT (-1))	-0.11	0.28	-0.40
C	0.07	0.03	1.95
R-squared	0.39		
F-statistic	1.29		

Note: D refers to the first differences and EC_{t-1} is the error correction term.

These results match those observed in the Saudi economy (Chapter Six) in the short-term. As the above table shows, both capital and tourism had a negative and non-significant effect on economic growth, whereas other variables had a statistically non-significant relationship. Consequently, all variables differ in their short and long-term

impacts. As mentioned in Chapter 6, these short-term effects are different from the long-term effects. Developing countries, including the UAE, need to consider the long-term in order to make a positive impact on economy.

In terms of the estimated coefficient for the error correction term (EC_{t-1}), in the main model this is negative and statistically significant (-2.29), consistent with the method of error correction. Further, the value of the F-statistic is 1.29, while R-squared is 0.39; hence the ECM explains 39% of the systemic variation in the dependent variable.

7.3.2 UAE: Economic Growth in the Oil-sector (Model II)

As mentioned in Chapter Six section 6.3.2, most studies in the field of economic growth in oil-rich countries have only focused on the whole economy, whereas few of these empirical studies have discussed the factors in the non-oil sectors. Therefore, the central idea of this section is to separate and analyse the oil sector alone and then develop a new model, which would provide more accurate results.

Economic Growth in the Oil-sector:

$$lnY_1 = \alpha + \beta_1 lnL_O + \beta_2 lnK_O + \beta_3 lnX_O + \beta_4 lnG + \varepsilon$$

7.3.2.1 UAE: Johansen Co-integration Results (Oil sector)

This section depends on the results of unit root tests, which have proven (in the case of both the Augmented Dickey-Fuller (ADF) and the Phillips-Perron Test (PP)) that all variables in the non-oil sectors are integrated into the first difference I (1)and hence Johansen co-integration testing is undertaken based on two criteria in Johnson's approach: λ-trace and λ-max. The Following table, 7.6, presents the results for the Johansen co-integration tests:

Table 7.6: UAE - Johansen Co-integration Test Results for oil sector economic growth

Hypothesized No. of CE(s)	*Eigen value*	*Trace Statistic: λ_{trace}*	*0.05 Critical value*	*Prob.*
Non*	0.839839	92.78920	69.81889	0.0003
At most 1*	0.472101	41.50512	47.85613	0.1731
At most 2*	0.397101	23.61731	29.79707	0.2171
At most 3*	0.280583	9.449153	15.49471	0.3255
At most 4*	4.008123	0.228375	3.841466	0.6327
Hypothesized No. of CE(s)	*Eigen value*	*Max-eigen Statistic: λ_{max}*	*0.05 Critical value*	*Prob.*
Non*	0.839839	51.28408	33.87687	0.0002
At most 1*	0.472101	17.88781	27.58434	0.5045
At most 2*	0.397101	14.16816	21.13162	0.3514
At most 3*	0.280583	9.220778	14.26460	0.2682
At most 4*	4.008123	0.228375	3.841466	0.6327

*The trace test indicates 1 co-integration eqn(s) at the 0.05 level. The Max-eigenvalue test refers to 1 co-integrating eqn(s) at the 0.05 level. *: Rejection of the null hypothesis of no co-integration at 0.05 level.*

The results, according Johansen approach, suggest that there is one co-integrating vector between economic growth (GDP) and other variables in the Trace-test, as well as the Max-test. The value of 92.78920 for the Trace-test and 51.28408 for the Max-test are higher than the critical values of 69.81889 and 33.87687 at the 0.05 levels respectively. Hence, the existence of a long-term relationship among economic variables and the equation for co-integration between the dependent variable and the independent variables is clarified in the following table:

Table 7.7: UAE – Determinants of Economic Growth in the Oil-sector

Variable Definition	*Symbols*	*Coefficient*	*Standard Error*	*t-Ratio*
Employees in oil sector	L_O	-0.038709	0.02430	1.59
Investment in oil-sector	K_O	0.417819	0.04288	9.74
Government spending	G	-0.118289	0.05500	2.15
Oil-exports	X_O	0.899631	0.04106	21.91

From this data, it can be seen that the relationship between the two variables, oil exports and investments in the oil-sector, is positive and statistically significant at 5% in the UAE. This result is consistent with economic theory (see Chapters 2 and 3). Hence, a

1% increase in oil investment and oil exports will lead to a long-term respective increase in GDP_O by 0.89% and 0.41%.

With regard to the labour force in the oil sector, the relationship was negative and statistically non-significant at 5%; this is the same result as the analysis of the Saudi economy. Likewise, the government spending variable had a negative impact on economic growth. This confirms the result of the first model, which showed a negative relationship between government spending and economic growth, contrary to the result of the analysis of the Saudi economy.

7.3.2.2 UAE: Error Correction Model (ECM) for the oil sector

The test results from the co-integration of the Johansen approach illustrate that there is a long-term relationship between the economic growth (GDP) and its main determinants. The relationship between economic growth and the selected variables in the long term appear in Table 7.8. Thus, the next step is to study the relationship between these variables in the short-term according to the Vector Error Correction Model (VECM). The results are shown in the following table:

Table 7.8: UAE - Vector Error Correction for the oil sector model

Variable	*Coefficient*	*Std. Error*	*t-Statistics*
EC_{t-1}	-7.72	2.51	-3.06
D (LGDPo (-1))	2.03	1.53	1.32
D (LKo (-1))	-2.63	0.89	-2.95
D (LLo (-1))	0.37	0.43	0.86
D (LXo (-1))	-1.70	1.48	-1.14
D (LG (-1))	-0.32	0.27	-1.18
C	0.02	0.05	0.36
R-squared	0.71		
F-statistic	1.73		

Note: D refers to the first differences and EC_{t-1} is the error correction term.

The results, as shown in Table 7.8, indicate that all selected variables were statistically non-significant except physical capital. However, capital had a negative effect on economic growth in the short-term. Labour force had a positive impact, although it was

not statistically significant. Another important finding was that all variables in this model appear to affect the short and long-term differently.

With regard to the estimated coefficient for the error correction term (EC_{t-1}), the short-term relationship between the dependent and the independent variables is negative and statistically significant. This is consistent with the method of error correction (see Table 7.8). The F-statistic is 1.73, whereas R-squared is 0.71; hence the ECM explains 71% of the systemic variation in the dependent variable.

7.3.3 UAE: Economic Growth in the Non-oil-sector (Model III)

Similar to the discussion in section 6.3.3, the analysis in this section aims to isolate non-oil sector variables and critically examine the extent to which they influence economic growth in the UAE. This model uses the non-oil sectors alone to view the impact of the variables on economic growth, trying to isolate and ignore the variables in the oil sector. These variables are: GDP in the non-oil sector (GDP_N), private investment (PI_N), public investment (PG_N), non-oil exports (X_N), tourism (T) and labour in the non-oil sector. In this model, the study also used the Johansen approach to study the relationships between all variables and economic growth in both the long term and the short term.

Economic Growth in the Non-oil-sector:

$$ln\ GDP_N = \alpha + \beta_1 lnL_N + \beta_2 lnPG_N + \beta_3 lnPI_N + \beta_4 lnX_N + \beta_5 lnT + \varepsilon$$

7.3.3.1 UAE: Johansen Co-integration Results (Non-oil sector)

Tables 7.1 and 7.2, which provided unit root tests based on ADF and PP, suggested that all selected variables in the non-oil sectors are integrated of order I (1). This introduced the possibility of an analysis through the co-integration tests of the Johansen approach. Therefore, the relationship between the GDP and the independent variables were tested so as to verify the existence of a long-term relationship between them. The following

table presents the results for the Johansen co-integration tests and shows that there is a complementary relationship between all variables under study:

Table 7.9: UAE - Johansen Co-integration Test Results for the non-oil sector

Hypothesized No. of CE(s)	*Eigen value*	*Trace Statistic*	*0.05 Critical value*	*Prob.*
Non*	0.794654	136.8342	95.75366	0.0000
At most 1*	0.705489	90.92542	69.81889	0.0004
At most 2*	0.572263	55.47471	47.85613	0.0082
At most 3*	0.470333	30.84652	29.79707	0.0377
At most 4*	0.290315	12.41682	15.49471	0.1380
At most 5*	0.081701	2.471726	3.841466	0.1159
Hypothesized No. of CE(s)	*Eigen value*	*Max-eigen Statistic*	*0.05 Critical value*	*Prob.*
Non*	0.794654	45.90874	40.07757	0.0099
At most 1*	0.705489	35.45071	33.87687	0.0322
At most 2*	0.572263	24.62819	27.58434	0.1142
At most 3*	0.470333	18.42971	21.13162	0.1146
At most 4*	0.290315	9.945092	14.26460	0.2156
At most 5*	0.081701	2.471726	3.841466	0.1159

*The trace test indicates 4 co-integrating eqn(s) at the 0.05 level. The Max-eigenvalue test shows that there are 2 co-integrating eqn(s) at the 0.05 level. *: Rejection of the null hypothesis of no co-integration at 0.05 level.*

The results suggest that there are in fact four co-integrating vectors between the economic growth (GDP) variable and the other variables in the Trace test (the values of 136.8342, 90.92542, 55.47471 and 30.84652 are higher than the critical values of 95.75366, 69.81889, 47.85613 and 29.79707 at the 5% level), whereas there are two co-integrating vectors in the Max-eigen test (the values of 45.90874 and 35.45071are higher than the critical values of 40.07757 and 33.87687 at the 5% level). These results confirm the existence of a long-term relationship amongst the economic variables. The equation for co-integration between economic growth and the independent variables in the third model can be seen in table 7.10, which reveals the dominance of tourism and non-oil exports on economic growth. It also shows the strength of the private investment variable in enhancing economic growth.

Table 7.10: UAE - Determinants of Economic Growth in the Non-oil sector

Variable Definition	*Symbols*	*Coefficient*	*Standard Error*	*t-Ratio*
Employees in non-oil sector	L_N	0.007285	0.11608	0.06
Public investment in non-oil sector	PG_N	-0.038780	0.03684	1.05
Private investment in non-oil sector	PI_N	0.087355	0.04313	2.02
Non-oil exports	X_N	0.356284	0.04151	8.58
International tourist arrivals	T	0.492648	0.08236	5.98

Table 7.10 shows that the effects of variables of the labour force in the non-oil sector. Private investment, non-oil exports and tourism on economic growth are positive and are statistically significant at 5%. The labour force is an exception, as it has not proven to be statistically significant.

Interestingly, this result is totally different from the result of the Saudi Arabian economy, particularly public investment and non-oil exports. The results confirm that there is a negative influence between public investment and economic growth in this sector.

Overall, the results of the third model illustrate that there is a positive and strong impact from tourism, non-oil exports and private investment on economic growth (GDP), which means that increasing these variables by 1% will lead to a long-term respective increase in the gross domestic product in the non-oil sector (GDP_N) by 0.49, 0.35 and 0.08 respectively. The results also show that the effect of labour force is non-significant.

7.3.3.2 UAE: Error Correction Model (ECM) for the non-oil sector

This section attempts to show the effect of independent variables in the non-oil sectors on economic growth in the short-term. So, in the discussion that follows, it will be argued that except labour force, all variables are totally different in the short term from the long term. Table 7.11 reveals the relationship between GDP and selected variables in the short term.

Table 7.11: UAE - Vector Error Correction for the non-oil sector model

Variable	*Coefficients*	*Std. Error*	*t-Statistics*
EC_{t-1}	-1.00	0.29	-3.41
D ($LGDP_N$ (-1))	0.41	0.27	1.51
D (LL_N (-1))	0.80	0.27	2.89
D (LPG_N (-1))	0.06	0.08	0.82
D (LPI_N (-1))	-0.19	0.08	-2.37
D (LX_N (-1))	-0.20	0.10	-2.01
D (LT (-1))	-1.22	0.47	-2.58
C	0.06	0.04	1.62
R-squared	0.83		
F-statistic	3.60		

Note: D refers to the first differences and EC_{t-1} is the error correction term.

The above estimated model for the non-oil model shows the results of estimating via the vector error correction model (VECM) for the short-term relationship between economic growth and its explanatory variables for the non-oil economy. In this model, only a single factor (labour force) was found to cause positive economic growth in the short term, which means that a 1% increase in the L_N will lead to an increase in the GDP_N by 0.80%. Although public investment in the non-oil sector had a positive impact on economic growth, it was statistically non-significant. Another three variables (private investment (PI_N), non-oil exports (X_N) and tourism (T)) had a negative effect on economic growth and also were non-significant statistically.

In this model, no variables are considered major determinants in both the short and the long-term except labour force in non-oil sector (L_N), which appear to affect the short and long-term similarly. The coefficient estimated for error correction (EC_{t-1}) in model (III) for the short-term relationship between the dependent variable and the independent variables is statistically significant, as is its negative sign and this is consistent with the method of error correction. The value of F is 3.60, whereas R-squared is 0.83. This is a favourable result in the short-term; hence the ECM explains 83% of the systemic variation in the dependent variable. Although the short-term analysis depends on the

results of error correction model (EC_{t-1}), this R^2 seems to be high, which indicates that the selected variables were effective in explaining the results.

Finally, Tables 7.12 and 7.13 are summary results of the analysis of the variables' behaviour in all three models in the long and short-term. These will be discussed in detail in the next section.

Table 7.12: UAE: Summary of the variables' behaviour in the long-term

Variable Definition	*Symbols*	*Relationship*		*Statistic*	*Order*
		Model I: The whole economy			
Total Exports	X_T	+	*(12.21)*	significant	1
Tourism	T	+	*(4.72)*	significant	2
Government Spending	G	-	*(7.05)*	significant	-
Total Labour force	L_T	+	*(0.54)*	non-significant	n/a
Capital	K	+	*(2.86)*	significant	n/a
		Model II: Oil sector			
Oil-Exports	X_O	+	*(21.91)*	significant	1
Investment in oil sector	K_O	+	*(9.74)*	significant	2
Government Spending	G	-	*(2.15)*	significant	-
Employees in oil sector	L_O	-	*(1.59)*	non-significant	n/a
		Model III: Non-oil sector			
Tourism	T	+	*(5.98)*	significant	1
Non-oil Exports	X_N	+	*(8.58)*	significant	2
Private Investment	PI_N	+	*(2.02)*	significant	3
Public Investment	PG_N	-	*(1.05)*	non-significant	-
Employees in non-oil sector	L_N	+	*(0.06)*	non-significant	n/a

*n/a: Not applicable.

Table 7.13: UAE: Summary of the variables' behaviour in the short-term

Variables	*Model 1*		*Variables*	*Model 2*		*Variables*	*Model 3*	
	Co.	*t-St.*		*Co.*	*t-St.*		*Co.*	*t-St.*
EC_{t-1}	-0.39	-2.29	EC_{t-1}	-7.73	-3.07	EC_{t-1}	-1.00	-3.42
D (LGDP (-1))	-0.08	-0.23	D ($LGDP_O$(-1))	2.03	1.32	D ($LGDP_N$(-1))	0.42	1.51
D (LL_T (-1))	-0.11	-0.30	D (LL_O (-1))	0.38	0.86	D (LL_N (-1))	0.81	2.89
D (LK (-1))	-0.09	-0.51	D (LK_O (-1))	0.08	-2.63	D (LPG_N (-1))	0.07	0.83
D (LG (-1))	0.02	0.21	D (LX_O (-1))	-1.70	-1.14	D (LPI_N (-1))	-0.19	-2.38
D (LX_T (-1))	0.04	0.25	D (LG (-1))	-0.33	-1.18	D (LX_N (-1))	-0.21	-2.01
D (LT (-1))	-0.12	-0.41	C	0.02	0.36	D (LT(-1))	-1.23	-2.59
C	0.07	1.96	-	-		C	0.07	1.63
R-squared	0. 39		R-squared	0.71		R-squared	0.83	
F-statistic	1.29		F-statistic	1.73		F-statistic	3.60	

where: D refers to the first differences; EC_{t-1} is the error correction term; Co. is coefficient and t-St. is t-statistic.

7.4 UAE: Discussion of the Economic Growth Model Results

7.4.1 Introduction

In this section, the study discusses the results of the analysis of the UAE economy and therefore answers the second research question which was "What is the role of the oil and non-oil sectors in the UAE economy?" Nonetheless, as an initial step, it would be useful to give a brief overview of the importance of testing the three models developed for this study (see Chapter 5) in another country such as the United Arab Emirates and to present the research questions.

The application and test of any model for more than a single country gives more strength and credibility to the basic model (Sousa et al., 2008), which is essentially what this study seeks to achieve. Furthermore, there are variables such as religious tourism that have not been tested empirically. Thus, the study attempts to compare a non-religious tourism-based country (the UAE) with a religious tourism-based country (the SA). Moreover, the effect of the labour force in the oil sector on economic growth in oil-rich countries has also not been tested and must therefore be determined for the UAE. Finally, it is necessary to confirm that the factors affecting the economic growth in other GCC countries are similar to those of the Saudi economy if the most important factors affecting economic growth are to be isolated, particularly those relating to non-oil sectors and the degree of similarity with the Saudi economy.

The results suggest that the main determinants of economic growth in the United Arab Emirates are related to both the oil and non-oil sectors, which shows the diversity of the UAE economy.

Within this framework, it should be clarified that there are a few other oil-rich countries in addition to the UAE that contain such variety in their economies, including Norway as a developed country and Qatar as a developing country. Norway, for example, is the sixth largest producer of oil in the world, with its oil and gas sectors constituting around

25% of its GDP. Qatar had one of the fastest growing economies in 2009, with one of the lowest debt-to-GDP.

Hence, a clear view of the economy of the United Arab Emirates can be seen, which utilises both oil and non-oil sources relatively equally in the process of the growth of the economy. This structure is completely different from the Saudi economy, with its bias towards oil revenues (as covered in Chapter Six).

The results of the analyses in this chapter illustrate the diversity of the UAE economy, although the impact of the oil sector is still very prominent. This is clear in the first model, where the estimated results show that exports are in fact primarily responsible for growth followed by international tourism (a non-oil sector). Contrary to the Saudi economy, tourism exceeded all expectations in the main model. It was found to be the primary factor influencing the growth of the UAE non-oil economy, followed by non-oil exports and private investment. Thus, the results demonstrate the prevailing economic theories, support the majority of applied studies and prove that exports (total, oil and non-oil), private investment and tourism all have a positive impact on economic growth (Tuwaijri, 2001; Anaman, 2004; Asseery and Al-Sheikh, 2004; Dash and Sharma, 2008; Kogid et al., 2010; Nurudeen and Osman, 2010; Safdari et al., 2011; Trpkova and Tashevska, 2011; Kalaitzi, 2013; Alshahrani and Alsadiq, 2014). However, the impacts of government spending and public investment are negative on economic growth, which supports studies such as Ghali (2000), Abu-Bader and Abu-Qarn (2003), Mitchell (2005), Gani (2010).

The next section proceeds with a discussion of these results and compares the empirical evidence obtained with other experimental studies.

7.4.2 Exports

The analyses indicate that total exports have a strong positive influence on the economic growth of the UAE. Similar to the Saudi Arabia results, this positive correlation between total exports (X_T) and the economic growth is consistent with most previous studies, including Asseery and Al-Sheikh (2004), Safdari et al. (2011), Dizaji (2012). The results also support key growth theories, notably by the Classical and Keynesian economic schools of thought. The positive effect on economic growth does not change when the economy is divided into the two main sectors: oil and non-oil. However, these results run completely contrary to the Saudi economy (as described in the previous chapter) where the impact of non-oil exports on economic growth was found to be very weak.

In the oil sector economic growth model, the impact of exports was very high and significant. This result is similar to the analysis of the Saudi economy and also supported by several studies in oil-rich countries such as Tuwaijri (2001) for Saudi Arabia; Anaman (2004) for Brunei Darussalam; Asseery and Al-Sheikh (2004) for Saudi Arabia. However, it contrasts with studies like Stijns (2005), Safdari et al. (2011), Dizaji (2012), who reported a negative relationship between a natural resource such as oil and economic growth. However, as mentioned in the Saudi analysis in Chapter Six, perhaps the main reason for this result is the negative effects of Iran undergoing an embargo of its oil exports (Safdari et al., 2011).

For the non-oil sector model, the impact of non-oil exports was found to be very strong in the UAE, in contrast to the Saudi economy. Thus, this result supports several studies in oil-rich countries such as Aljarrah (2008) for Saudi Arabia and Olayiwola and Okodua (2013) for Nigeria, whereas it contrasts with the findings in other studies that there is a negative relationship between non-oil exports and economic growth (e.g. Tabari and Nasrollahi, 2010 for Iran). The war between Iran and Iraq (1980-1988), in

addition to the blockade imposed on Iran in recent years, is the possible cause of this negative relationship. During this war, the military industry in Iran took priority over export-based industries. In addition, the Iranian government transformed the labour force from the non-oil industries to military ones, creating negative effects on non-oil exports.

Overall, the study confirms that exports, whether oil or non-oil, play a key role in the UAE economy and in determining the course of growth as well as development in the UAE in general.

7.4.3 International tourism

International tourism is the second most important factor, due to its relevance in both the whole economic model as well as in the non-oil sector. However, these results were somewhat different from those of the Saudi economy, particularly in the whole economy. More specifically, the importance of tourism for the UAE economy appears in both models and is statistically significant at 5% in both the main model and the third model for the non-oil sector (4.72 and 5.98 respectively – see Table 7.12). This gives support for the argument that tourism has a positive influence on the UAE economy, as stated in most empirical studies (Brau et al., 2007; Schubert et al., 2011; Tiwari, 2011). Clearly, tourism has a positive impact on economic growth (GDP). Therefore, the increased influence of the international tourism sector is visible in the economy. The effects are also symptomatic of the effects of oil exports, which proves that the government is attempting to diversify their sources of income and not rely on a single variable. This is consistent and compatible with many empirical studies (see Cortés-Jiménez and Pulina, 2006; Brau et al., 2007; Schubert et al., 2011; Tiwari, 2011). On the other hand, although the UAE appears to play a growing role in the field of tourism, the empirical tourism literature has neglected this country.

In general, these results show the effect that both the oil and non-oil sectors have over the growth of the UAE economy. This is particularly evident in the first model, which illustrates the strength of the tourism variable in relation to the oil variable, given that it has proven to be the second most influential variable after exports.

The discussion of these different results in regard to the international tourism variable between Saudi Arabia and the United Arab Emirates will be discussed in depth in the next chapter.

7.4.4 Government spending

Turning to government spending, the results are different from both the Saudi Arabia analyses in Chapter Six and several empirical studies in oil-rich countries (Albatel, 2000; Tuwaijri, 2001; Anaman, 2004; Asseery and Al-Sheikh, 2004; Dizaji, 2012) (for more details please see Chapter 3). However, a study by Ghali (2000) for Saudi Arabia supports this result and concurs with some theories (the classical thought, led by Adam Smith, for example), which oppose such an intervention in the economy and call for free markets and non-interference from the state. However, the Keynes' idea is quite different; it proposes that government spending is one of the main factors affecting economic growth. With regards to studies on this issue in developed and less developed countries, the results are mixed (see Chapters Three and Six).

The fundamental differences in the relationship between government spending and economic growth for the biggest economies in the Gulf and the Arab world will be discussed in depth as part of a detailed analysis in Chapter Eight.

7.4.5 The labour force

Regarding the labour force variable in the UAE, the coefficient is positive in all models except the second (oil-sector); this is similar to the results of the Saudi economy (Chapter Six). However, the effect of this variable on economic growth has been found

to be weak in all three models, with t-statistic values of 0.54, 1.59 and 0.06, respectively. These results create uncertainty over the role of this variable in economic growth in the UAE, where the labour force has importance to the Saudi economy in the main model and the non-oil sector, yet the Saudi and UAE labour force in the oil sector share a common negative impact on economic growth. This impact was, however, statistically non-significant, suggesting that the labour force in the oil industries of oil states, particularly Saudi Arabia and the UAE, is not important to economic growth. In Algeria and Nigeria (both oil-rich countries), studies by Jedi (2012) and Onodugo et al. (2013) respectively confirmed the existence of a negative relationship between the labour force and economic growth.

Linking these issues to one another is very important if a broader understanding is to be achieved. As mentioned in Chapter Four, the numbers working in the oil-sectors barely reach 2% of the national workforce in several petroleum-exporting countries, including Saudi Arabia and the UAE (see, for instance, the National Bureau of Statistics (2014) for the UAE and the Central Department of Statistics and Information for Saudi Arabia). According to the UAE National Bureau of Statistics (2014), workers in the oil and gas sectors between 1990 and 2000 did not exceed approximately 2% of the total labour force (see Chapter Four, Table 4.7). This gives a significant justification of its marginal importance in economic growth; its impact is, however, stronger in the non-oil sectors. Hence, as already noted in the case of the Saudi economy in Chapter 6, the negative relationship in the oil sector confirms that technology has a negative impact on some sectors, particularly the labour force, in oil-rich countries.

7.4.6 Investment

As with the findings for the Saudi economy in Chapter Six, the positive relationship between investment and economic growth in the UAE confirms the hypotheses of economic growth theories (such as the Solow-Swan growth theory and the Romer and

Lucas theory) and most of the empirical studies in both developed and developing countries (such as Serven and Solitnano, 1992; Khan and Kumar, 1997; Sinha, 1997; Elena and Gaetano, 2001; Podrecca and Carmeci, 2001; Anaman, 2004; Asheghian, 2004; Awokuse, 2007; Safdari et al., 2011; Dizaji, 2012). Investment plays a role in boosting growth, as mentioned above. However, in Asseery and Al-Sheikh's (2004) study, who examined the relationship between several variables including capital and economic growth in the Saudi economy, it is not positive. They disagree that investment leads to economic growth. This result is, however, contrary to the economic theories and previous studies, casting doubt into the analysis methods they used.

With regard to private and public investment, private investment was found to have a positive long-term impact on economic growth. The estimated results show the significance and importance to the UAE's economy of this variable in the non-oil sectors. This variable ranked third after tourism and non-oil exports in terms of positive and significant impact on the GDP. This result also agrees with economic theories and supports many applied studies (see, for example, Prochniak, 2011; Dobronogov and Iqbal, 2005; Chen and Feng, 2000). Within this framework, the study illustrates that there is a lack of testing of the relationship between private investment and economic growth in the UAE.

As for public investment, as mentioned before, this factor is most closely associated with the previous variable because both are parts of non-oil sectors. It has, however, a negative impact on the long-term economic growth of the UAE and is statistically non-significant. This result agrees with applied studies such as Devarajan et al. (1996), Cavallo and Daude (2001), Everhart and Sumlinski (2001), Swaby (2007). However, this argument is contrary to other studies, which believe that public investment has a positive impact and leads to enhanced economic growth (e.g. Gwartney et al., 1998; Vu Le and Suruga, 2005; Hammond and Thompson, 2006). Hence, this fundamental

difference in the impact of public investment for economic growth, in both Saudi Arabia and the UAE, will be discussed in the next chapter, as well as opinions about why the possible causes of this effect are different.

As for the short-term results of the error correction model, these are summarised in Table 7.13. Although total exports (X_T) and investment in the oil sector (K_O) are positive and statistically significant in the long-term estimated equations (see the summary on Table 7.14), they are not significant in the short-term. Labour force in the oil sector (L_O) also has a negative, but insignificant, influence in the short and long-term. All other variables are found to differ in their short and long-term impacts; this suggests that development and economic growth in oil-producing countries depend on long-term strategic planning. A recent report from the International Monetary Fund IMF (2014) for economic diversification in the GCC confirmed this through a number of examples of long-term impacts in a number of countries, including Mexico, Indonesia and Malaysia. Particularly, Malaysia took more than twenty years to achieve its goals and arrive at an advanced economic level.

Finally, with respect to the non-oil sector growth model, the most important variables as discussed above were international tourism, followed by non-oil exports; private investment was found to have the least effect. Public investment had a negative impact and is thus ineffective. With regard to the labour force in the non-oil sector, this variable has a positive (but weak) impact, as discussed earlier in this section.

It can be concluded that the UAE economy should continue to support non-oil sectors, particularly tourism, non-oil exports and private investment, as economic history has proven that oil cannot be depended upon. The government in the UAE can stimulate these important non-oil sectors through the provision of financial support and a suitable environment, given that these variables have proven their importance in this study. Hence, the enhancement of private investment, tourism and non-oil exports is a

particularly pressing subject when planning the future economic policies of the UAE. The outcomes of this research may therefore be of considerable value to the country's economic planners and their long-term economic strategies. Also, these results for the UAE economy confirm the results of the Saudi economy, which found that the exclusion of the main variables in the non-oil sectors and exclusive focus on the role of oil exports as the engine of economic growth might lead to considerably misleading economic outcomes. Table 7.14 contains the results of hypothesis testing for the UAE economy.

Table 7.14: UAE: Hypothesis Testing outcomes for Economic Growth

Symbols		***Hypotheses***	***UAE***
		The whole economy	
H_1a:	X_T	*Total exports have a positive effect on economic growth*	*Yes**
H_1b:	G	*Government spending has a positive effect on economic growth*	*No support*
H_1c:	T	*Tourism has a positive effect on economic growth*	*Yes*
H_1d:	L_T	*Total employees have a positive effect on economic growth*	*No support*
H_1e:	K	*Capital has a positive effect on economic growth*	*Yes*
		Oil sector	
H_2a:	X_O	*Oil exports have a positive effect on economic growth*	*Yes*
H_2b:	G	*Government spending has a positive effect on economic growth*	*No support*
H_2c:	K_O	*Oil investment has a positive effect on economic growth*	*Yes*
H_2d:	L_O	*Employees in the oil sector have a positive effect on economic growth*	*No support*
		Non-oil sector	
H_3a:	PI_N	*Private investment has a positive effect on economic growth*	*Yes*
H_3b:	PG_N	*Public investment has a positive effect on economic growth*	*No support*
H_3c:	L_N	*Employees in the non-oil sector have a positive effect on economic growth*	*No support*
H_3d:	T	*Tourism has a positive effect on economic growth*	*Yes*
H_3e:	X_N	*Non-oil exports have a positive effect on economic growth*	*Yes*

*Yes: refers to support of the hypothesis.

7.5 Summary: UAE Analysis

The analyses in this chapter have focused on the UAE's economic growth, starting with stationarity tests. The results of the unit root tests, based on ADF and PP, proved that all selected variables are integrated of order I (1). This led to a co-integration test according Johansen approach, which found that there are, respectively, three, one and two co-integrating vectors between GDP growth and other variables in the three models, using the lag length determined by the AIC. Consequently, the existence of a long-term relationship between the economic variables becomes apparent.

These findings indicate that the UAE economy is more diverse than that of Saudi Arabia. This is particularly evident in the first model, which illustrates the strength of the tourism variable in the model, the impact of which was second after exports.

This study's results support the positive impact of exports (total, oil and non-oil sectors), as well as capital, which is also compatible with economic theory. Overall, the labour force has performed below expectations in the main model and the non-oil sector model, while its impact was negative in the oil sector. The results also found that government spending and public investment have a negative impact on economic growth.

It can be concluded that the UAE economy should focus on non-oil sectors for many reasons, the most important of which is the fact that they have proven to have a positive economic impact. This confirms the need to continue to support these sectors so as to achieve a divergence from the reliance upon oil resources (oil and gas) and enhance the potential for long-term sustainable growth and development.

Finally, it seems that the majority of selected variables had a stronger impact on the long-term than the short-term. This confirms the results found for the Saudi economy. The fact that both countries (Saudi Arabia and the UAE) are still developing economies

accounts for this. Economic growth typically takes a long time to make its impact felt in such a case.

8

COUNTRY COMPARISON

CHAPTER EIGHT: COUNTRY COMPARISON

8.1 Introduction

As noted in chapter four, the GCC economies, most notably Saudi Arabia and the United Arab Emirates, are renowned for their abundant natural resources, especially oil. However, such resources are not sufficient in pushing the wheels of progress and prosperity in these states. Ignorance of this fact when addressing a GCC nation's growth and economic development may lead to many undesirable outcomes, not the least of which would be the negative economic and political impact.

The last two chapters analysed and discussed some of the factors underlying growth in the Saudi Arabia and the UAE's economies. It could be argued that the results, in the case of Saudi Arabia, emphasised the heavy reliance of the country's economy on oil and its derivatives, whereas in the UAE the economy is more diverse, relying on both oil and non-oil sectors. In this chapter the analysis is extended further by the use of a multi-group approach to carefully examine whether the estimated models in chapters 6 and 7 are significantly different. That is, whether the variables influencing economic growth in the three set of models are significantly different between the two countries. Such an analysis helps the other members in the GCC to clearly identify the appropriate path for the long-term sustainable growth and development of their countries. Further, it provides a comparison of the degrees of influence of variables on economic growth between Saudi Arabia and the UAE, highlighting the presence or absence of significant differences.

The rest of the discussion is organized into three main sections, beginning with a comparative discussion of the estimated models in chapters 6 and 7 for Saudi and the UAE respectively and focusing on long and short-term relationships. The second section then applies the multi-group analysis (MGA) to examine the difference in the estimated results, while the last section will address the third research question.

8.2 Multivariate Johansen test in the long and short term

Tables 8.1 and 8.2 present a comparative summary of the estimated long-term relationships for each of the three models in both Saudi Arabia and the UAE. This section will show the results found in the two economies in both long- and short term by highlighting differences and similarities in the variables included in both countries. The section will also identify and examine the variables with stronger effects. The following tables will present a brief overview of the analysis conducted in chapters Six and Seven, which will be discussed in the next section (Section 8.3).

Table 8.1: Summary of the variables' behaviour in the long-term (SA and the UAE)

Variable Definition	*Symbols*	*Relationship*	*Statistic*		*Order*
(SA)		***Model I: The whole economy***			
Total Exports	X_T	+	*(7.72)*	significant	1
Government Spending	G	+	*(3.14)*	significant	2
Tourism	T	+	*(0.21)*	non-significant	3
Total Labour force	L_T	+	*(4.96)*	significant	n/a*
Capital	K	+	*(7.71)*	significant	n/a
(UAE)					
Total Exports	X_T	+	*(12.21)*	significant	1
Tourism	T	+	*(4.72)*	significant	2
Government Spending	G	-	*(7.05)*	significant	-
Total Labour force	L_T	+	*(0.54)*	non-significant	n/a
Capital	K	+	*(2.86)*	significant	n/a
(SA)		***Model II: Oil sector***			
Oil-Exports	X_O	+	*(8.81)*	significant	1
Investment in oil sector	K_O	+	*(4.00)*	significant	2
Government Spending	G	+	*(3.14)*	significant	3
Employees in oil sector	L_O	-	*(0.06)*	non-significant	n/a
(UAE)					
Oil-Exports	X_O	+	*(21.91)*	significant	1
Investment in oil sector	K_O	+	*(9.74)*	significant	2
Government Spending	G	-	*(2.15)*	significant	-
Employees in oil sector	L_O	-	*(1.59)*	non-significant	n/a
(SA)		***Model III: Non-oil sector***			
Private Investment	PI_N	+	*(3.91)*	significant	1
Tourism	T	+	*(2.96)*	significant	2
Public Investment	PG_N	+	*(5.09)*	significant	3
Non-oil exports	X_N	+	*(1.38)*	non-signifiant	4
Employees in non-oil sector	L_N	+	*(3.36)*	significant	n/a
(UAE)					
Tourism	T	+	*(5.98)*	significant	1
Non-oil Exports	X_N	+	*(8.58)*	significant	2
Private Investment	PI_N	+	*(2.02)*	significant	3
Public Investment	PG_N	-	*(1.05)*	non-significant	-
Employees in non-oil sector	L_N	+	*(0.06)*	non-significant	n/a

*n/a: Not applicable. The numbers in brackets are the t-statistic. The order in which they appear reflects the order of importance of the variables.

Table 8.2: Summary of the variables' behaviour in the short-term (SA and the UAE)

Variables	*Model 1*		*Variables*	*Model 2*		*Variables*	*Model 3*	
	Co.	*t-St.*		*Co.*	*t-St.*		*Co.*	*t-St.*
SA								
EC_{t-1}	-0.49	-3.74	EC_{t-1}	-0.39	-2.15	EC_{t-1}	-0.53	-3.86
D (LGDP(-1))	0.39	1.84	D ($LGDP_O$(-1))	0.49	1.53	D ($LGDP_N$(-1))	-0.05	-0.26
D (LL_T(-1))	0.01	0.18	D (LL_O(-1))	-0.53	-1.81	D (LL_N(-1))	-0.14	-0.78
D (LK(-1))	-0.08	-2.32	D (LK_O(-1))	0.08	1.30	D (LPG_N(-1))	0.01	1.01
D (LG(-1))	0.06	1.29	D (LX_O(-1))	-0.41	-1.45	D (LPI_N(-1))	0.09	1.64
D (LX_T(-1))	0.12	2.00	D (LG(-1))	0.05	0.35	D (LX_N(-1))	-0.01	-0.38
D (LT(-1))	-0.02	-0.49	C	0.35	1.31	D (LT(-1))	-0.10	-2.15
C	0.01	1.83	-	-	-	C	0.11	4.67
R-squared	0. 69		R-squared	0.27		R-squared	0.96	
F-statistic	9.35		F-statistic	1.71		F-statistic	24.17	
The UAE								
EC_{t-1}	-0.39	-2.29	EC_{t-1}	-7.73	-3.07	EC_{t-1}	-1.00	-3.42
D (LGDP(-1))	-0.08	-0.23	D ($LGDP_O$(-1))	2.03	1.32	D ($LGDP_N$(-1))	0.42	1.51
D (LL_T(-1))	-0.11	-0.30	D (LL_O(-1))	0.38	0.86	D (LL_N(-1))	0.81	2.89
D (LK(-1))	-0.09	-0.51	D (LK_O(-1))	0.08	-2.63	D (LPG_N(-1))	0.07	0.83
D (LG(-1))	0.02	0.21	D (LX_O(-1))	-1.70	-1.14	D (LPI_N(-1))	-0.19	-2.38
D (LX_T(-1))	0.04	0.25	D (LG(-1))	-0.33	-1.18	D (LX_N(-1))	-0.21	-2.01
D (LT(-1))	-0.12	-0.41	C	0.02	0.36	D (LT(-1))	-1.23	-2.59
C	0.07	1.96	-	-	-	C	0.07	1.63
R-squared	0. 39		R-squared	0.71		R-squared	0.83	
F-statistic	1.29		F-statistic	1.73		F-statistic	3.60	

where: D refers to the first differences; EC_{t-1} is the error correction term; Co. is coefficient and t-St. is t-statistic.

As shown in Tables 8.1 and 8.2, this research provides tangible evidence that most of the variables in both countries had a stronger influence in the long-term than the short-term. Hence, this research posits that the process of economic growth in these two oil-rich countries (as two of the developing OPEC member countries) needs to focus on the long-term variables. Particularly, Table 8.1 shows that exports (total and oil-sector) and investment (total and oil investment) in the first and second models had similarly positive impacts on the economic growth of the two countries, followed by tourism and private investment. This means that an increase in one of these factors will lead to a positive increase in economic growth in both countries. However, the MGA will be employed in the next section to clarify whether or not there is a significant difference between the estimated coefficients in the two countries.

Government spending and public investment impacts were positive on the growth of the Saudi economy, yet negative on the UAE's. This will be discussed in depth later in this chapter (See Section 8.4.2). The influence of labour force in the oil sector was non-significant in both countries. As a result, the following sections will be limited to the long term and will use a MGA to support the findings found in chapters six and seven, relating to the difference and similarities between the estimated models for the two countries.

8.3 The Multi-group Analysis

Prior to conducting the MGA it is important to note that not all variables are included in this test. In fact, there were three variables whose effects in the two countries were initially distinct and hence their difference is already established and does not need to be assessed through a MGA. On the other hand, there were several variables producing similar effects on economic growth in both countries (negative or positive). Therefore, in such a case a MGA is needed to assess whether these effects are significantly different (statistically) amongst the two countries. The next sub-section will discuss the results of the MGA using the outcomes of the Johansen tests for each of the main models respectively – both the oil and the non-oil sector models.

8.3.1 Multi-group analysis results: Main model (Whole economy)

As can be seen in Table 8.1, there were three variables in the Johansen approach that can be compared, namely: total exports, government spending and investment. These were all statistically significant and had similarly positive effects in both Saudi Arabia and the UAE (government spending was an exception). Nonetheless, the Multi-group analysis discovered that there were significant differences with regard to the strength of the relationship between these three variables and economic growth. The results also confirm that the effect on the UAE was stronger than the effect on Saudi Arabia for total exports, whereas the effect of government spending was stronger on Saudi Arabia.

With regard to the investment variable, the results confirmed that the effects of investment in Saudi Arabia and the UAE were not statistically different. Table 8.3 presents the results of the test comparisons for the whole economy, using a Multi-group analysis.

Table 8.3: Path coefficient comparison between Saudi Arabia and The UAE
(The whole economy)

Hypothesis	*Saudi Arabia Economy*		*The U.A.E Economy*		*T- Test*	*P-Value*
	Coefficients	*SE (S_1)*	*Coefficients*	*SE (S_2)*	*(T_{12})*	
The whole economy						
K ⟶ GDP	0.274 (7.71)	0.035	0.262 (2.86)	0.091	0.1231	0.4512
X_T ⟶ GDP	0.218 (7.72)	0.028	0.607 (12.21)	0.049	-6.8928	0.0000
G ⟶ GDP	0.116 (3.14)	0.037	-0.442 (7.05)	0.062	7.7284	0.0000

Notes: *S.E.* is estimated standard error and t-statistic in parenthesis.

According to the above table, the estimated *P*-values (< 0.05) show that the path coefficients are significantly different for two variables (X_T and G), which means that the impact of these variables on economic growth are significantly different between Saudi Arabia and the UAE. $P > 0.05$ for the investment variable (K), showing that the path coefficient is similar and that there is no significant difference between Saudi Arabia and the UAE.

The impact of a 1% change of total exports (X_T) on economic growth in the UAE is about 0.61% ($\beta = 0.607$). This is greater than in Saudi Arabia, which is only 0.22% ($\beta = 0.218$). Government expenditure (G) has a much larger impact on economic growth in Saudi Arabia ($\beta = 0.116$) than on the UAE, where the impact is actually negative ($\beta = -0.442$). In contrast, the positive effect of capital (K) on economic growth in Saudi Arabia ($\beta = 0.274$) was similar in the UAE ($\beta = 0.262$) due to the respective low P-values of 0.4512 (Table 8.3). The next section examines the differences in the oil sector's economic growth models.

8.3.2 Multi-group analysis: Oil-sector model

The empirical evidence found on Table 8.1 for the Johansen test showed that there are three variables requiring comparison: oil exports, oil-investment and government spending, given that these three factors were statistically significant. With regard to the other variables, the difference in the effect occurring in both countries was clear. Comparing the two results in Table 8.4, it can be seen that the effect in the UAE was stronger than the effect in Saudi Arabia for both oil exports and oil investment, whilst government spending was stronger in Saudi Arabia. All these results will be discussed in Section 8.4.1.

Table 8.4: Path coefficient comparison between Saudi Arabia and The UAE (Oil sector)

Hypothesis	*Saudi Arabia Economy*		*The U.A.E Economy*		*T-Test* (T_{12})	*P-Value*
	Coefficients	*SE* (S_1)	*Coefficients*	*SE* (S_2)		
			The oil sector			
$K_O \longrightarrow GDP_O$	0.225 (4.00)	0.056	0.417 (9.74)	0.042	-2.7429	0.0039
$X_O \longrightarrow GDP_O$	0.642 (8.81)	0.072	0.899 (21.91)	0.041	-3.1018	0.0014
$G \longrightarrow GDP_O$	0.197 (2.71)	0.073	-0.118 (2.15)	0.055	3.4464	0.0005

Notes: *S.E.* is estimated standard error and t-statistic in parenthesis.

Table 8.4 reflects the fact that these three variables (K_O, X_O and G) have a positive impact on economic growth in both Saudi Arabia and the UAE, with the exception of government spending in the UAE, which has a negative effect on its economic growth. The MGA shows that the path coefficients are significantly different for all variables ($P < 0.05$), which means that the effect of these three variables on the economic growth are significantly different between the two countries.

The impacts of a 1% change of oil exports (X_O) and oil investment (K_O) on economic growth in the UAE are approximately 0.90% and 0.42% respectively. These were greater than in the Saudi Arabia economy (0.64% and 0.23% respectively). As in the first model, the impact of the government spending variable was different, where its

effect on the Saudi Arabian economy (β = 0.197) was larger than in the UAE economy (β = - 0.118).

8.3.3 Multi-group analysis: Non-oil sector model

The MGA for the non-oil sector model includes private investment and tourism. Table 8.5 confirms that the impact of international tourism on the UAE was stronger than the effect in Saudi Arabia, whilst there was no difference in the impact of private investment in both Saudi Arabia and the UAE.

Table 8.5: Path coefficient comparison between Saudi Arabia and The UAE (Non-oil sector)

Hypothesis	*Saudi Arabia Economy*		*The U.A.E Economy*		*T- Test (T_{12})*	*P-Value*
	Coefficients	*SE (S_1)*	*Coefficients*	*SE (S_2)*		
The non-oil sector						
$PI_N \longrightarrow GDP_N$	0.179 (3.91)	0.045	0.087 (2.02)	0.043	1.4781	0.0719
$T \longrightarrow GDP_N$	0.145 (2.96)	0.049	0.492 (5.98)	0.082	-3.6326	0.0003

Notes: *S.E.* is estimated standard error and the t-statistic is in parenthesis.

From Table 8.5, the effect of international tourism (T) was positive on the economic growth of both countries. However, the relative importance was clearly substantially greater in the UAE economy (β = 0.492) than it was in the Saudi Arabia economy (β = 0.145). Thus, the impact of a 1% change of tourism (T) on economic growth in the UAE is about 0.49%, which was greater than in Saudi Arabia (0.14%).

Turning to private investment, there were also positive effects on the economic growth of Saudi Arabia and the UAE from (PI_N). However, the influence in the UAE and Saudi Arabia was not statistically different (P = 0.0719). Hence, Table 8.6 presents a summary of the results of the hypotheses for the variables included in the study for all three models:

Table 8.6: A comparative hypothesis testing outcomes for Saudi Arabia and the UAE

Symbols		***Hypotheses***	***SA***		***UAE***
		The whole economy			
H_1a:	*X_T*	*Total exports have a positive effect on economic growth*	*Yes*	<	*Yes*
H_1b:	*G*	*Government spending has a positive effect on economic growth*	*Yes*	>	*No support*
H_1c:	*T*	*Tourism has a positive effect on economic growth*	*No support*	<	*Yes*
H_1d:	*L_T*	*Total employees have a positive effect on economic growth*	*Yes*	>	*No support*
H_1e:	*K*	*Capital has a positive effect on economic growth*	*Yes*	<	*Yes*
		Oil sector			
H_2a:	*X_O*	*Oil exports have a positive effect on economic growth*	*Yes*	<	*Yes*
H_2b:	*G*	*Government spending has a positive effect on economic growth*	*Yes*	>	*No support*
H_2c:	*K_O*	*Oil investment has a positive effect on economic growth*	*Yes*	<	*Yes*
H_2d:	*L_O*	*Employees in the oil sector have a positive effect on economic growth*	*No support*	=	*No support*
		Non-oil sector			
H_3a:	*PI_N*	*Private investment has a positive effect on economic growth*	*Yes*	=	*Yes*
H_3b:	*PG_N*	*Public investment has a positive effect on economic growth*	*Yes*	>	*No support*
H_3c:	*L_N*	*Employees in non-oil sector have a positive effect on economic growth*	*Yes*	>	*No support*
H_3d:	*T*	*Tourism has a positive effect on economic growth*	*Yes*	<	*Yes*
H_3e:	*X_N*	*Non-oil exports have a positive effect on economic growth*	*No support*	<	*Yes*

Note: (1) 'Yes' refers to support of the hypothesis; (2) '=' implies no significant difference between estimated coefficients; (3) '>' implies the estimated coefficient is significantly larger for Saudi Arabia than the UAE; (4) '<' implies that the estimated coefficient is significantly lower for Saudi Arabia than the UAE.

8.4 Discussion of the Multi-group Analysis Results

This section will discuss the results of the MGA between Saudi Arabia and the UAE and will therefore answer the third research question of this study which is "How does the economic impact of the oil and non-oil industries in Saudi Arabia compare with that of the United Arab Emirates?" The section will be structured as follows. The first sub-section will compare the role of oil sectors in both Saudi Arabia and the UAE whereas the second sub-section will contrast the influence of non-oil sectors in these two countries. With regard to the last question (Q4), which is "How can policy makers in the Arabian Gulf States, which are similar in their economies to Saudi Arabia and the UAE, reduce the negative effects arising from dependence on oil?" Chapter Nine will answer this within the recommendations section.

8.4.1 The role of the oil industry in the Saudi economy in comparison with the UAE

The results show that all the variables in the oil sector model have almost the same impact in Saudi Arabia as they do in the UAE, except government spending. The analysis also confirms the importance of exports to economic growth in Saudi Arabia and the UAE, as suggested by theoretical and empirical evidence. The result is in line with most studies on oil-rich countries (Anaman, 2004; Asseery and Al-Sheikh, 2004; Dizaji, 2012). It is clear that in both Saudi Arabia and the UAE, the impact of the oil-sector was highly prominent. This became more evident when the economy was divided into two parts (oil and non-oil), with estimated results showing that oil exports were in fact responsible for this growth, whereas the impact of non-oil exports on economic growth was different across the two countries – this will be explained in the next section (non-oil sector).

With regard to the comparison between the two countries and according to the Multi-group analysis test, it became clear that although both had a positive effect on economic growth, total exports and oil exports in the UAE had greater influence on economic growth than in Saudi Arabia. Similarly, the impact of investment in the oil sector was greater in the UAE than in Saudi Arabia. However, the influence of government spending on economic growth was found to be positive in Saudi Arabia, yet negative in the UAE. As for the total labour force, while this had a positive and significant impact on economic growth in Saudi Arabia, in the UAE, no effect was noticed. However, the influence of labour force in the oil sector was non-significant in both countries.

The next section proceeds to focus on the most important of these influences and how they differ between the two countries. Government spending, labour in the oil sector and oil exports receive particular emphasis.

8.4.1.1 Oil Exports

The results of the impact of total exports in general and oil exports in particular concur with most studies (see Tyler, 1981; Chow, 1987; Barro, 1996; Pahlavani, 2005; Hsiao and Hsiao, 2006; Awokuse, 2007; Kogid, 2010; Tiwari, 2011), including those studies that specifically address oil-rich countries (see Anaman, 2004; Asseery and Al-Sheikh, 2004; Dizaji, 2012, (as discussed in Chapters Six and Seven)). As for the Multi-group analysis test, this shows that oil exports affect economic growth in the UAE more than Saudi Arabia. Such a result may be owing to the fact that compared with the UAE, in Saudi Arabia, more oil revenues are spent in non-productive social aspects such as education and health. This is due to several factors behind this from which the differences between the two countries in terms of population size, governmental aids and security expanses. In fact, the population in Saudi Arabia is greater than the UAE and all other GCC countries (see Table 4.1 in Chapter Four) and the country is spread across a very large area. This undoubtedly affects the volume of spending in such non-

productive areas (see Table 8.7). Second, there have been large contributions from the Saudi government to humanitarian aspects nationally and internationally, as in the case of Syria, Yemen and certain African countries, such as the aid offered to refugees from countries like Syria and Iraq. This aid has no economic return. Finally, the fight against terrorism costs considerable amounts of money. These and other factors result in the employment of vital resources for non-productive purposes.

By contrast, revenues of oil in the UAE have been used in more productive aspects. For instance: investing in economy-enhancing assets, such as ports and airports. These have helped to reduce unemployment and increase per capita income (see Table 8.7). The country has also reduced the role of the public sector in the economy and granted the private sector a greater role in the production process, which has eased the burden on the state (see Table 8.8).

Overall, having a high-income status does not necessarily have a positive impact on economic growth. A good example of this is Nigeria, where exports of oil are high resource base, yet economic growth is weak. In contrast, Botswana is a small country with limited resources, yet its economy is growing rapidly (BBC, 2013).

8.4.1.2 Labour Force

Turning to the labour force in the oil sector, results have clearly shown that its influence was non-significant in both countries. This is not in line with the majority of the economic growth theories and empirical studies (See Chapters 2 and 3).

The main reason for this contradictory result is perhaps the questionable quality of the data published, given that these statistical figures were merely estimated but not based on accurate data (see, for example, the Ministry of Planning in Saudi Arabia, 2008; International Monetary Fund, 2012). However, this relationship, although statistically non-significant, is the logical consequence of the fact that the oil sector depends on

technology rather than labour force. Studies on economic growth in the literature (see Chapter Three) do not seem to provide any specific model for the oil industry that can be used in studying the economic factors in the oil sectors to enhance economic growth. Some studies (e.g. Jedi 2012) in oil-producing countries have shown the weakness of the relationship between the total labour force and economic growth (see Chapter Six, Section 6.4.5 and Chapter Seven, Section 7.4.5).

8.4.1.3 Government Spending

With regard to government spending, the results are significantly different between the two countries. Its impact was supportive of the Saudi economy, but it did not have this effect in the UAE and rather indicated a negative influence. This reflects the debatable role of government acknowledged in the literature. On the one hand, the positive influence found in Saudi Arabia is the line with Keynesian thought as well as a large group of empirical studies (Tuwaijri, 2001; Anaman, 2004; Asseery and Al-Sheikh, 2004; Onafowora, 2007; Dash and Sharma, 2008; Kogid et al., 2010; Nurudeen and Usman, 2010; Safdari et al., 2011; Trpkova and Tashevska, 2011; Dizaji, 2012; Al-Fawwaz, 2016). On the other hand, the negative influence noticed in the UAE is consistent with Adam Smith's theory as well as other empirical studies (Ghali, 1997; Abu-Bader and Abu-Qarn, 2003; Mitchell, 2005; Gani, 2010) which stand against government intervention.

Overall, it seems that the impact of government spending on economic growth in oil-producing countries is indecisive. There are several studies on the same country with different results. For example, in Saudi Arabia, Albatel (2000), Asseery and Al-Sheikh (2004) proved that there was a positive relationship, while Gani (2010) found the opposite. The difference in the periods of the study or in the methodologies used may account for this. In fact, it could be due to the way government spending is measured and the types of expenditures included in this variable. However, it gives us an

indication of the key relationships to explore in future studies, including the importance of investigating the direct and indirect impacts when studying the relationship between government spending and economic growth.

So, there is a lack of consensus in the nature of the relationship between government spending and economic growth in both economic theories and empirical results, not only in oil-producing countries but in *all* nations (see chapters Three and Four). It seems, therefore, that one cannot predict the role of government spending on economic growth. Therefore, the differing relationships found in this study may not be surprising. Debates about this issue stem from both the study outcome and existing expert opinions and there are several possible explanations for the results that have been obtained.

In fact, there are two explanations for this potential disparity in the outcome. First, according to economic theories (such as Keynesian and Romer-Lucas) government spending increases economic growth (See Chapter Two). Hence, based on this principle and given the high expenditures by the Saudi government, it is believed that the positive and significant effect of such expenditure on economic growth goes in line with the aforementioned economic theories. As for the negative effect obtained in the UAE between these two variables, this could be explained by the difference in size of expenditures between Saudi Arabia and UAE (measured through the ratio of government consumption to GDP). In fact, compared to Saudi Arabia, government spending is a small proportion of GDP (See Table 8.7) and consequently, due to this small value, it could be suggested that its "expected" positive impact on economic growth cannot be perceived (Mueller and Stratmann, 2003).

Having acknowledged the positive effect on the Saudi economy higher government spending is not a healthy sign for the economy, since most of the revenue for this spending comes from the process of selling a single product (oil), which would have repercussions on the per capita GDP output and unemployment rate (Mitchell, 2005;

Stratmann, 2010) (See the following table). More precisely, 90% of the Saudi economy depends on oil revenues and this revenue is pumped into the state by government spending (see Chapter Five).

Table 8.7: The ratio of government consumption expenditure to GDP, per capita GDP and unemployment rate (US $)

Countries and Years	*Saudi Arabia*			*UAE*		
	2009	*2010*	*2011*	*2009*	*2010*	*2011*
Ratio of government consumption expenditure to GDP (%)	25.50	23.32	21.96	9.54	8.53	7.31
Per capita GDP (US$?)	15,655	18.754	23.256	32,905	34.341	39.778
Unemployment Rate (%)	10.5	11.2%	12.4	4.2	4.3	4.6

Sources: World Bank (2015); Saudi Arabian Monetary Agency (SAMA) (2012); National Centre for Statistics in the UAE (2015).

Second, this inconsistency in the results between the two countries could be attributed to the period of time under which these have been studied. The study period for Saudi Arabia started in 1970, while the United Arab Emirates analysis began in 1980. The excluded ten years in the UAE's study (1970 to 1979) were critical as in these years the UAE was dramatically dependent on oil, with oil profits accounting for 90% of its economic income by 1971; and this may have affected the research outcome.

To summarise, despite the prominent role of the oil sector and the fact that it is the cause of the economic boom in the GCC during recent decades, GCC countries' reliance on oil also creates challenges such as the low level of employment in the oil industry. Reliance upon a single source of income subjects a country to external factors that are difficult to predict. The current analysis confirms that higher government spending may not necessarily reflect the strength and robustness of the economy.

8.4.2 The role of key non-oil sectors in Saudi Arabia and the UAE

Having focused on the role of the oil industry in economic growth and presented it as the driving force behind the GCC economic growth, it should be acknowledged that oil does not guarantee sustainable economic development for reasons mentioned

previously. However, most oil-rich countries (including SA) are heavily dependent on oil resources and the only way out of this problem is to diversify to non-oil sectors, which rely on internal domestic factors, given that these are easier to control. The key non-oil sectors (most notably tourism, private investment and non-oil exports) are the variables that proved useful in supporting and driving the process of economic growth, as previously stated in Chapter Three. However, in this respect the results between Saudi Arabia and the UAE differ.

Through the Multi-group analysis, it became clear that although both non-oil exports and tourism had a positive impact on economic growth, they had a greater influence in the UAE than in Saudi Arabia. Moreover, public investment had a positive and significant impact on the Saudi economy, while no effect was noticed in the UAE. These results are discussed in further details in the following sub-sections.

8.4.2.1 Tourism (Religious and International)

The tourism variable (religious tourism) in Saudi Arabia performed below expectations in the main model, while findings confirmed its importance in the non-oil sectors. With regard to the UAE economy, the situation was somewhat different. The diversity of the economy was evident here, especially in the strength of the effect of non-oil variables like tourism on the process of economic growth. International tourism also had a strong impact in the first model and was positively influential in the case of non-oil sectors, where it was the primary factor affecting economic growth. This put the UAE economy in a near-perfect balance in both oil and non-oil sectors.

In this section, the results of the study will not be compared against previous findings, as this was included in Chapters 6 and 7. Alternatively, the study will focus on the essence of the difference between the two countries.

International tourism is much more significant to economic growth in the UAE than in Saudi Arabia. This could be attributed to two main factors, the most important of which

is the availability of tourist visas. In Saudi Arabia, all visas are currently restricted to religious categories; the Saudi government needs to capitalise on tourism in its general sense by removing extant restrictions to tourist visas. However, this may cause problems for the Saudi authorities, as some visitors may wish to remain in the Holy Land. Thus, a more inclusive approach to issuing visas does not absolve the government from setting strict regulations and imposing important immigration rules.

The other reason is that the UAE is usually seen as a more open country, where foreigners outnumber the citizens. By contrast, Saudi Arabia is usually looked upon as a religious state, which people visit to practise religious rituals and where foreigners are fewer in number than Saudi citizens. This openness attracts more international tourists (including non-Muslims) to the UAE than to Saudi Arabia.

8.4.2.2 Non-oil Exports

The role of non-oil exports was also found to be highly influential to economic growth in the UAE. Although oil is their driving force, the UAE government has apparently become aware of how important non-oil sectors are to economic growth and development and the need to focus on trade, for which the UAE was famous before the discovery of oil (see Chapter Four). Unfortunately, the role of non-oil exports in the Saudi economy ran contrary to all expectations. In spite of their positive effect on economic growth, they are statistically non-significant and are exposed to marginalization. It seems that the policy makers of Saudi Arabia overemphasised the oil revenues and neglected the importance of non-oil sectors and economic diversification, which requires new development strategies, objectives and planning involving channelling oil revenues towards supportive investments in the non-oil sector.

Another explanation for the difference in the relationship between non-oil export and economic growth across the two countries is the disparity between Saudi and the UAE in per capita incomes. In fact, a study by Henn et al. (2013) shows that improvement in

the quality of exports is strongly linked to high per capita incomes. Table 8.7 illustrates how per capita GDP in the United Arab Emirates is higher than in Saudi Arabia, which may affect the size and quality of exports.

8.4.2.3 Private and Public Investments

While private investment had a significant and positive influence on economic growth in both countries, public investment had a significant positive impact on economic growth in Saudi Arabia and a non-significant effect in the UAE. The following justifies these disparities.

As mentioned in the hypotheses, public investment in the non-oil sectors variable is potentially positive or negative. Comprehensive insight therefore becomes necessary to any study on the effect of public investments and their relationship with private investments. Generally, there are several explanations for the lack of importance of this variable on the economic growth of the United Arab Emirates, the most important of which will be discussed now.

The Ministry of Economy in the UAE (2012) confirmed that the state was able to reduce the contribution of the public sector investments in the country, which reflects the success of the policy of supporting the private sector and highlights the fact that it encourages private investors. Consequently, in Saudi Arabia, increasing the contribution of the public sector is not necessarily a healthy move for the future of the economy. Table 8.8 supports this opinion. It shows the percentage contribution of investments in both the public and private sectors of Saudi Arabia and the UAE.

Table 8.8: The contribution of private and public investment to the gross capital formation

Gross Capital Formation	*Saudi Arabia*		*UAE*	
	2010	*2011*	*2010*	*2011*
Public Investment	39.2%	40.5%	22.4%	20.2%
Private Investment	45.9%	45.7%	68.2%	71.3%

Source: National Centre for Statistics (UAE, 2015)) and the Saudi Arabian Monetary Agency (SAMA, (2012)).

The above data shows that the contribution of public and private sectors in Saudi Arabia was almost equal in 2010 and 2011. The figures also indicate that the UAE was actually able to support the private sector in playing a larger role in the process of economic growth and this is what explains the weakness of the public sector in the UAE economy. Therefore, the Kingdom, as the largest oil exporter in the world and as the largest Arab economy in the Gulf (see Chapter Four), should recognise this point. This was underlined by a European Central Bank's (ECN) study in 2009 (Chapter Six) explained that public investment in the non-oil sector in the Saudi economy had a positive impact when used to support private investment and did not crowd it out in the way that the Russian economy tended to do.

Another possible explanation for the lack of importance of public investment in the non-oil sectors variable (the UAE economy) is that these results stem from the fact that public investment in GCC countries does not have profit as its sole motive; this is what explains the result. Thus, the results confirm that the UAE government should support private investment in non-oil sectors and work to organize legislation that retains non-monopolistic competition yet preserves the current rate of privatization, as advocated by Adam Smith.

In summary, the results of this part have confirmed that the variables in the non-oil sectors (particularly private investment and tourism, both religious and international) will have a strong positive role in economic growth. They also point to the fact that the

Gulf countries can benefit from the experiences of the UAE, especially in terms of the private sector's participation in the process of growth and prosperity.

Based on the current findings, it is argued that the UAE economy is more diverse than the Saudi economy, given the latter's dependence on oil revenues. The Saudi Arabian economy depends on its huge oil revenues and this has a strong effect on the economy due to its direct impact on government spending. The government of Saudi Arabia, like most countries in the world, owns all of the country's natural resources (oil and gas) and it uses these natural resources for income. It uses oil particularly to finance its expenditures; government spending depends on oil income and the economy relies on government spending, injecting the returns from oil into the economy through government spending. Oil prices increase or decrease the demand for oil, influencing the entire economy, while the UAE economy is less dependent on oil revenues, regardless of the fact that revenues from sources like tourism and non-oil exports are not as important as oil revenues.

The results of the third model confirm the findings of the first model, specifically: that the UAE economy is more diversified than the Saudi economy, proving that the Saudi economy is heavily dependent on oil revenues, whereas non-oil sectors suffer from marginalization. This result is very surprising as Saudi Arabia not only benefits from a highly strategic location, bordering on both the Red Sea and the Arabian Sea, but also has vast space. Yet the UAE achieved levels of growth in non-oil exports that exceeded much of those achieved by Saudi Arabia. With regard to international tourism, the study found that the UAE was in a stronger position than Saudi Arabia. Despite the fact that Saudi Arabia is a world leader in the field of religious tourism, the UAE has achieved high comparative progress and surpassed Saudi Arabia, with a strong tourism impact in the first and third models and largely balanced economic model.

Sheikh Mohammed Bin Rashid (2014), ruler of Dubai, stated that "the UAE has a different and unique model of development, where all sectors operate according to one vision with clear national priorities". Thus, the bottom line is to focus on the importance of the variables in the non-oil sectors in this growth, particularly tourism, private investment and non-oil exports. The results of this study relate primarily to tourism and private investment, which were clearly found to have a strong impact on economic growth. Unexpectedly, it was found that non-oil exports were statistically non-significant to the Saudi economy. This does not, however, call for the neglect of this variable; on the contrary, it should be fully supported due to its proven importance to the economy of the United Arab Emirates. Tourism in Saudi Arabia and the United Arab Emirates makes the industry a strong competitor in the future as an alternative to oil exports as a source of economic growth.

8.5 Summary

There are a significant number of studies examining the determinants of economic growth in both developed and less developed nations, but there are few studies in oil-rich countries like Saudi Arabia. In this study a comparison is model between two oil-rich countries using a new methodology based on a multi-group analysis, which has been applied in several important studies such as Keil et al., (2000); Kock, (2014).

This chapter opened with a general introduction and then briefly showed the results found in chapters Six and Seven, particularly relationships between all variables in both the long and short-term, so as to facilitate the comparison process between the two economies. The comparison process also included using a Multi-group analysis, which was employed due its successful application in other studies.

With regard to the determinants of economic growth in the Saudi Arabian economy (Table 8.1), research into the long-term relationship between selected variables in the main model found that the total-exports variable had the greatest influence on economic

growth, followed by government spending, whilst the impact of tourism was less than the rest of the variables. The results for all the independent variables were compatible with economic theory, as they illustrated the importance of total exports and government spending in stimulating economic growth. The effect of tourism was, in general, unimportant. This study separated the Saudi economy into two main parts: the oil and non-oil sectors. Regarding the second model, it appears that oil exports have the greatest effect on economic growth, followed by government spending. These results are compatible with economic theories and are a logical consequence of an oil-rich country that is dependent on petroleum exports for its survival and development.

In the last model, the research removed variables in the oil sector and focused instead on the effect on economic growth of variables in the non-oil sectors. The results of the co-integration of the long-term relationships were compatible with economic theories for all the independent variables. Perhaps the most important result lies in the private investment factor. The strong influences on economic growth within the non-oil sectors were identified; this was followed by an exploration into the influence of tourism and the public sector. Unexpectedly, the non-oil exports in the Saudi economy were found to be positive but statistically non-significant.

In the case of the UAE economy (see Table 8.1) investigation into the determinants of economic growth (in terms of the long-term relationship between selected variables in the main model) found that total exports had the greatest influence, followed by international tourism, whilst the impact of government spending was negative. As with Saudi, the UAE economy was separated into two main parts: the oil and the non-oil sectors. Regarding the second model, it appears that oil exports and investment in the oil sector affect economic growth, whereas government spending has a negative impact. In the last model, the research removed variables in the oil sector and focused instead on the effect on economic growth of variables in the non-oil sectors. The most important

result lies in the international tourism factor. The strong influence on economic growth within the non-oil sectors was identified; this was followed by the influence of non-oil exports and the private sector. Unexpectedly, public investment in the UAE economy was found to be negative as well as statistically non-significant.

The Multi-group analysis test results showed that although both variables had a positive impact on economic growth, exports (total, oil and non-oil), tourism and oil investment in the UAE had greater influence on economic growth than in Saudi Arabia, whereas government spending had a stronger effect on the Saudi economy than the UAE economy in both the first and the second models. While for the total labour force, employment in the non-oil sector and public investment in the non-oil sector had positive and significant impacts on Saudi Arabia's economic growth, but no effect was noticed on the UAE's economy.

Overall, the results show that the Saudi economy is suffering from excessive dependence on the oil sector and has been ignoring important opportunities in the non-oil sectors. The UAE should prove capable of withstanding the decline in oil prices through its balance between oil and non-oil sectors, despite the importance of oil exports to its economy.

9

SUMMARY, CONCLUSIONS AND IMPLICATIONS

CHAPTER NINE: SUMMARY, CONCLUSIONS AND IMPLICATIONS

9.1 Introduction

The main contribution of this research is to illustrate the importance of non-oil sectors such as private investment, tourism (whether international or religious) and non-oil exports as a future strategy for long-term sustainable growth for oil-rich countries, particularly for Saudi Arabia, the UAE and members of the Gulf Cooperation Council (GCC). Moreover, it highlights the importance of separating the economy in oil-rich countries into two main segments, oil and non-oil, when examining issues relating to economic growth.

This final chapter of the thesis summarizes the results and provides recommendations to decision-makers. Moreover, it outlines the theoretical and empirical implications of the study. The rest of the chapter is organized into the following sections: the main conclusions (including the results of the study) and the study implications (both theoretical and practical), with recommendations for the governmental bodies of Saudi Arabia, the UAE and the GCC. The final section addresses limitations and potential future research with a summary of the research.

9.2 Key Conclusions

The main aim of this study is to develop three new models for use in any oil-rich country through the identification of the main factors that have driven economic growth in two specific oil-rich countries, Saudi Arabia and the UAE. This accomplished, it seeks to identify which of these determinants positively impact economic policy development, focusing mainly on key variables in the non-oil sectors. The Augmented Dickey Fuller (ADF) unit root tests showed that the data used for each variable were integrated of the order of one I (1), presenting the possibility of conducting co-integration analysis. This allowed the possibility of addressing the research questions.

The Johansen test for co-integration suggested that there is a co-integrating vector between economic growth (GDP) and the explanatory variables in both countries for all three models - hence the existence of a long and short-term relationship between economic variables.

With regard to the Saudi Arabian economy, this study has uncovered the fact that oil exports have the greatest effect on economic growth, followed by investment in the oil sector and government expenditure – a logical finding, especially in oil-rich nations that rely on oil or gas exports to survive. This study has also revealed that private investment has a strong impact on economic growth in non-oil sectors in addition to religious tourism and public investment. However, non-oil exports are less important; this means that the current growth rates of non-oil exports in the Saudi economy are not sufficiently strong.

This study's results have also reiterated the positive impact of the labour force and capital on economic growth. This is compatible with economic theory, except in the case of labour in the oil sector. The religious tourism factor yielded results that were below expectations in terms of the whole economy, thereby throwing into question its efficiency and effectiveness in supporting the economic growth of Saudi Arabia. This does not mean it should be ignored; rather, it should be supported if it is to achieve the desired result, especially in the light of the evidence of its importance to growth if the country diversifies its economy to non-oil sectors.

This study also provides tangible evidence that, with the exception of the labour force in the oil sector, most of the variables had a stronger influence in the long-term than the short-term.

The three models were also tested in the UAE for several reasons. This country's characteristics are very close to those of the Saudi economy, given its heavy dependence

on oil exports, as well as the importance of the international tourism variable to the UAE's economy. The study focused on identifying tourism's impact on economic growth so as to determine whether or not it should be one of the strongest factors behind future growth strategies and sought to provide guidance for other GCC over future policies.

Despite the fact that some of the results were different in the UAE from the results for the Saudi economy, the three models were validated and can be useful in checking further factors of economic growth and in confirming that oil-producing countries need new development models, particularly in the oil sector.

The UAE economy was found to be more balanced than the Saudi economy (as far as the participation of non-oil sectors was concerned) in pushing and promoting economic growth. This study uncovered the fact that oil exports have the greatest influence on economic growth, followed by investment in the oil sector and international tourism, whereas government expenditure has a negative effect. The analyses also revealed that non-oil exports, international tourism and private investment have a strong economic impact in the non-oil sectors, whilst the impact of public investment is negative.

With respect to the oil sector model, the results of the two countries under study (Saudi Arabia and the UAE) emphasize the negative impact of the labour force variable in the oil sector on economic growth. This is consistent with other studies in oil producing countries such as the works of Jedi (2012) in Algeria (another oil-rich country), where a negative relationship between employment in the oil sector and economic growth was unearthed. However, as previously explained, the Jedi study focused on employment in general (the whole economy) without separating the labour force from the oil and non-oil sectors (see Chapter Six).

In providing a comparison between Saudi Arabia and the UAE, the Multi-group analysis test made it clear that although exports (total, oil and non-oil), investment in the oil sector and tourism all had a positive impact on economic growth in both countries, they had a greater influence on the UAE's economic growth than on Saudi Arabia's.

Concerning the remaining variables, the influence of government spending on economic growth was found to be positive in Saudi Arabia, while a negative effect was noted in the UAE in the first and second models. As for the labour force (total and non-oil sector) and public investment in the non-oil sector, these were found to have a positive and significant impact on economic growth in the Saudi economy, while no effect was noticed in the UAE. This non-significant effect was also true for the labour force in the oil sector in both countries.

9.3 Study Implications

9.3.1 Theoretical implications

The findings of this study have several implications. These are summarised below.

Looking back at the theories and reviews of empirical studies in Chapters 2 and 3, it is clear that most oil-rich countries have neglected the non-oil sectors (which constitute only a small percentage of their budgets) and have heavily invested in oil and its derivatives as an economic resource. Further research that identifies the variables or factors that affect economic growth in oil-rich countries is therefore necessary, as these factors have been overlooked in developing countries, particularly in oil-rich countries such as Saudi Arabia, the UAE and the GCC as a whole. Against this backdrop, the purpose of this study was to determine the factors that influence economic growth in the two selected oil-rich countries and implications for the GCC. The results provide a deeper understanding of economic growth in these countries. Although there have been numerous studies on economic growth; this particular research is significantly different

in a number of ways. Whilst most studies investigating the determinants of economic growth have focused on only a few variables (Prochniak, 2011), each depending on its focus (for example, Piazolo, 1995; Anaman, 2004; Asseery and Al-Sheikh, 2004; Kogid et al., 2010), the present research adopts a novel comprehensive approach, including 12 variables proven to be the most important determinants of economic growth in oil-rich countries, with a focus on important and neglected variables in the non-oil sectors. The results of the research provide some knowledge on why some oil-rich countries are reluctant to adopt elements of the non-oil sectors despite the fact that they can be depended upon to improve and enhance returns and are shielded from fluctuations in oil prices.

Furthermore, this study is the first to empirically test the effect of religious tourism on economic growth. It has focused on Saudi Arabia because its tourism is largely based on religious aspects. The study illustrates the key contribution of this new variable to economic growth; such information may serve to inform future studies on religious-based tourism in other countries, such as Italy and Iran.

Following on this, the study has theoretical implications. Through the inclusion of a new variable, religious tourism, as a determinant of economic growth and through the isolation of the non-oil sector from the oil sector, the study was able to detect and highlight the potential role of tourism as a future crucial factor in determining economic growth in oil-rich countries. As a result, the current literature has been extended and incorporates new and more positive economic variables on economic growth (such as religious tourism), giving more profound insights into the relevance of this variable for economic growth. The results relating to the non-oil sectors are also of great importance to future policies.

Moreover, this appears to be the first study that examines both oil and non-oil sectors simultaneously, using the Johansen approach. Therefore, its most valuable contribution

is the fact that it enhances understanding of the nature of economic growth in oil-producing countries. Previous studies have failed to divide the nature of the economy into oil and non-oil sectors and isolate them from the whole economy. The three models that have been utilised broaden the understanding of the economic factors that influence economic growth in those oil-rich countries that have similar characteristics to the Saudi and the UAE economies, such as Algeria, Iran, Libya and Iraq.

A comparison of the economically diverse countries of Saudi Arabia and the UAE has been made in order to establish the suitability of these three models to other oil-rich countries.

The effect of some of the variables on economic growth (such as government spending, non-oil exports and public investment) was not clear. Previous studies (e.g. Albatel, 2000; Mahdavi, 2007; Aljarrah's, 2008; Tabari and Nasrollahi, 2010; Tuwaijri, 2011; Adenugba and Dipo, 2013; Olayiwola and Okodua's, 2013) differed in the identity of the impact of these variables on economic growth in oil-producing countries in general and on the Saudi economy in particular. Therefore, these variables needed to be examined further and their real impact had to be established, which is what this study proceeded to do. The results confirmed, for example, the importance of government spending to the process of economic growth in the Kingdom of Saudi Arabia. The study has therefore confirmed the findings of Ghali (1997), Albatel (2000), Tuwaijri (2001), Asseery and Al-Sheikh (2004), which found a positive relationship between government spending and economic growth. With regard to non-oil exports, some of the above studies have illustrated that the impact on economic growth and performance is weak and less than expected (for example, Mahdavi, 2007; Adenugba and Dipo, 2013). This is consistent with the results of this study. Overall, although these studies were in oil-rich countries, the results are different. This is perhaps due to the different

methodologies used and supports the assertion that these three factors have an unpredictable impact on economic growth in oil-rich countries.

The econometric models developed in this study can be used by researchers as well as academics in conducting further research into the field of economic growth in oil-rich countries, potentially enriching the existing literature. There is a considerable overlap between these two sectors (oil and non-oil) and it may be difficult to completely separate them. Nevertheless, this study opens the door to other studies and serves as a base for future studies exploring oil-producing countries by means of the three models used here. Future research can now test other important variables in oil-producing countries and can further endorse the assertion that oil-producing countries need new, independent theories, especially in the oil sector.

In summary, the results of this study have confirmed that the exclusion of the variables in the non-oil sectors, in particular private investment and religious tourism and exclusive focus on the role of oil exports as the engine of economic growth, might lead to considerably misleading economic policy outcomes.

9.3.2 Policy recommendations

The results in general seek to inform and guide policy-makers in the GCC countries', particularly Saudi Arabia and the UAE, as to the most important sectors to focus on for sustained economic growth. Understanding the factors affecting economic growth in oil-rich countries enables policy-makers to expand their knowledge, raising their awareness of the relevance of non-oil sectors and allowing them to re-prioritize development strategies. Thus, the results of this study highlight the most important factors affecting economic growth, whether oil or non-oil – a primary objective in adopting economic policies that lead to sustainable development.

For Saudi Arabia, the process of understanding the perceived benefits of the non-oil sectors by policy makers from the government should help strengthen the role of these sectors in the process of growth and economic development.

Highlighting private investment and religious tourism as future engines for economic expansion would allow policy-makers in the Saudi economy to grasp the prudence of strengthening these two sectors. This can be achieved through key measures including: solving regional conflicts, developing suitable infrastructures, speeding up the privatization process and facilitating the process of obtaining visas. Thus, this study recommends that the government of the Kingdom of Saudi Arabia should adopt a step-by-step approach to the building up of non-oil sectors, which gradually move the economy through well-thought-out stages calculated to ultimately achieve a diversified economy. As such, the Saudi government is encouraged to focus on the factors and variables affecting the non-oil sector in order to promote its development rather than continuing to rely upon massive oil revenues. The oil sector cannot be considered as a reliable pillar, as its status is determined so decisively by international markets and global conflicts; it is difficult for any country to control or predict a future based on oil.

The results posit that the process of economic growth in Saudi Arabia (as one of the developing OPEC member countries) needs to focus on long-term variables. A key policy priority should therefore be to plan for long-term growth rather than short-term and the findings suggest that the development of non-oil sectors can avoid the problem of low oil prices and its volatility. Hence, decision-makers responsible for the development of non-oil sectors should be encouraged to invest in these sectors to the greatest degree possible.

This study found the labour force to have a strong positive economic impact in the non-oil sectors. Such findings support the call to expand education, particularly technical and vocational education and invest more in the promotion and enhancement of the

education process. They encourage an integration of young people in the non-oil sectors through the enactment of laws to ensure the stability of the rights of employees and employers. However, the government should invest in labour in the non-oil sector more than the oil sector, as the oil industry depends on modern technology more than the human factor. In fact, the results revealed a negative relationship between the labour force and economic growth in the oil sector.

Dependence on the oil sector poses imminent danger to most oil countries, especially Saudi Arabia. Such a high dependence without concurrent attempts to diversify sources of income fails to take into account the perils of falling prices. This was illustrated in 2014/15 when crude of oil price fell by over than 50 present, with the potential of further decreases.

Overall, the relationship between total exports and economic growth is positive, which suggests that the government of Saudi Arabia should continue to invest in this field. In general, exports push the process of economic growth, but it is oil that is responsible for this growth, whilst non-oil exports have bucked the trend – a fact which calls for an improvement in their performance through the creation of a more suitable environment. To this end, this study offers several recommendations. For example, policy-makers should continue to provide public assistance in an effort to encourage non-oil exports on the one hand whilst reducing costs on the other (such as those incurred through rapidly obtaining employment visas), providing services such as electricity, water and modern communication systems, which in turn lowers the cost of production, allowing competition. More importantly, the particular geographical location of the Kingdom on two pivotal seas (Red and Arab) should be exploited, through the support of and modernization of vital ports and through the formulation of legislation that protects and promotes exporters, such as rapid access to export licenses. Finally, it is highly recommended that decision-makers keep strategic reserves for natural resources (oil and

gas) in order to enhance future economic strength. Based on this, oil income is only supportive of development and is therefore not included in the state budget.

Moreover, a higher rate of international tourism (particularly religious) is crucial to economic growth. Therefore, the government of Saudi Arabia and the Saudi Commission for Tourism and Antiquities in particular should continue to adopt policies to attract more tourists. In fact, highlighting tourism as a future engine for growth means that policy-makers should think of ways to improve the tourism sector. This could be done as mentioned above by key measures including solving regional conflicts, developing suitable infrastructures and facilitating visa procedures throughout the year for Umrah and Hajj.

Religious tourism in Saudi Arabia is an inexhaustible supplier of revenue for the Saudi economy, as it is based on pilgrimage (Umrah and Hajj) to the country's holy regions (see Chapter Four). Although oil revenues stimulate booms in the natural resource sector of an economy, this financial swell leads to higher prices locally for goods and services and therefore prompts inflation (Carton et al., 2010). The tourism industry, in turn, is working to attract investments, whether domestic or foreign and foreign exchange (Schubert et al., 2011). Furthermore, nations that rely on attracting tourists do not face the risk of the Dutch disease. What is thus required is that Saudi Arabia should focus on encouraging religious tourism to achieve sustainable economic development.

In summary, it can be concluded that supporting, rather than compromising, the religious characteristics of Saudi Arabia appears to be the most prudent approach to the country's future economic stability. It would be difficult for the country, with its desert-based environment, to compete with developed countries like France or Italy in the field of tourism, but it would be a truly international competitor if it focused on religious tourism. Perhaps the most obvious solution is to begin granting Umrah visas throughout the year, since Umrah (unlike Hajj) is not limited to a specific time period.

Saudi policy makers should try to extensively rationalise government spending on oil exports. A reasonable approach to tackle this issue could be a diversification of sources of income and the reduction of dependence on oil. There is, therefore, a definite need to turn to other sources and one of the implications of these findings is that both tourism and private investment and perhaps non-oil exports (if they are supported) should be taken into account when searching for solutions. A key policy priority should therefore be to plan for long-term economic growth. Thus, if the Saudi economy is to catch up with the economies of other more advanced nations, the country must focus on important variables in non-oil sectors such as private investment and religious tourism for multiple reasons, not the least of which is the fact that these sectors are far easier to control.

Turning to the UAE, the country has a diversified economic growth, making it more resilient to the risk of fluctuations in oil prices. However, the outcomes of this study suggest that the government of the United Arab Emirates should adopt a new approach, ensuring a shift towards greater dependence on the private sector than the public. These results provide further support for the hypothesis adopted by Adam Smith, who called for non-interference by the state and reliance upon the private sector. This can be achieved by giving the private sector confidence in the management of the oil sector, which undoubtedly would increase oil sector revenues.

Although the city of Dubai lacks natural resources like oil and gas, it is a key source of tourism revenue for the UAE. This fact brings with it a range of challenges and obstacles, including environmental protection issues, water resource problems, air pollution from construction and, more importantly, cultural implications. Support of the tourism industry on the part of the government is critical, including the construction of new plants for desalination of seawater and the enactment of environmental protection laws. Openness to others does not necessitate a waiver of cultural specificity of the

native traditions, values, language and so on. In order to preserve the cultural identity of the UAE, there must be a continuous, ongoing process on the part of all governmental bodies. Therefore, the UAE can benefit from religious tourism if religious tourism is not confined to holy regions such as Makkah. The country can also follow the lead of other countries that have been reaping the rewards of catering to specific religious needs. Some companies in the USA, for example, particularly in Orlando and Boston, cater for religious tourism through hotel room services that contain indoor swimming pools, through the provision of prayer rugs and through determining the Qiblah (direction of Makkah). Another example can be found in the UK, where halal meat is freely available in most British regions (BBC, 2015).

The study proved the importance of the tourism industry, which had a positive relationship with economic growth for the UAE. However, the notorious desert-based weather conditions of the Emirates would limit the influx of tourists. Therefore, the study recommends that the Ministry of Tourism of the UAE and the policy-makers of cities like Dubai should increase investment in international tourism. Such investments could be targeted to touristic cities lacking capital. An example of this is the huge Chinese investments that have been made in the Caribbean (Wu, 2011).

As for the GCC, the majority of these countries are similar, to a large extent, to the Saudi and UAE economies. Kuwait's economy, for example, is 90% dependant on oil, which puts it in the same category as the Saudi economy. Qatar, on the other hand, has in the last few years been trying to follow the UAE's approach through diversifying its sources of income. With regard to Bahrain and Oman, these have been focusing on tourism lately and are now less dependent on natural resources.

Overall, throughout the GCC it seems that the diversity of sources of income and gradual movement away from dependence on oil is inevitable as the member countries take measures to avoid future problems, particularly the prospect of lower oil prices.

GCC nations are relatively similar in terms of their language, religion, culture, location and natural resources. These factors are rarely found in communities like the EU, for example, yet the EU has achieved considerable economic progress. It is therefore important to exploit these advantages in the Gulf States and the potentialities of thinking and working as a unified group. Each GCC country has a comparative advantage in a specific field, which, if exploited, would undoubtedly give a comprehensive economic boost to all its member nations.

9.4 Limitations and future research

The outcome of this research, as would be expected of the findings of any PhD, has some limitations: a) the lack of comprehensive data for some of the variables of the United Arab Emirates made it necessary to use two different time periods (1970-2011 for Saudi Arabia and 1980-2011 for the UAE); b) with regards to the tourism variable, religious tourism rather than international tourism was used for Saudi Arabia and the data duration (time period) was reduced for the UAE due to the lack of data; c) there is a considerable overlap between the two sectors (oil and non-oil) and it may be difficult to completely separate them; nevertheless, this study opens the door to other studies exploring oil-producing countries by means of the three models used here; e) generally and especially in the developing countries, there is an inconsistency among the different sources in terms of their dependence upon secondary data. In order to avoid such a phenomenon, the current study's data was derived from certified sources (e.g. SAMA for Saudi Arabia and the Department of Statistics for the United Arab Emirates).

In general, the difference in the two periods mentioned above in paragraph (a) did not constitute a significant impact on the research results or comparisons mainly because the use of the Multi-group analysis allows one to evaluate the strength of the variables between the two countries, regardless of the similarity of the two periods (Kock, 2014).

Religious tourism (rather than international tourism) has been applied to the research on Saudi Arabia, as according to the World Tourism Organization (WTO), religious tourism is a part of tourism. Focusing on a specific type of tourism has therefore had no negative impact on the research results; rather, it has generated a more pronounced picture for future research into this area.

Further research should be conducted to investigate the effect religious tourism has on economic growth – a comparison between Saudi Arabia (Makkah) and Italy (Vatican) would allow the impact of tourism to be explored across two faiths, Islamic and Christian, for example. Moreover, there is abundant room for further progress in determining factors that impact economic growth in oil-rich countries in particular, just as there is broad scope for comparative studies between oil-rich countries in developing countries and developed countries, such as Saudi Arabia and Norway. Finally, application of these models to all GCC countries and other oil-rich nations, developing and developed countries, would confirm the scope of their application and generalizability.

9.5 Summary of the research

This study has focused on the role of oil and non-oil sectors in economic growth in the GCC, particularly in Saudi Arabia and the UAE, with further analysis of the main non-oil sectors such as tourism, private investment and non-oil exports. As the results have revealed, the Saudi and UAE economies are different in terms of their reliance on these two sectors. Saudi Arabia relies heavily on the oil-sector, as shown is Chapter 6, whereas UAE is more diverse in both sectors, as shown in Chapter 7. This diversity adopted in UAE reduces the risks of oil price fluctuation in the world market and increases income sources for the government and citizens, which leads to better life standards. The other GCC countries including Saudi Arabia can benefit from the UAE experience in economic diversity, especially because the current oil prices in 2016 has

decreased since the beginning of this study by around 70%. As the study shows, the non-oil sectors are relatively easier to control, as they rely on manageable internal factors. The history of GCC, particularly in Saudi Arabia and UAE (as mentioned in Chapter 2), has showed that these non-oil sectors, despite being subject to decrease, are inexhaustible sources. The GCC countries are distinguished by their geographical locations, holy places and natural resources, all of which enable these countries to progress towards the economically advanced countries, especially if these factors are well exploited by the authorities and policy makers in the GCC counties.

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Appendices

Appendix A. The First Article:

Religious Tourism and Economic Growth in Oil-Rich Countries:

Evidence from Saudi Arabia

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Religious Tourism and Economic Growth in Oil-Rich Countries:

Evidence from Saudi Arabia

Abstract

Key studies have identified the need to diversify the Kingdom of Saudi Arabia economy beyond its heavily oil-based status if it is to attain long-term sustainable growth. Tourism, in particular religious tourism, has been recognised as one key non-tradable sector that could promote this growth. This paper applies a time series approach to examine the impact of the tourism industry on the economic prosperity of the Kingdom between 1970 and 2011. The results show that tourism only plays a minor role in improving economic growth when the economy as a whole is taken into consideration. However, when isolating the non-oil sectors, the impact of tourism could be seen to have a greater influence on economic growth. Tourism is therefore potentially important for any future diversification of the economy from growth.

***Keywords**:* Co-integration; Economic growth; Religious tourism; Saudi Arabia.

Introduction

A significant number of oil-rich countries, including Saudi Arabia, rely heavily on oil exports; however, natural resources like oil and gas are exhaustible and thus lead to future economic instability as far as external markets are concerned. In contrast, the non-oil sectors chiefly rely on internal factors and can therefore be easily managed and controlled. Tourism, for instance, in Saudi Arabia, is an inexhaustible supplier of prosperity, given that it includes the Hajj and Umrah (Islamic pilgrimages) into the country's holy regions. Indeed, oil incomes can encourage prosperity, particularly in the natural resources sector, but by raising the prices of local goods, they lead to inflationary pressures (Farzanegan and Markward, 2009). Conversely, the tourism sector attracts foreign investment, provides employment opportunities and increased foreign currencies availability (Katircioglu, 2009).

Moreover, the labour force in the field of oil and its derivatives barely reach 2% of the national workforce in many petroleum-exporting countries (see for instance, the National Bureau of Statistics (2014) from the UAE and the Central Department of Statistics and Information for Saudi Arabia). This is true of Saudi Arabia, where the International Monetary Fund (2012) reported that workers in the oil sector in Saudi Arabia in 1989, 1999 and 2009 represented approximately 1.1%, 1.6% and 1.1% of the total labour force respectively. Interestingly, according to the World Tourism Organization (2012), the number of tourists traveling to Saudi Arabia (international and religious) reached record levels in 2011: more than 17 million tourists visited the country at that time – well above Egypt's and Dubai's figures (8 million and 10 million respectively).

Therefore, the key purpose of this paper is to consider the role of tourism (non-oil sector) on the economic growth of Saudi Arabia and offer new insights. In an attempt to discuss all aspects of these two fields, the paper is organized into four main sections: the theoretical framework, the method of study, the empirical results and the conclusion drawn therefrom.

Theoretical framework

As highlighted by several studies pioneering the field of tourism and economic growth (see for example, Dritsakis, 2004; Durbarry, 2004; Katircioglu, 2009; Schubert et al., 2011), attention to tourism leads to enhanced growth. This occurs through several channels: attracting foreign investment, providing employment opportunities for citizens, attracting foreign currencies, in addition to higher household incomes and government revenues through taxes. McKinnon (1964) suggests that the impact of tourism on economic growth derives its strength from the foreign currency earnings from international tourism; these earnings are used to import goods and servicesand this has undoubtedly lead to economic growth.

Export-led growth (ELG) hypothesis underpin most studies on economic growth (see Balaguer and Cantavella-Jordà, 2001; Jayathilake, 2013). Since international tourism could be considered as an export, tourism-led growth (TLG) hypothesis is derived directly from the ELG. It relies on the premise of moving consumers rather goods (non-traded goods) and consequently considers tourism to be a future strategy for economic expansion (Cortes-Jimenez and Pulina, 2010). However, the TLG hypothesis remains neglected compared to export-led growthand hence could be seen as a novel target for investigation (Cortes-Jimenez and Pulina, 2010; Kim et al., 2006).

The majority of high-tourism nations, whether low or high income, promote economic policies that encourage tourism as a possible source of economic growth. Recent prominent tourism-related studies include: Balaguer and Cantavella-Jordà, 2002 on Spain; Chen and Chiou-Wei, 2009 on Taiwan; Dritsakis, 2004 on Greece; Durbarry, 2004 on the Island of Mauritania; Kaplan and Çelik, 2008 on Turkey; Katircioglu, 2009 on Turkey; Kim et al., 2006 on Taiwan; Lee and Chang, 2008 on Taiwan; Narayan et al., 2010 for 4 Pacific islands; Oh, 2005 on Korea; Seetanah, 2011 for 19 separate islands).

The first study using time-series analysis was by Balaguer and Cantavella-Jordà, (2002) on Spain. It analysed the relationship and tourism-led-growth (TLG) hypothesis by applying unit root properties and the Johansen's approach for the period 1975-1997. The authors used several variables, where economic growth (GDP) was the dependent variable, while tourism receipts and exchange rate were the independent variables. They concluded that tourism did indeed have a supportive influence on economic growth. The same methodology and variables were used in Greece by Dritsakis, (2004) over the 1960- 2000 period. The results showed that international tourism plays an important role in the growth and development of the Greek economyand unearthed the presence of bilateral causality between economic growth and international tourism.

In the Island of Mauritania, Durbarry (2004) examined the relationship between international tourism and economic growth. The study used tourism receipts, physical capital, human capital, sugar exports and manufactured exports as independent variables. The study used a Johansen co-integration analysis together with the Granger causality test based on an error correction model (ECM) to analyse the relationship between international tourism and economic growth during the period 1952-1999. The author discovered that the international tourism sector caused economic growth and played a particularly important role in boosting such growth. A similar study by Kim et al. (2006), which likewise applied the Johansen approach for co-integration to study the relationship between the long-term variables and the Granger test of causality, was conducted in Taiwan. It used two different time periods: annual (1956-2002) and quarterly (1971-2003)and concluded that there is a bidirectional causal relationship between international tourism and economic growth (GDP) in Taiwan's economy.

In the case of Korea and Taiwan, Chen and Chiou-Wei (2009) examined the causal relationship between tourism and economic growth for the period 1997-2007. Results showed that Taiwan's tourism led to an increased level of economic growth (unidirectional causality), whereas a bidirectional relationship existed for the Korean state.

Kaplan and Çelik (2008) analysed the influence of tourism on economic growth in Turkey. This study also applied a time series approach for the period 1963-2006and used tourism receipts and exchange rate as explanatory variables. The results of the study showed that tourism affects economic growth positively and significantly.

In another Turkish study but with different results conducted by Katircioglu (2009) the same variables were used during roughly the same period of time, using Johansen approach for the period 1960-2006. The results showed there to be no relationship between international tourism and economic growth; this is contrary to the views of

most empirical studies. This disparity was perhaps due to the different methodologies used or uncertainty in the methods of analysis employedand highlighted the need for additional work on the nature of the relationship between Turkey's tourism sector and economic growth.

Some studies have, however taken a different approach by using panel data. In their paper, Lee and Chang (2008) examined the relationship between tourism and economic growth based on panel data for a sample of 55 nations (OECD, non-OECD, Asia, Sub-Sahara Africa and Latin America), using the gross domestic product (GDP) as a dependent variable. Explanatory variables included: tourism receipts, exchange rate and tourist arrivals between 1990 and 2002. The results were mixed; however, it can generally be said that tourism affected economic growth in the long-term. They also highlighted the fact that tourism affected the gross domestic product (GDP) in non-OECD more than in OECD countries. A similar methodology by Seetanah (2011) examined the relationship between tourism-based economic growth and the tourism-led growth (TLG) hypothesis in 19 islands over the period 1995-2007. Growth was reflected by increases in GDP, which was used as a dependent variable, with the explanatory variables of tourism arrivals, tourism receipts, openness, freedom index, human capital and physical capital. The authors discovered that the effect of tourism on economic growth was strong and significant in the long term. This result confirms the outcomes of a similar study by Narayan et al. (2010) on 4 Pacific Islands over the period 1980-2005, they found a positive, strong, long-term relationship between tourism and economic growth. However, the study found that natural disasters, political instability and the dependence on food imports constrained growth in the tourism sector.

The relationship between tourism and economic growth has continued to generate a series of debates among researchers. Although international tourism plays a role in boosting growth as discussed above, they are not positive for a few studies. Oh (2005),

for example, studied the relationship between tourism and economic growth in the South Korean economy from 1975-2001. The study wholeheartedly disagreed with the hypothesis of tourism-led-growth. Oh (2005) did not find consistent evidence that tourism would increase growth in South Korea. Hence, there was no evidence of the validity of the tourism-led growth hypothesis in this country.

These findings in the Korean economy are in contrast to the results of Chen and Chiou-Wei (2009) study. The surprising differences between these two could be due to the differences in the periods of analysis or the additional variable of exchange rate in the study by Chen and Chiou-Wei.

Most of the above studies reflect the fact that tourism has a positive long-term relationship to economic growth, which justifies the inclusion of the tourism sector in growth models. Following the above studies, this paper aims to examine the role of the tourism sector in economic growth of Saudi Arabia, based on the hypothesis that expansion of tourism is a valid future strategy in the country's economic expansion.

In order to assess the relationship between the tourism sector and economic growth in oil export-reliant countries like Saudi Arabia, this study, in addition to the tourism sector, uses exports and government spending. The latter is used due to the fact that all oil revenues in most oil-exporting countries (particularly Saudi Arabia) contribute to governmental budgets and hence inject these returns into the economy through government spending.

Material and methods

The present paper uses three key variables: exports, tourism and government spending. The latter is included in the extended production function due to its association with revenues from oil exports (see for example, Anaman, 2004; Safdari et al. 2011). In general, the relationship between exports, tourism and government

spending on economic growth (see Al-Yousif, 1997; Cortes-Jimenez and Pulina 2010) can be shown in the extended production function as:

$$Y = F\,[(K, L); X, G, T] \qquad (1)$$

where Y is real GDP, X is exports, T is tourism, G is government spending and K and L are capital and labour respectively. In order to achieve the objectives of the study equation (1) is expanded (1) as follows:

- Exports (X) is separated into total exports (X_T) and non-oil exports (X_N).
- Capital (K) is replaced with total investment or gross fixed capital formation due to the lack of data on capital.
- Investment (I) is separated into public investment (PG) and private investment (PI) in the non-oil sector.

To achieve its objectives, this study examines two models: the whole economy (equation (2)) and the non-oil sector (equation (3)). Hence, these take an extended production function compatible with the neoclassical growth theory:

Model (I): Main model

$$lnY_1 = \alpha + \beta_1 lnL + \beta_2 lnK + \beta_3 lnX_T + \beta_4 lnG + \beta_5 lnT + \varepsilon \qquad (2)$$

Model (II): Non-oil sector

$$lnY_2 = \alpha + \beta_1 lnL_N + \beta_2 lnPG + \beta_3 lnPI + \beta_4 lnX_N + \beta_5 lnT + \varepsilon \qquad (3)$$

where Y_1 is total GDP, Y_2 is GDP in non-oil sector; X_T, X_N, G and T are total exports, non-oil exports, government spending and tourism respectively. PI and PG are investment both private and public, in addition to capital (K) and labour (L). A time-series econometric approach was applied to determine the short and long-term relationship between economic growth and the various determinants under study. Data analysis methods are similar to those used by Awokuse (2007) and Katircioglu (2009). The study starts with the concept of time series stationarity, followed by main stationary tests, as represented in the Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979)

and Phillips and Perron (PP) tests. These are followed by co-integration tests based on the Johansen test (Johansen and Juselius, 1990), to discover the relationship between the variables and economic growth in the long-term, as well as the Error Correction Model (ECM) to assess the relationship between selected variables and economic growth in the short-term, with a focus on tourism.

Empirical analysis and results

Data was obtained from the International Monetary Fund database (IMF), The World Tourism Organisation (WTO) and the Saudi Commission for Tourism and Antiquities (SCTA). Selected variables in the model were computed in real terms, using the GDP-deflator (1999 = 100). All-time series data were converted into their natural logarithms.

The results for unit root tests according to Augmented Dickey-Fuller (ADF) (see Table 1) show that all variables are integrated in the first difference (I). This implies the possibility of co-integration.

The results in Table 2 show the Johansen test for co-integration to discover the relationship between the key variables and economic growth in the long-term, using lag-length according to the Akaike Information Criterion (AIC). The results suggest that there is co-integrating vector between economic growth (GDP) and other variables in both models - hence the existence of a long-term relationship between economic variables - The equation for the co-integration between the dependent variable and the independent variables are presented in the second part of Table 2. This table shows the superiority of exports in the process of economic growthand the inferiority of tourism in supporting this growth in the whole economy. Conversely, in the non-oil sector, the latter proved to be among the most important factors. Private investment was also shown as a strong effect on economic growth in non-oil sectors; this influence is followed by tourism sector. The results also show that non-oil exports are less

important; meaning that the present growth rates of non-oil exports in the Saudi economy are not economically viable for growth compared to the tourism sector.

Per the Error Correction Model (ECM), tourism in both models appears to be affecting the short and long-term growth differently (see Table 3).

Table 1

Unit root test ADF

Variable Definition	Symbols	Level		First Difference	
		ADF	PP	ADF	PP
Economic growth	GDP	-2.770	-3.880**	-4.518**	-2.431
Economic growth in non-oil sector	GDP_N	-0.818	-4.509**	-5.871**	-2.400
Total exports	X_T	-2.164	-2.268	-4.037**	-3.935**
Non-oil exports	X_N	-2.089	-2.620	-6.085**	-11.079**
International tourist arrivals	T	-1.336	-1.319	-5.364**	-5.154**
Government spending	G	-2.600	-2.669	-8.122**	-8.141**
Total labour force	L	-2.120	-1.905	-9.023**	-9.023**
Employment in non-oil sector	L_N	- 1.762	- 1.609	-4.139**	-4.112**
Capital	K	-2.962	-2.965	-4.875**	-6.847**
Private investment	PI	- 3.409	- 3.434	-4.055**	-4.116**
Public investment	PG	- 1.966	- 2.273	-3.766**	-3.851**

*** significance at 5% and *Significance at 10%. The lag length is based on the Schwarz Information Criterion for ADF and the Newey-West Bandwidth for PP. Critical values (with linear trend): at the 5% and 10% are 3.54 and 3.20, respectively.*

Table 2

Johansen co-integration test results

Co-integrating rank (r)	Model (I) Trace statistics: λ-$_{Trace}$	Model (II) Trace statistics: λ-$_{Trace}$	C (5%)
r=0	117.097*	195.570*	95.75366
r≤1	65.471	100.167*	69.81889
r≤2	40.573	59.795*	47.85613
r≤3	23.849	25.596	29.79707
r≤4	11.504	4.594	15.49471
r≤5	0.001	0.220	3.841466
	λ-max statistics	λ-max statistics	C (5%)
r=0	51.625*	95.402*	40.07757
r≤1	24.897	40.372*	33.87687
r≤2	16.724	34.198*	27.58434
r≤3	12.345	21.001	21.13162
r≤4	11.502	4.374	14.26460
r≤5	0.001	0.220	3.841466

Co-integration equations:

Variables:	Coefficient:	Variables:	Coefficient:
LL	0.209583(4.96)	LL_N	0.165653(3.36)
LK	0.274168(7.71)	LPI	0.179269(3.91)
LG	0.116647(3.14)	LPG	0.080012(5.09)
LX_T	0.218725(7.72)	LX_N	0.050321(1.38)
LT	0.004250(0.21)	LT	0.145523(2.96)

The trace as well as the Max-eigenvalue tests indicates one and three co-integration eqn(s) at the 0.05 level respectively.
**: Rejection of the null hypothesis of no co-integration at 0.05 level.*
Notes: were taken the critical values (C (5%)) according to Osterwald-lenum.In brackets are t-Statistics.

Table 3

Error Correction Model for Saudi Arabia

Co-integration Model (I):

$$\Delta LnY = 0.01 + 0.39\Delta LnY_{-1} + 0.01\Delta LnL_{-1} - 0.08\Delta LnK_{-1} + 0.06\Delta LnG_{-1} + 0.12\Delta LnX_{-1} - 0.02\Delta LnT_{-1} - 0.49EC_{t-1}$$

(1.83) (1.84) (0.18) (-2.32) (1.29) (2.00) (-0.49) (-3.74)

R^2=0.69

F=9.35

Co-integration Model (II):

$$\Delta LnY = 0.07 - 0.09\Delta LnY_{-1} + 0.05\Delta LnL_{-1} + 0.16\Delta LnPI_{-1} + 0.01\Delta LnPG_{-1} - 0.02\Delta LnX_{-1} - 0.01\Delta LnT_{-1} - 0.27EC_{t-1}$$

(3.36) (-0.51) (0.29) (3.61) (0.63) (-0.75) (-2.12) (-4.78)

R^2=0.95

F=20.38

where: Δ refers to the differences, while EC_{t-1} refers to the error correction. The statistics in parenthesis are t-statistics.

Conclusion

The results have reflected the fact that the main determinants of economic growth of Saudi Arabia are related to the oil sectors. The analysis of the long-term relationship between selected variables in the main model found that total exports had the greatest influence on economic growth, while tourism was the least influential variable.

The general performance of tourism was below expectations in the main model, reaffirming both the domination of the oil sector and the uncertainty of the tourism sector in its ability to lead and support Saudi Arabia's economic growth. However, the latter was found to be the most important when assessed in the non-oil model. Hence, it is concluded that tourism *can* be considered to be a valid future alternative source of growth and a potential replacement for the oil sector. Oil-rich countries (particularly Saudi Arabia) should re-direct their economic policies more and more towards promoting those non-oil sectors that are the easiest to control. This study also found out that all variables are important in the growth of the Saudi Arabian economy except exports in non-oil, which do not have a strong influence on economic growth.

Overall, this study's outcomes suggest that the omission or exclusion of important variables and factors in non-oil sectors such as tourism, in addition to the exclusive concentration of experts' empirical studies on the role of exports (particularly oil and gas) and government spending as the engines of growth might be both biased and misleading. Thus, this paper has both theoretical and practical implications. Theoretically, through the inclusion of the tourism variable as a determinant of economic growthand isolating the non-oil sector from the oil one, the study was able to detect and highlight the potential role of tourism as a future crucial factor in determining economic growth in oil rich countries.

In more practical terms, our findings inform policy-makers in oil-rich countries in generaland the Saudi government in particular, as to future key sectors to focus on in

order to ensure continuous growth. In fact, highlighting tourism as a future engine for growth means that policy-makers should think of ways to improve the tourism sector. This could be done by key measures including, solving regional conflicts, developing suitable infrastructures and facilitating visa procedures.

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Appendix B. The Second Article:

Long-term Economic Growth in Oil-Rich Saudi Arabia: What is the role for non-oil sectors?

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(Economic Issues, Vol. 20, Part 1, 109-129)

ABSTRACT

As a depletable resource, oil is a useful source of economic growth, but may not be relied upon for long-term sustainable development. Diversification from oil is needed to achieve this. This paper examines the most important non-oil determinants of growth in the Saudi economy between 1970 and 2011, using the Johansen approach and error correction modelling, to study the relationship between all variables, both long and short-term. It focuses on the role of non-oil sectors, given the government's determination to reduce dependence on oil income. The study uses exports, government spending, private and public investment, religious tourism, labour and capital as independent variables, while economic growth is addressed as the dependent variable. Empirical results show that all variables are important in the growth of the Saudi economy except non-oil exports, which do not have a significant effect on economic growth. Religious tourism's role was not found to be significant in the process of economic growth, when the economy as a whole was taken into consideration. Nonetheless, when isolating the non-oil sectors, the effect of religious tourism had a greater influence on economic growth. Concrete evidence also exists as to the importance of the role of an additional variable - government spending — in enhancing economic growth.

1. INTRODUCTION

THE WORLD TODAY IS WITNESS to significant interest in the vicissitudes of economic growth. It is one of the major macroeconomic indicators, wherein macroeconomic instability leads to many problems, notably higher inflation and national unemployment (Montiel 2011). Economic theories and empirical studies have made strong progress in enhancing our understanding of the expansion of a given economy. Some have focused on external factors affecting economic growth, while others have concerned themselves with the internal factors. The majority of oil-rich countries on the other hand, have focused on a single product (oil and its derivatives) for the most part, without trying to diversify their sources of income, nor taking into

account the perils of falling prices – such as the implications of prices reaching their current (early 2015) lows of less than 50 per cent of 2014 values with the potential for further decreases (BBC 2015).

In the case of the Kingdom of Saudi Arabia (KSA), instability of world oil prices and the Saudi economy's reliance on a single product, calls for the enhancement of other revenue-generating sectors in the country's achievement of a greater level of growth and sustainable development. Saudi Arabia has to unleash the potential of non-oil sectors if it is to reduce its dependence on oil. In several studies, private investment, non-oil exports and religious tourism have been identified as sectors with huge potential to enhance economic growth (Khan and Reinhart 1990; Al-Yousif 1997 and Schubert et al. 2011). Religious Tourism, for example, has experienced tremendous growth in terms of the number of tourists visiting Saudi Arabia. It reached its highest ratio in the Middle East region in 2011, according to The World Tourism Organization (2012), along with an unparalleled growth in non-oil exports. The role of private investment increased steeply; the contribution of the private sector in Gross Domestic Product (GDP) in Saudi Arabia, at constant prices, reached slightly more than 58 per cent, based on the Ministry of Planning for the year 2012. Nonetheless, in oil-rich countries (most prominently Saudi Arabia) there is very limited empirical evidence concerning the relationship between oil and non-oil factors and economic growth. Saudi Arabia is economically a very important country due to the fact that its significant oil stocks allow it to plug into the world oil markets and monitor the stability of oil prices; hence, the importance of the economic stability of Saudi Arabia concerns not only Saudi Arabia but the whole world.

Indeed there have been numerous studies on economic growth but this study is significantly different in four key areas. First, while most studies investigating the determinants of economic growth have focused on few variables only (Prochniak 2011), each depending on its focus (for example, Asseery and Al-Sheikh 2004; Anaman 2004; Piazolo 1995; Kogid et al. 2010), the present paper adopts a novel comprehensive approach, including 12 variables proven to be the most important determinants of economic growth in oil-rich countries, with a focus on important and neglected variables in the non-oil sectors. Second, this paper is the first study that tests analytically the effect of religious tourism on economic growth. We choose Saudi Arabia as its tourism is largely based on religious aspects. We illustrate the key contribution of this new variable in economic growth, which may inform potential studies in other countries with tourism characterized by religious aspects, such as Italy and Iran. Third, to the authors' knowledge this is the first study that examines both oil and non-oil sectors simultaneously, using the Johansen approach, for the period 1970-2011. Finally, our study opens the door to future studies on oil-producing countries using three models to test other important variables.

The rest of the paper is organised as follows: the literature review, followed by a section on the method of study, the empirical results and discussion and, finally, the conclusion.

2. LITERATURE REVIEW

Historically, two key economic theories, the Solow-Swan modeland the New Growth Theory of Romer and Lucas, have formed the basis for most studies on economic growth. The Solow model is one of the most important contributors to modern economic theory; its goal is to identify and evaluate basic factors influencing economic growth. The Solow model began with a normal production function, which depends on labour, capital and technical advances (Solow 1962) and was later expanded to a) incorporate other variables such as: savings, population growth, investment and technical progress and b) examine how this in turn impacted on living standards and economic growth. On the other hand, Romer (1986) and Lucas (1988) developed an endogenous growth theory, which concentrated on the stock of human capital, technological advances, trade and government policies. The essential characteristic of this model is that it links technical progress directly to productivity and economic growth, rather than to labour and capital. However, most studies in both developed and developing countries rely on the expanded Solow model (Anaman 2004). Rao and Cooray (2012) in their study on the most suitable form for developing countries, confirm that the expanded Solow model is the best model in the case of less developed countries.

According to these theoretical discussions, empirical studies have attempted to identify the important factors for economic growth. Nonetheless, this analysis has two main problems: 1) there are a large number of different variables which impact on economic growth and 2) each country has its own specific conditions (Piazolo 1995). Whilst following these empirical studiesand taking into consideration these problems, the factors which impact economic growth in Saudi Arabia were selected by focusing mainly on the key determinants of economic growth in non-oil sectors. These factors are: exports, tourism and private investment.

Exports, has been found to be one of the primary determinants of growth in both oil and non-oil sectors, by many empirical studies (see for instance, Tyler 1981; Chow 1987; Barro 1996; Asseery and Al-Sheikh 2004; Harvie and Pahlavani 2005; Kogid et al. 2010; Tiwari 2011) and by several theories (including the Mercantilists, Classical and Keynesian growth models), all of which argued that trade plays a vital role in economic growth.

Several analysts argue that the relationship between exports and economic growth depends mainly on the export-led growth (ELG) hypothesis (for example, Al-Yousif 1997; Awokuse 2007)and they utilise this hypothesis to assess the effect of exports on economic growth. The empirical studies also argue that exports contribute positively to growth on several fronts, including through the provision of foreign exchange, technology transfer and diffusion of knowledge, as well as enhanced efficiency by means of improvements in the skills of workers. The current analysis tests the validity of this hypothesis for the Saudi economy, which is based mostly on oil and its derivatives.

In this framework, studies addressing the determinants of economic growth in oil-producing countries have tended to focus on the exports variable (see for instance, Anaman 2004; Asseery and Al-Sheikh 2004; Konya 2004). Tuwaijri (2001) examined the causal relationship between economic growth and exports in the Kingdom of Saudi Arabia for the period 1969 to 1996. Government spending was incorporated in the analysis; evidence showed that the Kingdom's oil exports led to increased government spending, which positively and significantly impact on economic growth. The study found the presence of bilateral causality between economic growth and exports, although the impact of exports on economic prosperity was stronger than the impact of economic growth on exports. Furthermore, the inclusion of the government spending variable considerably increased the strength of the causal relationship between the growth and exports. Thus, this study supports other studies conducted in oil-producing countries, in terms of the importance of exports in the process of economic growth. It also provides concrete evidence of the importance of the role of government spending on economic growth. Therefore, the following hypothesis is proposed:

H_1 – exports have a positive effect on economic growth.

More recently, researchers have shown a great interest in the relationship between tourism and economic growth. Several studies (see Belisle and Hoy 1980; Davis and Consenza 1988; Sequeira and Maçãs Nunes 2008; Tiwari 2011) showed that tourism has a positive effect on long-term economic growth. Tourism is argued to be a good source of foreign exchange for both developing and developed economies and also leads to employment creation, which contributes further to income generation, in addition to tax revenue.

Most studies that address this tourism-led growth hypothesis (TLG) are underpinned by the export-led growth hypothesis (ELG) (see Balaguer and Cantavella-Jordà 2001; Cortes-Jimenez and Pulina 2010; Jayathilake 2013). This hypothesis is based on the premise of moving consumers rather goods and thus considers international tourism to be a genuine strategy for economic growth. Currently, many low-income countries and developed countries adopt a set of economic policies encouraging international tourism, which is asserted to be a potential source of economic expansion.

Several empirical studies have examined the role of tourism: Heng and Low (1990) for Singapore, Katircioglu (2009) for Turkey; Chen and Chiou-Wei (2009) for Taiwan and Korea; Schubert et al. (2011) for a small island and Chatziantoniou et al. (2012) for France, Italy, Spain and Greece. However, not all of these studies have found evidence of the long-term positive effects from this sector. As far as oil-rich countries are concerned, Brau et al. (2007) consider tourism to be very important. Following the results of an empirical analysis of data from 143 countries between 1980 and 2003 they concluded that countries that depend on tourism tend to grow faster than oil-producing countries. However, most studies carried out in oil-rich countries have ignored the importance of this variable. In Saudi Arabia, for example, Asseery and Al-Sheikh (2004) examined the determinants of economic growth between 1964 and 2001. They used military spending, financial sector development, exports, government spending,

labour and investment as their independent variables and found that all variables except investment were important determinants of economic growth in the country. The study further noted that oil exports seemed to have the strongest correlation to this growth - above all the other factors combined.

Nonetheless, their exploration into growth in Saudi Arabia suffered from some fundamental shortcomings. For instance, they ignored important variables in non-oil sectors such as non-oil exports, private investment and religious tourism. The last of these, religious tourism, is a non-depleting resource that the governments of such countries could invest enormous amounts of oil-revenues into. Statistics from the United Nations World Tourism Organisation (UNWTO) suggest that the KSA had the highest number of tourists in the Middle East, amounting to over 17 million in 2011 (World Tourism Organisation 2012). As a result, it can be established that KSA, along with being an oil exporter, has a promising tourism market due to the two holy mosques of Makkah and Medina. Thus, the next hypothesis is proposed as:

H_2 – Religious tourism has a positive effect on economic growth.

Similarly, there have been considerable debates between researchers on the relationship between private investment and growth. A significant number of researchers have concluded that private investment has had a positive influence on economic growth (see for example, Serven and Solitnano 1992; Khan and Kumar 1997; Al-Jundi and Hijazi 2013; Alshahrani and Alsadiq 2014). These empirical studies indicate that there is a positive relationship between private investment and economic growth working through several channels, the most important of which is to provide employment for citizens and stimulate productivity.

A study by Khan and Kumar (1997) explored the impact of private and public sector investment on growth in developing countries using a co-integration approach. The results reflected the fact that private investment has a much larger impact than public investment. A recent study by Alshahrani and Alsadiq (2014) also examined the effect of several factors on economic growth, including private and public investment. The authors discovered that there was a positive impact from both private and public investment on the Saudi economy. Consequently, empirical studies support the concept that private investment has a positive effect on economic growth. From this perspective, this analysis tests the validity of this hypothesis for the Saudi economy. Hence, the last hypothesis proposed is:

H_3 – private investment has a positive effect on economic growth.

It is important to note that religious tourism, private investment and non-oil exports are not necessarily the only factors affecting economic growth in the KSA and similar countries, but are the most important following previous empirical studies discussed above. Additional variables considered to be important determinants of economic growth in oil-rich countries include: government spending (for example, Anaman 2004; Asseery and Al-Sheikh 2004; Safdari *et al* 2011), labour and capital (following the neoclassical production function). Consequently, this paper aims to examine a specific subset of these variables in the KSA, with a particular focus on the main non-oil sectors.

3. METHOD OF STUDY AND MODEL SPECIFICATION

3.1. METHOD OF STUDY

Time series data used were from several sources, namely: the International Monetary Fund database (IMF), the Saudi Arabian Monetary Agency "Central Bank" (SAMA), the Saudi Commission for Tourism and Antiquities (SCTA) and The United Nations World Tourism Organisation (UNWTO). All the data were transformed into natural logarithms and variables have been calculated in real terms (US dollars), using the GDP-deflator (1999 = 100). The data consist of 41 (annual) observations over the period 1970 to 2011.

The methods of analysis employed are based on those used by Piazolo (1995), Awokuse (2007) and Katircioglu (2009), beginning with the stationary tests for Augmented Dikey-Fuller (ADF) (Dickey and Fuller 1981) and the Phillips-Peron (PP) (Phillips and Perron 1988) test for unit roots. The Johansen method for cointegration (Juselius and Juselius 1990) was applied to test the relationship between independent variables and economic growth (GDP) in the long-term as well as the Error Correction Model (Engle and Granger 1987), to test the relationship between all variables in the short-term.

A unit root test is imperative in identifying whether time-series data are stationary or not. The procedure is important in order to avoid the problem of spurious regression (Gujarati 2011)and is necessary to the conversion of the data into a form that satisfies the stationary condition before starting the analysis. There are a number of methods used to test the stationarity of time series, as represented in: Dickey Fuller (DF), Augmented Dickey-Fuller (ADF), Philips-Perron (PP), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Ng-Perron (NP) (Kogid *et al* 2010).

The ADF and PP unit root tests will be presented. These have been extensively used in numerous studies (see for example, Piazolo 1995; Kogid et al 2010). Piazolo (1995) confirmed that there are three important tests of integration to apply, ADF and PP being the most important. After the unit root tests for ADF and PP, it is necessary to ensure that time-series variables are integrated of order one. The cointegration test of the Johansen approach will, therefore, be conducted between GDP and the independent variables to verify the existence of a long-term relationship between the GDP and the most important determinants. Two criteria in Johnson's approach are λ-trace and λ-max. The Johansen test relies on the estimation of the Vector Autoregressive Model (VAR) that assumes the existence (p) of economic variables in the vector of regression of K-class, using the following equation:

$$\Delta X_t = \mu + \Gamma_1 \Delta X_{t-1} + \Gamma_2 \Delta X_{t-2} + \ldots \Gamma_{k+1} \Delta X_{t-p+1} + \pi X_{t-1} + \varepsilon_t$$

where: $X_t = (k \text{ x } 1)$ stochastic variable vector, $u_t = (k \text{ x } 1)$ constant vector, π and Γ_1, $\Gamma_{2,} \ldots \Gamma_{k+1} = (k \text{ x } k)$ parameter matrices and $\varepsilon_t = (k \text{ x } 1)$ random vector.

With regards to the short-term relationship, if the variables are cointegrated, following the Johansen test, the study will employ the Vector Error Correction Models

(VECM) derived from the VAR to examine the short-term relationship between the economic growth (GDP) and the selected variables in all three models.

3.2. MODEL SPECIFICATION

In studying the effect of selected variables on growth, the analysis utilizes the widely used expanded neoclassical production function (see for example, Barro 1991; Mankiw et al. 1992), which includes several variables such as human capital and government spending. Thus, the neoclassical production functions can be written as follows (Odedokun 1997):

$$Y=Af\ (K, L; Z) \qquad (1)$$

Where:

Y = economic growth (GDP);
A = technological;
K = capital;
L = labour force;
Z = a vector of other relevant variables.

Saudi Arabia and other economies that are oil-export based rely on external influences in determining prices. They then inject these earnings into the economy via government spending. Hence, in order to access the determinants of economic growth in the context of an economy based on the extraction of a natural resource such as oil, the econometric models will derive from the extended neoclassical production function as indicated in equation (2):[2]

$$Y=F\ [(K, L); X, G, T] \qquad (2)$$

where additional variables, X, G and T are total exports, government spending and religious tourism respectively.

Overall, the existence of the oil sector in oil-rich economies, with its domination of the economy (which is greatly different in nature to the non-oil sector), makes it necessary to divide the economy into two major sectors: oil and non-oil. In order to achieve the objectives of the study, some of the variables in equation (2) were revised as follows:

- Three main types of exports (X): total exports (X_T), oil exports (X_O) and non-oil exports (X_N).
- Following Khan and Reinhart (1990) as well as Odedokun (1997), capital is divided into public (PG_N) and private (PI_N) in the non-oil sector.

To address its aim, this paper estimates three different models: 1) the main model, which reflects the whole economy, 2) the oil sector and 3) the non-oil sector. Thus, the empirical formulations of the extended production function (2) are as follows:

MAIN MODEL:

$$\ln Y_1 = \alpha + \beta_1 \ln L_T + \beta_2 \ln K + \beta_3 \ln X_T + \beta_4 \ln G + \beta_5 \ln T + \varepsilon \qquad (3)$$

OIL SECTOR MODEL:

$$\ln Y_2 = \alpha + \beta_1 \ln L_O + \beta_2 \ln K_O + \beta_3 \ln X_O + \beta_4 \ln G + \varepsilon \qquad (4)$$

NON-OIL SECTOR MODEL:

$$\ln Y_3 = \alpha + \beta_1 \ln L_N + \beta_2 \ln PG_N + \beta_3 \ln PI_N + \beta_4 \ln X_N + \beta_5 \ln T + \varepsilon \qquad (5)$$

where Y_1 is real GDP, Y_2 is real GDP in the oil sector, Y_3 is real GDP in the non-oil sector; X_T, X_N and X_O are exports variables (total, oil-exports and non-oil exports, measured by real values); T is religious tourism (measured by the total number of tourist arrivals including Hajj and Omrah); G is government spending (measured by real government consumption expenditures, except soft government loans granted to the private sector); PI_N and PG_N are private and public investments in non-oil sectors, measured by gross private fixed capital formation in non-oil sector (in real terms) and gross public fixed capital formation in the non-oil sector (in real terms); K and K_O are capital and oil-investment, measured by total gross fixed capital formation (in real terms) as proxy of capital and gross public fixed capital formation in the oil sector (in real terms); whereas L_T, L_O and L_N are labour force variables (measured with total, employees in the oil sector and employees in the non-oil sector respectively). All time-series data were converted to natural logarithms.

4. DESCRIPTION OF VARIABLES

- *Gross domestic product (GDP) (Y)*

Saudi GDP is our dependent variable, denoted by (Y).

- *Labour (L)*

This variable plays a vital role in economic growth according to many theories, as discussed previously. However, the labour force in oil-rich countries (such as KSA) is concentrated in non-oil sectors, according to the KSA Ministry of Planning and Central Bank. As per the neoclassical growth theorists, the labour variable must be included in this model. It is expected that labour will have a positive relationship with economic growth.

Labour can be measured in different ways, depending on data availability: the size of the labour force, number of hours worked, schooling years and the population size. In this study the size of the labour force is used for our analysis, given that this information is readily availableand following previous studies (see, for example, Anaman 2004; Teixeira and Fortuna 2003; Awokuse 2007).

- *Exports (X)*

Petroleum exports play a major role in determining economic growth in oil-rich countries, particularly in Saudi Arabia, but the fluctuation of oil income together with the lack of diversity of income sources may have a negative long-term impact on the rate of economic growth. In Saudi Arabia, for example, the contribution of exports to total GDP has increased, as the greatest percentage of the country's exports are oil-related, constituting about 90 per cent of the total export earnings; non-oil exports account for the remaining percentage. Such a situation makes GDP and Saudi economic performance more sensitive to any changes in international economies. Based on the hypothesis that exports play a leading role in growth, it is expected that exports, both oil and non-oil, will have a positive impact in all three economic growth models.

- *Government spending (G)*

Government spending is strongly influenced by monetary policy in oil-rich countries. If it is competently managed it is capable of strengthening economic growth and its sustainability, improving social welfare and raising standards of living. Government spending in Saudi Arabia includes the procurement of goods and different services such as security and defence, health, education, public sector staff salaries and others. It does not include transfers and various subsidies provided by the State to the private sector. Government spending is expected to have a positive impact on economic growth (Dash and Sharma 2008; Kogid et al 2010; Nurudeen and Usman 2010).

- *Private investment (PI)*

Private investment is an important pillar of Saudi Arabia's economic growth. It is an important component of total demand and GDP. The government of Saudi Arabia has taken a number of actions to enhance the role of private investment, through low-yielding loans and direct and indirect subsidies. It is expected that the impact of private investment on the Kingdom's economic growth will be positive, especially in the non-oil sector (Serven and Solitnano 1992; Khan and Kumar 1997; Alshahrani and Alsadiq 2014).

- *Public investment (PG)*

Public investment in the Saudi economy is very important. It can improve levels of development, promote business growth and increase productivity. Like private investment, it can lead to an increase in the accumulation of physical capital and thus stimulate economic growth. That said, the overall effect of public investment on economic growth in Saudi Arabia could be positive or negative (Khan and Kumar 1997; Tanzi and Davoodi 1998), as investment in the public sector of Saudi is not necessarily motivated by profit.

- Religious tourism (*T*)

Tourism is the most controversial factor in recent studies on economic growth. Saudi Arabia is attempting to diversify its sources of income and resolve its almost complete dependence on oil, through direct investment in the tourism industry, be it international tourism or religious tourism.3 Religious tourism is expected to carry a positive impact on economic growth in Saudi Arabia. There are numerous of indicators to measure this, including tourist arrivals, tourist receipts and the number of nights spent by tourists in the country. This study uses tourist arrivals, as these have already been successfully and

extensively utilised in previous works (Jayathilake 2013). Tables 1 and 2 contain summaries of the hypothesis and the descriptive statistics of the variables.

Table 1: Hypothesis

Explanatory Variables	*Symbols*	*Hypothesis*	*Expected sign*
Capital	K, K_O	Gross fixed capital formation and investment in the oil sector positively affect economic growth.	+
Labour force	L_T, L_O, L_N	The labour force in three models positively affects economic growth.	+
Exports	X_T, X_O, X_N	Exports in the three models positively affect economic growth.	+
Private investment	PI_N	Private investment in the non-oil sector positively affects economic growth.	+
Public investment	PG_N	Public investment in the non-oil sector has a mixed effect (positive and negative) on economic growth.	+/-
Government spending	G	Government spending positively affects economic growth.	+
Religious tourism	T	Religious tourism positively affects economic growth.	+

Table 2 Descriptive statistics of the variables

	GDP	GDP_O	GDP_N	G	K_O	K	PG_N	PI_N
Std. Dev.	0.408276	0.300556	0.596595	0.584971	0.506216	0.485156	0.839079	0.812113
Skewness	-1.609558	-1.057865	-1.865849	-1.919784	-1.195018	-1.473710	-0.569442	-1.439257
Kurtosis	6.236814	3.050656	6.657689	5.688582	4.482432	5.561474	2.692085	5.447174
Sum	484.8687	444.1415	464.1138	425.7885	321.5911	421.3028	376.2585	391.1865
Sum^2 Dev.	6.667557	3.613365	14.23704	13.68762	10.25017	9.415048	28.16213	26.38111
Obs.	41	41	41	41	41	41	41	41

	L_T	L_N	L_O	X_N	X_O	X_T	T
Std. Dev.	0.485179	0.530403	0.525970	0.796311	0.335842	0.532246	0.822892
Skewness	-0.662180	-0.356197	-0.467947	-0.146655	-0.975430	-0.163593	0.459599
Kurtosis	2.126065	2.013406	1.832262	2.979104	3.182963	2.518557	1.869469
Sum	343.0865	344.0903	158.6822	363.6918	440.2532	451.4858	332.6735
Sum^2 Dev.	9.415964	11.25310	11.06576	25.36445	4.511606	11.33143	27.08608
Obs.	41	41	41	41	41	41	41

5. EMPIRICAL RESULTS AND FINDINGS

5.1. UNIT ROOT TESTS

The Augmented Dickey and Fuller (ADF) and Phillips-Perron (PP) unit root tests are presented in Table 3. The ADF tests suggest that all selected variables are integrated of order I (1). The PP test indicates that two dependent variables are integrated I (0). This study utilises the results of the ADF test as a basis for a cointegration test, as the PP-test performs better with large samples than smaller of this study (Davidson and MacKinnon 2004). In the Augmented Dickey Fuller (ADF) test, the gap was determined by the

Akaike Information Criterion (AIC), while the Newey-West standard was utilised in the Phelps-Perron (PP) tests.

Table 3: Tests for unit root (ADF and PP tests)

	ADF test at first difference				*PP test at first difference*			
	Intercept	*Lags*	*Intercept and trend*	*Lags*	*Intercept*	*Lags*	*Intercept and trend*	*Lags*
ln GDP	-4.391**	8	- 4.518**	8	- 2.512	4	-2.431	3
ln GDP_O	-3.561**	8	-3.649**	8	-4.946**	0	-4.857**	1
ln GDP_N	-3.385**	2	-7.037**	4	-2.074	8	-2.400	5
ln L_T	-8.962**	0	-9.023**	0	-9.013**	1	-9.023**	0
ln L_O	-5.752**	0	-4.490**	3	-5.754**	2	-5.790**	4
ln L_N	-3.960**	0	- 4.139**	0	- 3.955**	2	-4.112**	1
ln K	-6.959**	0	-4.875**	1	-6.944**	6	-6.847**	6
ln K_O	-7.547**	1	-7.437**	1	-8.298**	13	-7.624**	12
ln PI_N	-3.879**	1	- 4.055**	1	- 3.857**	6	-4.116**	5
ln PG_N	-3.804**	0	- 3.766**	0	- 3.868**	3	-3.851**	3
ln X_T	-4.137**	0	-3.696**	1	-4.052**	2	-3.935**	2
ln X_N	-6.111**	0	-4.306**	4	-6.726**	8	-11.079**	15
ln X_O	-5.321**	0	-5.370**	0	-5.232**	1	-5.376**	1
ln G	-7.381**	0	-8.122**	0	-7.289**	4	-8.141**	2
ln T	-5.291**	0	-4.827**	1	-5.206**	5	-5.154**	8

**Significance at 10% and ** significance at 5%. The lag length is based on the Akaike Info Criterion (AIC) for ADF and Newey-West Bandwidth for PP.*

5.2. CO-INTEGRATION TEST

The results of the Johansen's cointegration test are presented in Table 4. They show that there are, respectively, one, two and three cointegration vectors between GDP growth and other variables in all three models, using the lag length determined by the AIC. The Johansen approach is sensitive to lag length; hence, optimal lag-length must be selected. Consequently, the existence of a long-term relationship between economic variables becomes apparent. The equation for cointegration between economic growth and the independent variables in all three models can be seen in the lower panel of Table 4, which reveals the dominance of total exports on economic growth. It also shows the failure of the religious tourism variable to enhance economic growth in the main model. In the oil-sector growth model, as expected, oil exports was the most important variable, followed by investment in the oil sector and government spending, while private investment was the primary factor affecting economic growth in the non-oil sectors in terms of the magnitude of the estimated coefficients. Religious tourism and investment in the public sector were second and third respectively in the latter model, while exports did not have a significant effect.

Table 4: Johansen Co-integration Test Results

H_0	H_1	*Model (I)*	*Model (II)*	*Model (III)*
		Trace statistics: λ-$_{Trace}$		
r=0	r > 0	117.0971*	80.52109*	195.5705*
r≤1	r > 1	65.47119	42.21529*	100.1677*
r≤2	r > 2	40.57395	16.25504	59.79529*
r≤3	r > 3	23.84954	6.239517	25.59655
r≤4	r > 4	11.50454	0.000019	4.594693
r≤5	r > 5	0.001841	0.000000	0.220659
		Eigen statistics: λ-max		
r=0	r = 1	51.62596*	38.30579*	95.40278*
r≤1	r = 2	24.89724	25.96025*	40.37239*
r≤2	r = 3	16.72441	10.01552	34.19874*
r≤3	r = 4	12.34500	6.239498	21.00186
r≤4	r = 5	11.50270	0.000019	4.374033
r≤5	r = 6	0.001841	0.000000	0.220659

Estimated Long-Term Coefficients Johansen Approach

Variables	Coefficient	*Variables*	Coefficient	*Variables*	Coefficient
LL_T	*0.209583(4.96)*	LL_O	*-0. 004755(-0.06)*	LL_N	*0.165653(3.36)*
LK	*0.274168(7.71)*	*LKo*	*0.225699(4.00)*	LPI_N	*0.179269(3.91)*
LG	*0.116647(3.14)*	*LG*	*0.197766(2.71)*	LPG_N	*0.080012(5.09)*
LX_T	*0.218725(7.72)*	LX_O	*0.642599(8.81)*	LX_N	*0.050321(1.38)*
LT	*0.004250(0.21)*	--	--	*LT*	*0.145523(2.96)*

** Rejection of the null hypothesis of no co-integration at 0.05 level.*
*Notes: * denote significant at the 5% level. t-Statistics in parenthesis.*

5.3 ERROR CORRECTION MODEL

The above results find long-term relationships between economic growth and its determinants. Consequently, the next step is to examine the relationship between these variables in the short-term. The results are shown in Table 5.

Table 5: Error Correction Model for Saudi Arabia

Variables	*Model 1*		*Variables*	*Model 2*		*Variables*	*Model 3*	
	Co.	*t-St.*		*Co.*	*t-St.*		*Co.*	*t-St.*
EC_{t-1}	-0.49	-3.74	*EC_{t-1}	-0.39	-2.15	**EC_{t-1}	-0.53	-3.86
D (*LGDP*(-1))	0.39	1.84	D ($LGDP_O$(-1))	0.49	1.53	D ($LGDP_N$(-1))	-0.05	-0.26
D (LL_T(-1))	0.01	0.18	D (LL_O(-1))	-0.53	-1.81	D (LL_N(-1))	-0.14	-0.78
D (*LK*(-1))	-0.08	-2.32	D (LK_O(-1))	0.08	1.30	D (LPG_N(-1))	0.01	1.01
D (*LG*(-1))	0.06	1.29	D (LX_O(-1))	-0.41	-1.45	D (LPI_N(-1))	0.09	1.64
D (LX_T(-1))	0.12	2.00	D (*LG*(-1))	0.05	0.35	D (LX_N(-1))	-0.01	-0.38
D (*LT*(-1))	-0.02	-0.49	C	0.35	1.31	D (*LT*(-1))	-0.10	-2.15
C	0.01	1.83	-	-	-	C	0.11	4.67
R-squared	0. 69		R-squared	0.27		R-squared	0.96	
F-statistic	9.35		F-statistic	1.71		F-statistic	24.17	

where: D refers to the first differences; EC_{t-1} is the error correction term; *Co*. is coefficient and *t-St*. is *t*-statistic. *EC_{t-2} = (*t-St*. is 2.08) ** EC_{t-2} and EC_{t-3} = (*t-St*. are 4.06 and 2.01 respectively).

The results in Table 5 indicate that total exports (X_T) is the main determinant of economic growth in the first model, both in the short and the long-term, whereas other variables are found to differ in their short and long-term impacts. Although government spending (G), total labour force (L_T), investment in oil sector (K_O), private investment (PI_N) and public investment (PG_N) are positive and statistically significant in the long-term estimated equations (Table 4), they were not significant in the short-term. Labour force in the oil sector (L_O) also has a negative, but insignificant, influence in the short and long-term.

With regards to the estimated coefficient for the error correction term (EC_{t-1}), in all three models the short-term relationship between the dependent and the independent variables is negative and statistically significant, consistent with the method of error correction (see Table 5).

1. DISCUSSION OF THE RESULTS

The study illustrates the importance of exports to economic growth, as suggested by both theory and existing empirical evidence. In Saudi Arabia the impact of the oil-sector is highly prominent. This is evident when the economy is divided into two parts (oil and non-oil) with estimated results showing that oil exports are in fact responsible for this growth, whereas the impact of non-oil exports on economic growth is not significant. Religious tourism performs below expectations in the main model. Nonetheless, our findings confirm its importance in the non-oil economy. It is found that private investment in the non-oil economy has the greatest positive impact on economic growth, followed by religious tourism and public investment respectively.

The results thus substantiate prevailing economic theories and support the majority of applied studies, as they show that exports (total and oilexports), government spendingand public and private investments have a positive impact on economic growth (see for example, Tuwaijri 2001; Anaman 2004; Asseery and Al-Sheikh 2004; Dash and Sharma 2008; Kogid et al 2010; Nurudeen and Usman 2010; Safdari et al 2011; Trpkova and Tashevska 2011).

With regard to non-oil exports, some studies have found that their impact on economic growth and performance is weak and less than expected (see, for example, Mahdavi 2007; Adenugba and Dipo 2013). The results of the present study support this. Aljarrah's (2008) research into Saudi Arabia and Olayiwola and Okodua's (2013) work on Nigeria both identify a positive relationship between non-oil exports and economic growth. However, other studies have shown a negative relationship with economic growth, for example in Iran, another oil-rich country (Tabari and Nasrollahi 2010). These differences, all for oil-rich countries, may be due to the different methodologies used, or maybe they support the assertion that non-oil exports have an unpredictable impact on economic growth in oil-rich countries.

With regard to religious tourism, these findings give strong support for an unprecedented positive impact of religious tourism on the Saudi economy. They support most of the empirical studies (such as Brau et al 2007; Schubert et al 2011; Tiwari

2011), which posit that tourism in general has a positive impact on economic growth. However, these studies did not consider religious tourism specifically, perhaps because of an absence of tourism of this type in the countries investigated. Hence, our study is among the first, if not the first, to examine the impact of religious tourism on economic growth, thereby extending our understanding of the relationship between tourism and economic growth, especially in oil-rich countries.

2. CONCLUSIONS

The aim of this paper has been to identify and examine the main factors of economic growth in Saudi Arabia, focusing mainly on key variables in the non-oil sectors of the economy. The Augmented Dickey Fuller (ADF) unit root tests showed that the data used for each variable are integrated of order one I(1), which gave the possibility of conducting cointegration analysis in seeking to answer the primary research questions of the paper. The main contribution of this paper is to illustrate the importance of non-oil channels such as private investment, religious tourism and non-oil exports as a future strategy for long-term sustainable growth for oil-rich countries, particularly for Saudi Arabia. Moreover, it highlights the importance of separating the economy in oil-rich countries into two parts, oil and non-oil, when examining issues relating to economic growth.

This study has uncovered the fact that oil exports have the greatest effect on economic growth, followed by investment in the oil sector and government expenditure - a logical finding, especially in oil-rich nations where oil or gas exports dominate. This study has also revealed private investment as having a strong impact on economic growth in non-oil sectors in addition to religious tourism and public investment. However, non-oil exports are less important; this means that the current growth rates of non-oil exports in the Saudi economy are not sufficiently strong economically, in the absence of a strong oil sector.

This study's results have also reiterated the positive impact of the labour force and capital on economic growth. This is consistent with economic theory, except in the case of workers in the oil sector. The religious tourism factor yields results that are below expectations when considering its impact on the whole economy, putting into context its efficiency and effectiveness in supporting the economic growth of Saudi Arabia. This does not mean it should be ignored; rather it should be supported if the desired economic results are to be achieved, especially with regards to diversification and expansion of nonoil sectors of the economy. This study also provides tangible evidence that, with the exception of the labour force in the oil sector, most of the variables had a stronger influence in the long-term than the short-term.

In summary, if the Saudi economy is to catch up with the economies of other more advanced nations, the country must focus on important variables in non-oil sectors such as private investment and religious tourism for multiple reasons, not the least of which is the fact that these sectors are far easier to control. Hence, there are two implications of this paper, both theoretical and practical.

As far as the theoretical side is concerned, the religious tourism sector is postulated to be a new determinant in economic growth theories. An attempt has also been made to isolate each sector separately in oil-rich countries (i.e. the oil and non-oil sectors). The present study has revealed and highlighted the potential role of the main non-oil sectors, in particular religious tourism and private investment, as decisive future factors available to promote economic expansion for petroleum-exporting countries (for example, Iraq and Iran).

With regard to practicality, the outcomes in general inform policy-makers in countries that depend on a single product such as oil and the Saudi government in particular, of the key sectors to focus on if they wish to ensure sustained economic growth. Highlighting private investment as well as religious tourism as future engines for economic expansion permits policy-makers in Saudi Arabia to grasp the prudence of strengthening these two sectors. This may be accomplished through primary measures such as infrastructure development, speeding up the privatisation process and facilitating the process of obtaining visas. Thus, the Saudi government is encouraged to focus on the factors and variables affecting the non-oil sector in order to promote its development, rather than continuing to rely upon massive oil revenues. The oil sector cannot be considered a dependable economic pillar, as its status is determined so decisively by international markets and global conflicts; it is difficult for any country to control or predict a future based on oil. We posit that the process of economic growth in Saudi Arabia (as an emerging-market/ developing country and an OPEC member) needs to focus on long-term variables.

Finally, the most valuable contribution of this study is that it modifies understanding of the nature of economic growth in oil-producing countries. Previous studies failed to separate the nature of an economy into oil and nonoil sectors and detach it from the whole economy. The three models that have been utilised can broaden our understanding of the economic factors that influence economic growth in those oil-rich countries that have similar characteristics to the Saudi economy, such as Iran and Iraq.

The literature review has been extended by incorporating new economic variables on economic growth (such as religious tourism) in order to give more profound insights into the relevance of these variables for economic growthand the results relating to the non-oil sectors are of great importance to the drawing-up of future policies. There is a considerable overlap between these two sectors (oil and non-oil) and it may be difficult to separate them completely. Nevertheless, this study opens the door to other studies exploring oil-producing countries by means of the three models used here. Future researchers can now test other important variables in oil-producing countries and can further endorse the assertion that oil-producing countries need new, independent theories, especially in the oil sector.

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ENDNOTES

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2. Government spending is included in two equations (the Main Model and Oil Sector) because it is significantly influenced by revenues from oil exports (for example, Tuwaijri 2001; Anaman 2004; Safdari *et al* 2011). However, it is not included in the Non-Oil Sector as the study aims to isolate any effect of the Oil Sector.
3. Religious tourism is a kind of tourism wherein people travel for religious reasons to Omrah on a pilgrimage or as a missionary (Shinde 2008). The largest type and most important form of religious tourism in the world is the Hajj pilgrimage in Makkah (Aziz 2001).

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Appendix C. The Third Article:

THE MAIN DETERMINANTS OF ECONOMIC GROWTH AND THE ROLE OF NON-OIL SECTORS IN OIL COUNTRIES' ECONOMIES: THE CASE OF SAUDI ARABIA

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Abstract

This paper examines the main determinants of economic growth in non-oil sectors, so as to provide information that may be used as a resource for future strategies on the economic growth in oil-dependent countries. In addition to labour and capital, the estimated model has non-oil exports, private and public investment and tourism as independent variables, with economic growth (GDP) as the dependent variable. Empirical results show that the most important factors that have an effect on economic growth in the Saudi economy, in order of importance are: private investment, international tourist arrivals and public investment. Unexpectedly, exports in the non-oil sector do not have a strong effect on economic growth. The results indicate that more must be done in the non-oil sector if the economy is to be diversified beyond oil for sustainable economic growth.

Keywords: Economic growth, Non-oil sector, Saudi Arabia.

I. Introduction

Economic growth is one of the main macroeconomic indicators that any nation aims to achieve, both developed and developing. Saudi Arabia is one of the six Arabian Gulf countries that depend mostly on oil revenues, but oil and its derivatives are exhaustible resources. Consequently, its current circumstances do not support the promotion of economic stability in the long term, given the country's dependence on the overseas market. Oil resources are the backbone of the economy in the Kingdom of Saudi Arabiaand the only way out of this problem of resource constraints would be to search for non-oil sectors, which rely on internal domestic factors, given that these are easier to control. International tourism, for example, is an inexhaustible supplier of revenue for the Saudi economy as it is based on pilgrimage (Omrah and Hajj) to the country's holy regions. Although oil revenues stimulate booms in the natural resource sector of an economy, this financial swell leads to higher prices locally for goods and services and therefore prompts inflation (Carton et al., 2010). The tourism industry, in turn, is working to attract investments, whether domestic or foreignand foreign exchange (Schubert et al., 2011). Furthermore, nations that rely on attracting tourists do not face the risk of Dutch disease.

Statistics have shown that the number of employed in the oil sector does not exceed about 2% of the total employment in many oil-producing countries. In the Kingdom of Saudi Arabia, for example, around 1.3% of the labour force was employed in the oil sector in 2003; the country had similar figures in 2004 (Kingdom of Saudi Arabia Department of Statistics, 2012). With regards to the International Monetary Fund, workers in the oil and gas sector in 1989, 1999 and 2009 comprised 1.1%, 1.6% and 1.1% of the total employment respectively (Table 1). According to the Council of Saudi Chambers (2010), tourism is expected to provide more than 1.5 million jobs for Saudis in 2015 and 2.2 million jobs in 2020. Skilled and trained personnel are required in the

oil-sector, whereas the tourism sector is far more flexible and possibly less problematic. It is known that the oil sector is capital intensive and uses modern technology, which affects the number of workers in this sector.

Table 1: Capital Investment and Employment in the Oil Sector

Year	**Oil Investment** (Million Riyals)	**Labour in the Oil Sector**	**The ratio of total employment**
1989	2130	54000	1.1%
1999	13147	97000	1.6%
2009	19180	91000	1.1%

Source: The International Monetary Fund (2012).

According to the latest statistics from the World Tourism Organization in 2012, Saudi Arabia had the highest number of tourists travelling to the Middle East in 2011. The number of tourists at that time reached more than 17 million; by contrast, ten million tourists visited Egypt and eight million travelled to Dubai in the same year. Saudi Arabia is the one of the largest oil exporters in the world and has some of the largest oil reserves. However, the Kingdom is not only an oil exporter; it has a promising tourism market, being the home of the holy mosques of Makah and Medina (QTA, 2011).

For Saudi Arabia, instability of world oil prices as well as the economy's heavy reliance on oil necessitates the strengthening and development of non-oil exports to achieve a more sustainable level of growth and development. This was highlighted in the Ninth Development Plan document (2010-2014) by the Ministry of Economy and Planning (2012). In addition, empirical studies emphasise the positive effects non-oil exports have on the economic development in the Kingdom, in that they visibly stimulate both investment and production within the country (Aljarrah, 2008). On the other handand in this framework, the Kingdom is facing several challenges through the heavy reliance on oil exports, which requires expanding the base of domestic production in some fields, such as industry and services.

The main objective of this paper is to identify the main determinants of economic growth in non-oil sectors in the Kingdom of Saudi Arabia, a nation with one of the largest oil economies in the world. The analysis covers the period 1970-2011 and addresses the following research questions: (1) The role of key non-oil sectors, such as tourism, non-oil exports and private investment, in the economy of Saudi Arabia; (2) The main determinants of economic growth in the last 40 years. The paper is comprised of five main sections. The introduction is the first of these, followed by a literature

review on the most important determinants of economic growth identified in the second section. Section 3 describes the method of study, with the empirical results and conclusion discussed in the fourth and final sections respectively.

II. LITERATURE REVIEW

There has been a significant amount of research into the field of economic growth. Empirical and theoretical studies have been conducted in order to identify the factors that contribute to such expansion in growth (Barro and Sala-i-Martin 1995; Piazolo 1995; Barro 1996; Asheghian 2011; Prochniak 2011). However, not all of these factors can be important and influential in oil economies; the specificity of these nations in their excessive dependence on a single product significantly affects the economy through higher prices lowering the opportunity to compete with the economies of other countries.

Exports, particularly oil, are the main factor affecting oil-rich countries, given the unparalleled dependence of these countries on the export of oil and its derivatives. Exports are the primary determinant of economic growth, as identified by many applied studies on both, non-oil and oil-rich countries (see for example, Safdari et al., 2011and Tolo, 2011) as well as several theories of economic growth, including the Classical and Keynesian growth models.

Studies addressing the determinants of economic growth in oil-producing countries have tended to focus on the export variables, especially oil exports (Safdari et al., 2011; Konya, 2004; Anaman, 2004; Asseery, 2004). Oil-rich countries have, in turn, been criticised for overly relying on oil-exports. Such criticism stems from the fact that this reliance might affect other areas of export due to the neglect of the country's infrastructure whilst narrowly focusing on the transfer of technology for oil purposes only. In this framework, a great number of articles have attempted to examine the impact of non-oil exports on growth, with mixed results. Evidence from Iran, an oil-rich

country, reveals a negative relationship between non-oil exports and economic growth (Ali and Nasrollahi, 2010). Moreover, an additional study on developing nations by Griffin, (1989) confirms that there is a weak relationship between exports and economic growth in developing countries. These nations need to refrain from depending on primary exports and the development of manufacturing processes in order to enhance growth, as such dependence would require substantial investment in their infrastructure. Conversely, there have been several studies in oil-rich countries, for example, Aljarrah (2008) for Saudi Arabia and Okodua (2013) for Nigeria, which have argued that there is a positive relationship between non-oil exports and economic growth. Olayiwola and Okodua (2013) also recommend that governments should encourage non-oil exports in order to increase FDI and contribute to the economic growth in these countries. Overall, this relationship between non-oil exports and economic growth is still not clear.

Although exports play an important role in boosting growth, they are not the sole contributing factor. Studies have shown that public investment is another key factor affecting economic growth (Hammond and Thompson 2006; Vu Le and Suruga 2005; Gwartney et al.1998). This argument is contrary to some studies, which view public investment as having a negative effect on growth due to their tendency to crowd out private investment (Aschauer1989; Everhart and Sumlinski 2001; Cavallo and Daude 2011; Swaby 2007; Devarajan et al. 1996). Pritcbett (1996) confirms, for instance, that in developing countries directed public investments with non-productive purposes weakens the significance of private investment.

In oil-rich countries, private investment plays a prominent role in stimulating economic growth. Unfortunately, the influence of private investment on growth has not received the attention it deserves. In countries like Saudi Arabia, for example, the contribution of the private sector in GDP for the year 2012, at constant prices, reached 58.2% (Central Department of Statistics and Information, 2012). This also supports a recent study

conducted by the International Monetary Fund (Alshahrani and Alsadiq, 2014) which showed that private investment has a positive effect on economic growth in Saudi Arabia. There are several studies in both developed and developing countries supporting this approach (Prochniak 2011; Dobronogov and Iqbal 2005; Chen and Feng 2000).

Recent interest from researchers concerning the relationship between international tourism and economic growth has increased considerably. Tourism is recognised as having a positive impact on long-term economic growth in several ways: it is one of the most important sources of foreign exchange for many developing nations as well as for developed nations. In addition, tourism contributes to the creation of employment and to an increase in income (Schubert et al.2011; Cortés-jiménez and Pulina 2006; Tiwari 2011).

A study by Sequeira and Maçãs Nunes (2008) shows the significant contribution of tourism to economic growth. In recent years, both low-income and high-income countries (Norway, Singapore and the USA, for example) focus on economic policies that promote international tourism as a potential source of economic expansion. Recent international tourism-related empirical studies include Cortés-jiménez and Pulina (2006) for Spain and Italy, Tiwari (2011) for India, China, Pakistan and Russia, Chatziantoniou et al. (2012) for France, Italy, Spain and Greece and Schubert et al. (2011) for a small tropical island. These authors have analysed the possible relationship between tourism and economic growth but only a few found evidence of the long-term effect from this sector on such growth. In oil-rich countries, studies by Tiwari (2011) and Brau et al. (2006) see tourism as a significant contributorand suggest that countries that depend on international tourist arrivals are inclined to show a more dramatic growth in their economy compared to oil-producing countries.

Overall, economic growth depends on many other variables. Economic theories, as well as various studies, have focused on the role of a variety of factors such as labour, physical capital and technical progress during the process of economic growth. However, given the difficulty of examining all the variables as delimiters for economic growthand the specificity of the Saudi economy as a representative case of oil economies, as well as the difficulty in accessing some of the data such as technology-related information, the following variables are assessed in the Saudi Arabia economic growth model for this study: non-oil exports, tourism, investment (both private and public), in addition to labour and capital.

III. METHOD OF STUDY AND MODEL SPECIFICATION

Method of Study: Data for this study was obtained from the Saudi Arabian Monetary Agency (SAMA), the International Monetary Fund (IMF) database as well as the Saudi Commission for Tourism and Antiquities (SCTA). Variables were calculated in real terms using the GDP-deflator (1999 = 100).

As for the methods used, they are similar to those used by (Kogid et al., (2010) and Awokuse, (2007). The study will begin with the stationary tests according to the Augmented Dikey-Fuller (ADF) test for unit roots (Dickey and Fuller, 1981). The Johansen approach (Johansen and Juselius, 1990) will be applied to test the relationship between dependent and independent variables and economic growth in the long-term, in addition to the use of the Error Correction Model (ECM) (Engle et al., 1987) to examine the relationship between these variables and economic growth in the short-term.

Model Specification: The study uses three main variables: tourism, non-oil exports and investment (both private and public). Investigating the effects of selected variables on economic growth in the Saudi economy (see Al-Yousif, 1997) can be basically illustrated in the extended production function as:

$$Y=F\,[(K, L); X, T] \qquad (1)$$

where Y is economic growth (GDP), X is exports, T is tourism and L and K are labour force and capital respectively. In order to achieve its aims, this paper will extend the above model to:

- Focus on non-oil exports (X_N) in order to isolate the effects of any external influences on the Saudi economy.
- Utilise gross fixed capital formation or total investment as a proxy for capital because of the lack of data on physical capital.
- Explore private investment (PI) and public investment (PG) in non-oil sectors only.
- Focus on employment in the non-oil sector.
- Use religious tourism between 1970 and 1989 due to the lack of data on the arrival of tourists in Saudi Arabia within these periods of time.

Hence, these take an extended economic growth function as follows (see Table 2):

$$LnY= \alpha + \beta_1 LnL_N + \beta_2 LnPG + \beta_3 LNPI + \beta_4 LnX_N + \beta_5 LnT + \varepsilon \qquad (2)$$

Table 2: Definition of Variables

Variables	**Definition**
Ln Y	Log GDP of the non-oil sector
Ln X_N	Log non-oil exports
Ln PI	Log private investment (non-oil sector)
Ln PG	Log public investment (non-oil sector)
Ln L_N	Log total labour forces in non-oil sector
Ln T	Log total international tourist arrivals

To examine the short-term relationship between the dependent variable and the independent variables, this study uses the Vector Error Correction Models (VECM) derived from the VAR model. Hence, Equation 3 is represented as below:

$$\Delta Y = \alpha_0 + \sum_{j=1}^{n} b_j \Delta Y_{t-j} + \sum_{j=0}^{n} c_j \Delta Ln_{t-j} + \sum_{j=0}^{n} d_j \Delta Xn_{t-j} + \sum_{j=0}^{n} e_j \Delta PG_{t-j} + \sum_{j=0}^{n} f_j \Delta PI_{t-j} + \sum_{j=0}^{n} fg_j \Delta T_{t-j} e_{t-1} + u_t \quad (3)$$

IV. EMPIRICAL RESULTS AND FINDINGS

The Unit Root Test: The test of the unit root based on ADF, as illustrated in Table 3, suggests that all six variables are stationary at first difference I (1). This means that there is a possibility of achieving co-integration relationships between economic growth and selected variables. The appropriate gap has been identified in the Augmented Dickey Fuller (ADF) test on the basis of the standard (Schwarz) criterion.

Table 3: Tests for unit root (ADF)

Variable Definition	**Symbols**	**Level**	**First Difference**
Economic growth in non-oil sector	GDP_N	-0.81	-5.87**
Employment in non-oil sector	Ln	-1.76	-4.13**
Private investment	PI	-3.40	-6.02**
Public investment	PG	-0.10	-4.05**
Non-oil exports	X_N	-2.08	-6.08**
International tourist arrivals	T	-1.33	-5.36**

**Significance at 10% and ** significance at 5%. The lag length is based on the Schwarz Info Criterion (SIC). Critical values (with linear trend): at the 5% and 10% are 3.54 and 3.20 respectively.*

Co-integration Test

Johansen approach: As mentioned before, this research uses non-oil sectors alone to assess the impact of these variables on economic growth. The variables include private investment (PI), public investment (PG), non-oil exports (X_N), tourism (T) and labour in the non-oil sector (L_N). The Johansen approach was used to examine the relationships between all variables and economic growth in the short term and long term.

Having proven the results of unit root tests for Augmented Dickey-Fuller (ADF), time-series variables were integrated into the first difference. Table 4 presents the results obtained from the Johansen co-integration tests, which indicates the existence of a complementary relationship between all variables under study.

Table 4: Johansen Co-integration Test Results

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical value	Prob.
Non*	0.918780	195.5705	95.75366	0.0000
At most 1*	0.654385	100.1677	69.81889	0.0000
At most 2*	0.593417	59.79529	47.85613	0.0026
At most 3*	0.424595	25.59655	29.79707	0.1412
At most 4*	0.108728	4.594693	15.49471	0.8503
At most 5*	0.005790	0.220659	3.841466	0.6385
Hypothesized No. of CE(s)	**Eigen value**	**Max-eigen Statistic**	**0.05 Critical value**	**Prob.**
Non*	0.918780	95.40278	40.07757	0.0000
At most 1*	0.654385	40.37239	33.87687	0.0073
At most 2*	0.593417	34.19874	27.58434	0.0061
At most 3*	0.424595	21.00186	21.13162	0.0521
At most 4*	0.108728	4.374033	14.26460	0.8179
At most 5*	0.005790	0.220659	3.841466	0.6385

**Trace test indicates 3 co-integrating eqn(s) at the 5% leveland the Max-eigenvalue test shows that there are 3 co-integrating eqn(s) at the 5% level. *: Rejection of the null hypothesis of no co-integration at 5% level.*

The results suggest that there are in fact three co-integrating vectors between economic growth (GDP) and other variables. Hence, there exists a long-term relationship among economic variables. The equation for the joint integration between the dependent variable and the independent variables can be represented in the following table:

Table 5: Determinants of Economic Growth in Non-oil Sector

Variables	Coefficient	Standard Error	t-Ratio
Ln	0.165653	0.04928	3.36
PG	0.080012	0.01571	5.09
PI	0.179269	0.04578	3.91
X_N	0.050321	0.03636	1.38
T	0.145523	0.04908	2.96

Table 5 shows that the effects of the labour force, private investment, public investment and tourism on economic growth are positive and are statistically significant at 5%. Interestingly, there is a weak impact from non-oil exports on economic growth.

Error Correction Model (ECM): The test results from the co-integration of the Johansen approach show that there is a long-term relationship between the GDP_N and its

determinants. The relationship between these variables in the short-term and the results are shown in Table 6.

Table 6: Vector Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic
EC_{t-1}	-0.270656	0.05661	-4.78078
D ($LGDP_N$(-1))	-0.099887	0.19256	-0.51874
D (LL_N(-1))	0.055173	0.18677	0.29541
D (LPG(-1))	0.019037	0.03017	0.63109
D (LPI(-1))	0.161364	0.04458	3.61962
D (LX_N(-1))	-0.023075	0.03045	-0.75789
D (LT(-1))	-0.101862	0.04790	-2.12664
C	0.07882	0.02340	3.36868
R-squared	0.95		
F-statistic	20.38		

The previous estimated model shows the results of estimating via the vector error correction model (VECM) for the short-term relationship between the dependent variable and the independent variables. Specifically, the value of the F-statistic (20.38), in addition to the error correction coefficient (EC_{t-1}), is statistically highly significant, as is its negative sign and this is consistent with the method of error correction. With R-squared at 0.95, the ECM explains 95% of the systemic variation in the dependent variable.

V. DISCUSSION AND CONCLUSION

The main objective of this paper is to identify the key determinants of economic growth in non-oil sectors of oil-rich countries. A unit root test, based on the Augmented Dickey Fuller (ADF), has shown that the time series data used for each variable are stationary at the first differences I (1). The co-integration technique based on Johansen's approach indicates that there is evidence of the existence of co-integration between the variables. Thus, a long-term relationship between these variables was found.

The major contribution of this article is that it has shown the importance of non-oil sectors such as tourism and private investment to future strategies for economic growth in oil-rich countries. It has also highlighted the importance of separating the economic entity into two main parts: oil and non-oil, particularly in oil-rich countries.

The results of this study relate primarily to private investment; its strong influence on economic growth in non-oil sectors was clearly identified. The impact of private investment is followed by the influence of the tourism and public sector. Unexpectedly, it was found that non-oil exports in the Saudi economy are statistically non-significant, which suggests that the growth in non-oil exports may not lead to a corresponding growth in Saudi's economy. Furthermore, this study has revealed the positive impact of labour force and capital on economic growth; this discovery is compatible with economic theory. The growth of tourism in Saudi makes this industry a strong contender as the future alternative to petroleum exports as a source of economic growth.

In summary, the results of this study have indicated that the exclusion of the variables in the non-oil sectors (such as private investment and tourism) and exclusive focus on the role of oil exports as the engine of economic growth might lead to considerably misleading economic outcomes.

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Appendix D: Data for model I (Whole economy in Saudi Arabia)

Year	*GDP- million*	*G - million*	*X_T - million*	*K - million*	*L_T – '000*	*T – '000*
1970	22279	3837	10907	3649	1589.0	1045.6
1971	30124	4300	17303	5874	1684.0	1216.9
1972	37819	5098	22761	7080	1784.0	1149.5
1973	53047	7844	33309	-8647	1890.0	1484.9
1974	159276	13593	126223	51824	2003.0	1557.9
1975	163156	23908	104412	32688	2122.0	1456.4
1976	224441	38076	135154	71756	2248.0	1627.6
1977	259548	47921	153209	79582	2382.0	1899.4
1978	270439	66217	138242	93232	2524.0	2079.7
1979	373309	81404	213183	101724	2674.0	1949.6
1980	544069	86981	362885	117563	2833.0	1943.2
1981	619538	121864	405481	120759	2022.0	2011.6
1982	520949	137555	271090	119369	3223.0	2501.7
1983	441533	132834	158444	135214	3438.0	1884.5
1984	416416	127048	132220	127665	3667.0	1589.8
1985	372408	120051	99536	73172	3912.0	1600.5
1986	318775	111633	74678	56112	4172.0	1619.3
1987	317478	113040	86880	50405	4450.0	1379.6
1988	322283	102240	91288	59436	4747.0	1466.9
1989	350325	119958	106294	63448	5064.0	1485.1
1990	430334	127824	166339	57453	5401.0	2209.0
1991	484853	169128	178636	81670	5536.0	2463.0
1992	501359	152692	188325	104979	5674.0	2746.3
1993	485630	130976	158770	111333	5815.0	3062.1
1994	494766	122552	159590	91083	5960.0	3414.2
1995	526004	125923	187403	95823	6148.0	3806.9
1996	581873	144783	227428	106906	6289.0	4244.7
1997	608802	161795	227443	113077	6391.0	4732.9
1998	536635	155192	145388	122555	6519.0	5277.1
1999	593955	154095	190084	127617	5592.9	5883.9
2000	697007	183804	290553	132227	5713.3	6585.0
2001	679163	188695	254898	129593	5808.6	6727.0
2002	699680	184517	271741	139109	5913.0	7511.0
2003	796561	198148	349664	159471	5875.0	7332.0
2004	929946	221798	472491	180156	5411.8	8599.0
2005	1172399	262650	677144	215687	6145.6	9100.0
2006	1324556	311082	791339	250101	6384.4	10961.6
2007	1430771	322086	874403	309365	6656.8	13478.6
2008	1771203	345098	1175482	406864	7121.7	14757.0
2009	1399701	357015	721109	360900	7837.4	10897.0
2010	1695039	395299	941785	386594	7951.0	10850.0
2011	2221773	488062	1367620	488062	8779.6	17498.0

Sources: Saudi Arabian Monetary Agency (SAMA) (2012); The Ministry of Hajj, World Tourism Organisation, Saudi Commission for Tourism and Antiquities.

Appendix E: Data for model I (Whole economy in the UAE)

Year	*GDP - million*	*G - million*	X_{T} *- million*	*K - million*	L_{T} *– '000*	*T – '000*
1980	111470	17648	126050	30155	559.9	1159.0
1981	124054	32115	125080	30643	571.0	1191.2
1982	115654	33489	108925	31683	595.0	1224.2
1983	105504	29056	92028	31668	619.0	1258.2
1984	104504	26667	90025	29823	644.0	1293.1
1985	101990	29317	86443	30384	683.8	1328.9
1986	81832	27533	59336	30513	707.0	1377.2
1987	89218	27155	74222	30503	756.0	1427.1
1988	88801	28622	71645	27802	808.0	1478.9
1989	102549	29844	90201	29616	864.0	1532.5
1990	125266	30393	121766	30962	924.0	1588.1
1991	126264	32073	127950	31870	988.0	1713.2
1992	131676	35356	137507	35344	1057.0	1848.1
1993	133206	36565	151493	42032	1130.0	1993.6
1994	141909	37735	156096	41081	1208.0	2150.6
1995	156902	39700	166394	44693	1335.9	2320.0
1996	175778	41361	217451	47432	1382.0	2570.0
1997	187550	46801	238164	50990	1480.0	2480.0
1998	177360	52175	204826	52195	1582.0	2990.0
1999	201797	55480	216434	53916	1698.0	3390.0
2000	257979	59010	282373	57398	1820.0	3910.0
2001	379412	32528	186388	60178	1947.0	4130.0
2002	403300	35388	199508	62404	2176.3	5450.0
2003	456662	38611	255204	73105	2334.3	5870.0
2004	542885	42286	344862	81255	2459.1	6200.0
2005	663318	45455	447996	93798	2800.2	7130.0
2006	815723	50961	559429	141822	3105.6	7843.0
2007	947197	56190	685152	223283	3822.9	8797.0
2008	1158581	66570	913125	259219	4901.9	9468.0
2009	935766	89301	741185	269224	4898.8	9111.0
2010	1055557	90141	826755	262574	4903.9	9787.0
2011	1280215	93657	1155440	281689	5238.0	10534.0

Sources: International Monetary Fund, World Tourism Organisation, The UN Statistical Databases, The National Bureau of Statistics, The Ministry of Planning, UNCTADSTAT.

Appendix F: Data for model II (Oil sector in Saudi Arabia)

Year	$GDP_{O\text{ - million}}$	G - *million*	$X_{O\text{ - million}}$	$K_{O\text{ - million}}$	$L_{O\text{ – '000}}$
1970	10390	3837	9698	577	17.5
1971	17031	4300	11548	671	18.5
1972	22450	5098	16152	2040	19.6
1973	33217	7844	21583	2632	20.8
1974	126320	13593	115684	3659	22.1
1975	104876	23908	95587	5422	23.3
1976	137999	38076	125350	7316	24.7
1977	146758	47921	141807	8053	26.2
1978	130552	66217	125265	8222	27.8
1979	203623	81404	194459	12264	29.4
1980	341641	86981	334543	10811	27.3
1981	380798	121864	375320	12604	29.6
1982	254737	137555	249978	14882	32.7
1983	163118	132834	154178	11882	35.9
1984	140671	127048	127423	9554	50.4
1985	104451	120051	93623	8302	45.9
1986	72666	111633	66665	8927	41.6
1987	78775	113040	76271	6753	39.3
1988	76738	102240	75440	1247	39.7
1989	98652	119958	89965	1534	41.9
1990	15893	127824	149649	4234	46.5
1991	179572	169128	162764	4505	51.2
1992	199856	152692	173752	7000	63.9
1993	170012	130976	144202	8000	64.1
1994	169438	122552	142401	8154	64.9
1995	187718	125923	162593	14768	71.1
1996	226476	144783	202638	8536	73.0
1997	228250	161795	199172	9293	75.2
1998	152829	155192	121607	11466	77.4
1999	198988	154095	167793	13147	79.0
2000	289165	183804	264951	14018	76.3
2001	255509	188695	223532	14240	78.1
2002	263511	184517	238587	12486	85.1
2003	330389	198148	307591	21131	81.8
2004	424104	221798	414059	16921	79.9
2005	618291	262650	605881	22231	76.6
2006	720664	311082	705811	44380	73.2
2007	788823	322086	769933	64954	79.6
2008	1081226	345098	1053860	66201	78.3
2009	662212	357015	611490	55060	86.2
2010	872162	395299	807176	55563	87.5
2011	1288599	488062	1191051	59014	96.6

Sources: Saudi Arabian Monetary Agency (SAMA) (2012); The Ministry of Economy and Planning (2008); OPEC, International Monetary Fund.

Appendix G: Data for model II (Oil sector in the UAE)

Year	$GDP_{O\text{ - million}}$	$G_{\text{ - million}}$	$X_{O\text{ - million}}$	$K_{O\text{ - million}}$	$L_{O\text{ – '000}}$
1980	70532	17648	71936	5432	4.6
1981	69814	32115	68852	3863	7.1
1982	55982	33489	58558	3748	7.6
1983	46145	29056	47768	7600	7.6
1984	46608	26667	44175	8080	7.7
1985	44707	29317	39988	5773	6.9
1986	26171	27533	25194	5797	7.1
1987	32423	27155	28993	5795	7.6
1988	29643	28622	27991	6900	7.2
1989	38792	29844	37489	7240	7.5
1990	57632	30393	54484	6898	7.9
1991	54260	32073	52686	6850	8.3
1992	53753	35356	52301	7573	8.4
1993	47341	36565	44473	7782	8.0
1994	44558	37735	42876	6770	11.4
1995	47949	39700	47056	6811	12.7
1996	57123	41361	54976	7075	14.3
1997	55799	46801	56037	7575	21.1
1998	37402	52175	40850	6385	20.9
1999	49794	55480	55127	7180	22.3
2000	86690	59010	95963	7280	23.5
2001	94703	32528	82259	7530	25.9
2002	93705	35388	79888	7925	27.2
2003	114781	38611	92311	8445	28.1
2004	158087	42286	139823	9350	30.0
2005	227232	45455	202139	10804	31.7
2006	304762	50961	257267	13937	34.1
2007	320709	56190	270904	11392	40.6
2008	427667	66570	374659	22552	51.8
2009	251818	89301	249104	37826	53.5
2010	331584	90141	273921	37690	53.5
2011	503225	93657	409597	30111	61.0

Sources: International Monetary Fund, OPEC, The National Bureau of Statistics, The Ministry of Planning, The UN Statistical Databases.

Appendix H: Data for model III (Non-oil sector in Saudi Arabia)

Year	$GDP_{N\text{ - million}}$	$X_{N\text{ - million}}$	$PG_{N\text{ - million}}$	$PI_{N\text{ - million}}$	$L_{N\text{ - '000}}$	T - '000
1970	11889	1209	1204	1150	1571.5	1045.6
1971	13094	5755	1443	1290	1665.5	1216.9
1972	15369	6609	1985	1669	1764.4	1149.5
1973	19831	11726	3416	2351	1869.2	1484.9
1974	32956	10539	7370	6670	1980.9	1557.9
1975	58280	8825	17491	10627	2098.7	1456.4
1976	86442	9804	27352	16523	2223.3	1627.6
1977	112789	11402	40484	18354	2355.8	1899.4
1978	139888	12977	49031	19401	2496.2	2079.7
1979	169686	18724	61598	23207	2644.6	1949.6
1980	202428	28342	66874	28691	2452.7	1943.2
1981	238739	30161	73881	35830	2665.4	2011.6
1982	266213	21112	66411	34162	2941.3	2501.7
1983	278414	4266	50026	41320	3231.1	1884.5
1984	275745	4797	46314	40624	3503.6	1589.8
1985	267957	5913	32775	35236	3800.1	1600.5
1986	246109	8013	25184	32033	4064.4	1619.3
1987	238703	10609	27402	31047	4356.7	1379.6
1988	245545	15848	24029	31642	4588.3	1466.9
1989	251672	16329	26285	32590	4828.1	1485.1
1990	271641	16690	42491	28078	4951.5	2209.0
1991	305281	15872	45201	36804	5123.8	2463.0
1992	301503	14573	32289	54686	5293.1	2746.3
1993	315617	14568	30029	60421	5430.9	3062.1
1994	325328	17189	23969	52084	5552.1	3414.2
1995	338285	24810	25168	53619	5645.9	3806.9
1996	355397	24790	12914	81398	5616.0	4244.7
1997	380552	28271	16102	83846	5580.8	4732.9
1998	383805	23781	12437	89056	5567.6	5277.1
1999	394967	22291	12958	92091	5613.0	5883.9
2000	407842	25602	16353	92953	5886.7	6585.0
2001	423654	31366	17508	94347	6179.9	6727.0
2002	436169	33154	18121	97459	6579.9	7511.0
2003	466172	42073	23291	103676	7082.2	7332.0
2004	505842	58432	30386	109040	7585.1	8599.0
2005	554108	71263	54940	118461	8042.4	9100.0
2006	603892	85528	58741	129943	8407.8	10961.6
2007	641947	104470	84042	146405	8707.4	13478.6
2008	689978	121622	109882	171928	8944.7	14757.0
2009	737488	109619	112088	168180	9151.8	10897.0
2010	822877	134609	145694	170683	9469.5	10850.0
2011	933174	176569	173390	195681	9703.4	17498.0

Sources: International Monetary Fund, UNCTADSTAT, Saudi Arabian Monetary Agency (2012), Ministry of Hajj, World Tourism Organisation, Saudi Commission for Tourism and Antiquities.

Appendix I: Data for model III: (Non-oil sector in the UAE)

Year	$GDP_{N\text{ - million}}$	$X_{N\text{ - million}}$	$PG_{N\text{ - million}}$	$PI_{N\text{ - million}}$	$L_{N\text{ - '000}}$	T - *'000*
1980	40938	54114	7022	17701	555.3	1159.0
1981	54240	56228	5452	21328	563.9	1191.2
1982	59672	50367	6006	21929	587.4	1224.2
1983	59359	44260	2859	21209	611.4	1258.2
1984	57896	45849	1762	19981	636.3	1293.1
1985	57283	46454	4557	20053	676.9	1328.9
1986	55661	34142	4577	20139	699.9	1377.2
1987	56795	45229	4575	20132	748.4	1427.1
1988	59158	43654	6839	14063	800.8	1478.9
1989	63757	52712	7057	15319	856.5	1532.5
1990	67634	67282	8262	15802	916.1	1588.1
1991	72004	75264	8370	16650	979.7	1713.2
1992	77923	85206	9511	18260	1048.6	1848.1
1993	85865	107020	13900	20350	1122.0	1993.6
1994	97351	113219	17442	16869	1196.6	2150.6
1995	108953	119337	17641	20241	1323.2	2320.0
1996	118655	162474	19119	21238	1367.7	2570.0
1997	131751	182127	19970	23445	1458.9	2480.0
1998	139958	163975	25817	19993	1561.1	2990.0
1999	152003	161307	24384	22352	1675.7	3390.0
2000	171289	186410	25363	24755	1796.5	3910.0
2001	284709	104128	28303	24345	1921.1	4130.0
2002	309595	119619	28094	26385	2149.1	5450.0
2003	341881	162892	32204	32456	2306.2	5870.0
2004	384798	205039	34253	37652	2429.1	6200.0
2005	436086	245856	35778	47216	2768.5	7130.0
2006	510961	302162	40753	87132	3071.5	7843.0
2007	626488	414247	52797	159094	3782.3	8797.0
2008	730914	538466	62521	174146	4850.1	9468.0
2009	683947	492080	52031	179367	4845.3	9111.0
2010	723974	552834	56711	168173	4850.4	9787.0
2011	776990	745843	67706	183872	5177.0	10534.0

Sources: The International Monetary Fund, UNCTADSTAT, World Tourism Organisation, UN Statistical Databases, National Bureau of Statistics, Ministry of Planning.